



2026 MSCA Hosting Offers

MSCA Support at the University of Florence

The University of Florence offers a **highly supportive and research-driven environment** for MSCA Postdoctoral Fellows, combining **scientific excellence** with tailored, hands-on assistance throughout the entire proposal lifecycle. Our European and International Research Unit works closely with applicants to **maximise the competitiveness of their proposals** and to help shape **ambitious, high-impact research projects** aligned with the MSCA philosophy.

From the earliest stages, fellows receive **strategic guidance** in positioning their research idea within the MSCA framework, with particular attention to **excellence, impact and career development**. Applicants are supported in structuring a **compelling and competitive proposal**, strengthening its narrative, and designing a **coherent training and career development pathway** that enhances both **scientific independence** and long-term career prospects. Dedicated assistance is also provided for **budget preparation** and for the **submission process via the Funding & Tenders Portal**, ensuring a smooth and efficient application experience.

Once selected, fellows benefit from **continuous and proactive support** throughout the implementation of their project. The University provides expert assistance in **grant agreement preparation, project management, financial monitoring and reporting**, as well as in **dissemination, communication and Open Science practices**. Particular care is devoted to ensuring that fellows can **focus on their research** while being fully supported in all administrative and compliance aspects.

Beyond technical support, the University of Florence offers a **vibrant, international and interdisciplinary research environment**, where fellows are fully integrated into **dynamic research groups** and benefit from **close mentorship by experienced supervisors**. Strong emphasis is placed on developing **scientific autonomy**, expanding **international networks** and enhancing **future funding opportunities**, including progression towards prestigious schemes such as **ERC grants**.

Choosing the University of Florence as a host institution means joining a research community that is **deeply committed to excellence, innovation and the long-term success of its researchers**.

Explore below our current hosting offers and identify the research opportunity that best matches your profile and ambitions.

UNIFI Hosting Offers Overview

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CHEMISTRY (CHE)

Development of novel synthetic methodologies through gold(I)-catalysis

Supervisor	Prof. Ernesto Giovanni Occhiato
Department	Department of Chemistry
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Organic chemistry; Synthesis; Gold catalysis; Natural compounds; Bioactive compounds

First Principles Simulation of Spin-Electric coupling in lanthanides and transition metal complexes

Supervisor	Prof. Matteo Briganti
Department	Department of Chemistry
Keywords	Lanthanides, Molecular Magnetism, Ab Initio, Spin-electric, Quantum Computing

Glyconanomaterials for Biomedical Applications

Supervisor	Prof. Barbara Richichi
Department	Department of Chemistry
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Glyconanomaterials, Glycofluorescent probe, Cancer treatment and disease modeling

Hybrid Bio-Nano Sensing Technologies for Rapid, Portable and High-Sensitivity Detection

Supervisor	Prof. Giovanna Marrazza
Department	Department of Chemistry

EUniWell Arena	Arena 1: Health and Well-Being Arena 2: Social Equality and Well-Being;
Keywords	Environmental monitoring, Food safety, Healthcare diagnostics

Hybrid lipid nanoparticles and lipoprotein-guided delivery for nucleic-acid therapeutics

Supervisor	Prof. Lucrezia Caselli
Department	Department of Chemistry
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Lipid nanoparticles, Gene delivery, Hybrid systems, Lipoproteins, Structural characterization

Intrinsically Disordered Proteins (IDPs) studied through NMR spectroscopy: opening novel avenues in drug discovery

Supervisor	Prof. Isabella Caterina Felli
Department	Department of Chemistry
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	IDP, NMR, ¹³ C

Molecular and Hybrid 1D and 2D Magnetic Systems for Spintronics and Quantum Computing by ab initio methods

Supervisor	Prof. Federico Totti
Department	Department of Chemistry
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Spintronics, Quantum Computing, ab initio methods, 2D materials, Molecular Magnetism

Multi-Target Strategies in Medicinal Chemistry: Carbonic Anhydrases as Key Drivers

Supervisor	Prof. Fabrizio Carta
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Department	Department of Neurosciences, Psychology, Drug Research and Child Health
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Metalloenzymes, Medicinal chemistry

Nonlinear Ultrafast Spectroscopy of Soft Matter: Water, Proteins, and THz Collective Dynamics

Supervisor	Prof. Renato Torre
Department	Department of Physics and Astronomy
EUniWell Arena	Arena 1: Health and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Ultrafast Spectroscopy, Complex Liquids, THz Dynamics, Biomolecular Hydration, Nonlinear Optics

Responsive soft materials

Supervisor	Prof. Jacopo Vialetto
Department	Department of Chemistry
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Responsive soft materials, Colloids, Interfaces, Active matter, Rheology

Selective degradation of pathological Tau protein in neuronal models as a disease-modifying strategy for Alzheimer's disease

Supervisor	Prof. Andrea Trabocchi
Department	Department of Chemistry
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Peptidomimetics, Drug discovery, PROTACS, High-content screening, Alzheimer's disease

Smart polymers for biomedical application

Supervisor	Prof. Camilla Parmeggiani
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Department	Department of Chemistry
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Liquid Crystalline Networks (LCNs), 3D printing, Tissue engineering, Smart polymers, Stimuli-responsive materials

First Principles Simulation of Spin-Electric coupling in lanthanides and transition metal complexes

Supervisor	Prof. Matteo Briganti
Department	Department of Chemistry
Keywords	Lanthanides, Molecular Magnetism, Ab Initio, Spin-electric, Quantum Computing

SOCIAL SCIENCES AND HUMANITIES (SOC)

A spatial approach to the study of sustainability with a specific focus on Food Systems and Tourism

Supervisor	Prof. Filippo Randelli
Department	Department of Economics and Management
EUniWell Arena	Arena 1: Health and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Food Policy, Food System, Sustainable Tourism, GIS, Agroecology

Archaeology in conflict areas

Supervisor	Prof. Marina Pucci
Department	Department of History, Archaeology, Geography, Fine and Performing Arts
EUniWell Arena	Arena 4: Culture, Multilingualism and Well-Being
Keywords	Conflict heritage, Post-conflict heritage, Endangered archaeology, Archaeological data management, Digital heritage, GIS, Database design, Syria, Near East, Heritage governance

Archaeometry and Landscape Archaeology: Materials, Production and Settlement Dynamics

Supervisor	Prof. Elisabetta Gliozzo
Department	Department of History, Archaeology, Geography, Fine and Performing Arts
Keywords	Archaeometry, Landscape archaeology, Material culture, Provenance analysis, Geophysical survey

Behavioral Macroeconomics of Poverty Traps, Inequality, and Green Transition in Modern Economies

Supervisor	Prof. Edgar J. Sanchez Carrera
Department	Department of Economics and Management
EUniWell Arena	Arena 1: Health and Well-Being Arena 2: Social Equality and Well-Being

Arena 3: Environmental Change and Well-Being

Keywords

Behavioral Macroeconomics, Evolutionary Game Theory, Green Transition, Poverty Traps, Wealth Inequality

Bioinspired materials for Cultural Heritage and Building Conservation

Supervisor

Prof. **Antonella Trombadore**

Department

Department of Architecture

EUniWell Arena

Arena 3: Environmental Change and Well-Being
Arena 5: Teacher Education and Well-Being

Keywords

Biomaterials, Cultural heritage, Sustainable design (for recycling, for environment, eco-design), Architecture and green materials

Consumer Behaviour and Sustainable Food Systems: Experimental and Policy-Oriented Research in Agri-Food Economics

Supervisor

Prof. **Caterina Contini**

Department

Department of Agriculture, Food, Environment and Forestry

EUniWell Arena

Arena 1: Health and Well-Being
Arena 3: Environmental Change and Well-Being

Keywords

Consumer behaviour, Sustainable food systems, Food choice modelling, Agri-food economics

Cultural history of the long European Renaissance

Supervisor

Prof. **Igor Melani**

Department

Department of History, Archaeology, Geography, Fine and Performing Arts

EUniWell Arena

Arena 4: Culture, Multilingualism and Well-Being
Arena 5: Teacher Education and Well-Being

Keywords

Renaissance History, Cultural history of the Early modern Era, History of mentalities

Digital Twins and Advanced 3D Modelling for Cultural Heritage Documentation and Resilience

Supervisor	Prof. Grazia Tucci
Department	Department of Civil and Environmental Engineering
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Geomatics, Cultural Heritage, Digital Twins, 3D Modelling, Remote Sensing

Ecological Macroeconomics and the Global South: Modeling Just Transitions and Structural Change in a Post-Growth Era

Supervisor	Prof. Tiziano Distefano
Department	Department of Economics and Management
EUniWell Arena	Arena 2: Social Equality and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Ecological Macroeconomics, EUROGREEN, Post growth, Complexity, Policy scenario analysis

History of Late Antiquity and the Early Middle Ages

Supervisor	Prof. Marco Cristini
Department	Department of History, Archaeology, Geography, Fine and Performing Arts
EUniWell Arena	Arena 4: Culture, Multilingualism and Well-Being
Keywords	Late Antiquity, Ostrogothic Italy, Early Middle Ages, Diplomacy, African Christianity

Late Medieval and Renaissance Manuscript Culture

Supervisor	Prof. Irene Ceccherini
Department	Department of History, Archaeology, Geography, Fine and Performing Arts
EUniWell Arena	Arena 4: Culture, Multilingualism and Well-Being Arena 5: Teacher Education and Well-Being
Keywords	Palaeography, Codicology, Diplomatics, History of the Book, History of Libraries

Network Spillovers in Heterogeneous Agent Models: From Micro Interactions to Macroeconomic Outcomes

Supervisor	Prof. Giorgio Ricchiuti
Department	Department of Economics and Management
EUniWell Arena	Arena 2: Social Equality and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Heterogeneous Agents, Economic Networks, Agent-Based Models, Stock-Flow Consistent Models, Global Value Chains

Pathways to parenthood: infertility, assisted reproduction and relationship dynamics

Supervisor	Prof. Valentina Tocchioni
Department	Department of Statistics, Computer Science, Applications
EUniWell Arena	Arena 1: Health and Well-Being Arena 2: Social Equality and Well-Being
Keywords	Medically assisted reproduction, Fertility, Infertility, Quantitative methods, Relationship dynamics

Personality traits in food experience

Supervisor	Prof. Sara Spinelli
Department	Department of Agriculture, Food, Environment and Forestry
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Sensory science, Taste, Emotions, Personality

Political Spaces and Systems in Medieval Cities (11th–15th Centuries)

Supervisor	Prof. Pierluigi Terenzi
Department	Department of History, Archaeology, Geography, Fine and Performing Arts
EUniWell Arena	Arena 5: Teacher Education and Well-Being
Keywords	Medieval history, Urban political systems, Solidarity networks, European cities, Power relations

Postgrowth cities and landscapes seeking social and ecological sustainability in a complex world and in an uncertain century

Supervisor	Prof. Silvio Cristiano
Department	Department of Architecture
EUniWell Arena	Arena 1: Health and Well-Being Arena 2: Social Equality and Well-Being Arena 3: Environmental Change and Well-Being Arena 4: Culture, Multilingualism and Well-Being Arena 5: Teacher Education and Well-Being
Keywords	Urban and regional dynamics, Physical-ecological systems, Spatial studies, Strong sustainability and new-risk resilience, Postgrowth and decoloniality

Prosperity Fashion: Design and Socio-Technical Transitions in the Fashion Industry

Supervisor	Prof. Paolo Franzo
Department	Department of Architecture
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Circular Fashion, Sustainable Fashion Systems, Design for Sustainability, Artificial Intelligence in Fashion Design, Socio-technical Innovation

Spatial Mismatch in Sustainability Transitions: GeoAI, Energy Systems, and Climate Risk

Supervisor	Prof. Federico Martellozzo
Department	Department of Economics and Management
EUniWell Arena	Arena 2: Social Equality and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Spatial modelling, GeoAI, Sustainability transition, Climate change, Spatial inequalities

The political legacies of armed conflict and political violence

Supervisor	Prof. Stefano Costalli
Department	Department of Political and Social Sciences
Keywords	Armed conflict, Political violence, Legacies, Peacekeeping, Peace-building

Transnational Families, Gender, and Intersectionality in a Mobile World

Supervisor	Prof. Elisabetta Zontini
Department	Department of Political and Social Sciences
EUniWell Arena	Arena 2: Social Equality and Well-Being Arena 4: Culture, Multilingualism and Well-Being
Keywords	Transnational families, Intersectionality, Migration, Gender, Qualitative methods

W-Motion - Women in Motion: Migration and Silent U.S. Cinema

Supervisor	Prof. Cristina Iandelli
Department	Department of History, Archaeology, Geography, Fine and Performing Arts
Keywords	Migrant women, Early American cinema, East Coast studios, Creative and technical women work

Whose Liberty? Slavery, the Past, and the Atlantic World

Supervisor	Prof. Giovanni Tarantino
Department	Department of History, Archaeology, Geography, Fine and Performing Arts
EUniWell Arena	Arena 4: Culture, Multilingualism and Well-Being
Keywords	Atlantic world, Political languages, Slavery and abolition, Uses of the past, Global history

ECONOMIC SCIENCES (ECO)

A spatial approach to the study of sustainability with a specific focus on Food Systems and Tourism

Supervisor	Prof. Filippo Randelli
Department	Department of Economics and Management
EUniWell Arena	Arena 1: Health and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Food Policy, Food System, Sustainable Tourism, GIS, Agroecology

Behavioral Macroeconomics of Poverty Traps, Inequality, and Green Transition in Modern Economies

Supervisor	Prof. Edgar J. Sanchez Carrera
Department	Department of Economics and Management
EUniWell Arena	Arena 1: Health and Well-Being Arena 2: Social Equality and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Behavioral Macroeconomics, Evolutionary Game Theory, Green Transition, Poverty Traps, Wealth Inequality

CLIMBEE-AI: Decoding Climate Impacts on Honeybee Health through Advanced Machine Learning and Large Language Models

Supervisor	Prof. Maria Elvira Mancino
Department	Department of Economics and Management
EUniWell Arena	Arena 1: Health and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	HoneyBees, Ecology, Climate, Sustainability

Competition Policy and Regulation in Digital Markets in the age of AI

Supervisor	Prof. Lapo Filistrucchi
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Department	Department of Economics and Management
EUniWell Arena	Arena 4: Culture, Multilingualism and Well-Being
Keywords	Digital markets, AI, Structural econometrics, Media, Two-sided platforms

Consumer Behaviour and Sustainable Food Systems: Experimental and Policy-Oriented Research in Agri-Food Economics

Supervisor	Prof. Caterina Contini
Department	Department of Agriculture, Food, Environment and Forestry
EUniWell Arena	Arena 1: Health and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Consumer behaviour, Sustainable food systems, Food choice modelling, Agri-food economics

Decoding Market Dynamics: Heterogeneity, High-Frequency Data & Economic Networks

Supervisor	Prof. Leonardo Bargigli
Department	Department of Economics and Management
EUniWell Arena	Arena 2: Social Equality and Well-Being
Keywords	Agent-Based Computational Economics, Systemic Risk, Networks, High-Frequency Econometrics

Ecological Macroeconomics and the Global South: Modeling Just Transitions and Structural Change in a Post-Growth Era

Supervisor	Prof. Tiziano Distefano
Department	Department of Economics and Management
EUniWell Arena	Arena 2: Social Equality and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Ecological Macroeconomics, EUROGREEN, Post growth, Complexity, Policy scenario analysis

Network Spillovers in Heterogeneous Agent Models: From Micro Interactions to Macroeconomic Outcomes

Supervisor	Prof. Giorgio Ricchiuti
Department	Department of Economics and Management
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Keywords	Heterogeneous Agents, Economic Networks, Agent-Based Models, Stock-Flow Consistent Models, Global Value Chains

Postgrowth cities and landscapes seeking social and ecological sustainability in a complex world and in an uncertain century

Supervisor	Prof. Silvio Cristiano
Department	Department of Architecture
EUniWell Arena	Arena 1: Health and Well-Being Arena 2: Social Equality and Well-Being Arena 3: Environmental Change and Well-Being Arena 4: Culture, Multilingualism and Well-Being Arena 5: Teacher Education and Well-Being
Keywords	Urban and regional dynamics, Physical-ecological systems, Spatial studies, Strong sustainability and new-risk resilience, Postgrowth and decoloniality

Spatial Mismatch in Sustainability Transitions: GeoAI, Energy Systems, and Climate Risk

Supervisor	Prof. Federico Martellozzo
Department	Department of Economics and Management
EUniWell Arena	Arena 2: Social Equality and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Spatial modelling, GeoAI, Sustainability transition, Climate change, Spatial inequalities

INFORMATION SCIENCE AND ENGINEERING (ENG)

A spatial approach to the study of sustainability with a specific focus on Food Systems and Tourism

Supervisor	Prof. Filippo Randelli
Department	Department of Economics and Management
EUniWell Arena	Arena 1: Health and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Food Policy, Food System, Sustainable Tourism, GIS, Agroecology

AI-Driven Digital Heritage: 3D Reconstruction, Analysis and Innovation for Cultural Heritage

Supervisor	Prof. Rocco Furferi
Department	Department of Industrial Engineering
EUniWell Arena	Arena 2: Social Equality and Well-Being
Keywords	Generative AI, Foundation Models, Computer Vision, 2.5D/3D Reconstruction, Neural Rendering, Digital Twins, Cultural Heritage, Geometric Modelling, Deep Learning

AI-Driven Edge-to-Cloud Continuum for Integrated 6G Terrestrial and Non-Terrestrial Networks (NTN)

Supervisor	Prof. Daniele Tarchi
Department	Department of Information Engineering
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Edge-to-Cloud Continuum, Distributed Machine Learning, 6G Networks, Satellite Communications (NTN), Computation Offloading

Bioinspired materials for Cultural Heritage and Building Conservation

Supervisor	Prof. Antonella Trombadore
Department	Department of Architecture
EUniWell Arena	Arena 3: Environmental Change and Well-Being Arena 5: Teacher Education and Well-Being
Keywords	Biomaterials, Cultural heritage, Sustainable design (for recycling, for environment, eco-design), Architecture and green materials

Coupling Geothermal Energy with High-Performance Thermal Storage

Supervisor	Prof. Lorenzo Talluri
Department	Department of Industrial Engineering
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Geothermal energy, Thermal storage, Thermodynamics, Heat pumps, Exergy analysis

Decoding galaxy properties with simulation-based inference

Supervisor	Prof. Michele Ginolfi
Department	Department of Physics and Astronomy
Keywords	Astronomy, Galaxies, Artificial Intelligence, Deep Learning, Physics

Deepfake Visual Media Forensics

Supervisor	Prof. Alessandro Piva
Department	Department of Information Engineering
EUniWell Arena	Arena 2: Social Equality and Well-Being Arena 4: Culture, Multilingualism and Well-Being
Keywords	Image forensics; Video forensics; Deepfake detection

Digital Twins and Advanced 3D Modelling for Cultural Heritage Documentation and Resilience

Supervisor	Prof. Grazia Tucci
Department	Department of Civil and Environmental Engineering
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Geomatics, Cultural Heritage, Digital Twins, 3D Modelling, Remote Sensing

Edge AI for Smart Control of Power Converters in Renewable Energy Systems

Supervisor	Dr. Fabio Corti
Department	Department of Information Engineering
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Power Electronics, Renewable Energy Integration, Edge AI, Reinforcement Learning, Smart Grid

Efficient Vision-Language Adaptation for an Open and Changing World

Supervisor	Prof. Andrew David Bagdanov
Department	Department of Information Engineering
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Computer Vision, Deep Learning, Vision-language Models, Continual Learning, Efficient Model Adaptation

Experimental Research on Battery and Electronic Systems Reliability with AI-based Prognostics in Advanced Measurement Laboratory

Supervisor	Prof. Lorenzo Ciani
Department	Department of Information Engineering
EUniWell Arena	Arena 1: Health and Well-Being Arena 3: Environmental Change and Well-Being

KeywordsReliability, Lithium-ion Batteries, PHM, AI, Experimental Testing

First Principles Simulation of Spin-Electric coupling in lanthanides and transition metal complexes

Supervisor Prof. **Matteo Briganti****Department** Department of Chemistry**Keywords** Lanthanides, Molecular Magnetism, Ab Initio, Spin-electric, Quantum Computing

From Single Agents to Trustworthy AI Ensembles: Software Architecture for LLM-Based Multi-Agent Systems

Supervisor Dr. **Roberto Verdecchia****Department** Department of Information Engineering**EUniWell Arena** Arena 2: Social Equality and Well-Being**Keywords** Software Architecture, Multi-Agent LLM Systems, Empirical Software Engineering, Agentic AI, Software Quality

Generative Methods for 3D Human Face and Body

Supervisor Prof. **Stefano Berretti****Department** Department of Information Engineering**EUniWell Arena** Arena 1: Health and Well-Being
Arena 5: Teacher Education and Well-Being**Keywords** Generative AI, 3D Computer Vision, 3D Face and Body, Geometric Data, Temporal Modeling

Glyconanomaterials for Biomedical Applications

Supervisor Prof. **Barbara Richichi****Department** Department of Chemistry**EUniWell Arena** Arena 1: Health and Well-Being**Keywords** Glyconanomaterials, Glycofluorescent probe, Cancer treatment and disease modeling

Hybrid Bio-Nano Sensing Technologies for Rapid, Portable and High-Sensitivity Detection

Supervisor	Prof. Giovanna Marrazza
Department	Department of Chemistry
EUniWell Arena	Arena 1: Health and Well-Being Arena 2: Social Equality and Well-Being
Keywords	Environmental monitoring, Food safety, Healthcare diagnostics

Human-Centric Manufacturing Systems for Industry 5.0: Skills, Adaptability and Technology Integration

Supervisor	Prof. Romeo Bandinelli
Department	Department of Industrial Engineering
EUniWell Arena	Arena 1: Health and Well-Being Arena 2: Social Equality and Well-Being Arena 3: Environmental Change and Well-Being Arena 4: Culture, Multilingualism and Well-Being
Keywords	Industry 5.0, Human-Centric Manufacturing, Skills Development, Human-Technology Synergy, Industrial Innovation

Isogeometric Modeling and 4D Printing of Patient-Specific Shape-Changing Biomedical Devices

Supervisor	Prof. Enzo Marino
Department	Department of Civil and Environmental Engineering
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Nonlinear structural mechanics, Computational mechanics, Isogeometric analysis (IGA), 4D printing, metamaterials

Multiplexed 3D spatial biology of cancer

Supervisor	Prof. Ludovico Silvestri
Department	Department of Physics and Astronomy
EUniWell Arena	Arena 1: Health and Well-Being

Keywords Light-sheet microscopy, 3D spatial biology, Tissue clearing, Multiplexed proteomics

Operational Excellence and Data-Driven Optimization for Sustainable Industrial Systems

Supervisor Prof. **Filippo De Carlo**

Department Department of Industrial Engineering

Keywords Operational Excellence, Industrial Process Optimization, Data-Driven Decision Making, Logistics Systems, Sustainable Manufacturing

Post-detection scenario reconstruction of Advanced Persistent Threats

Supervisor Prof. **Andrea Ceccarelli**

Department Department of Mathematics and Computer Science

Keywords Security, Intrusion detection, Anomaly detection, Advanced Persistent Threats, Attacks

Postgrowth cities and landscapes seeking social and ecological sustainability in a complex world and in an uncertain century

Supervisor Prof. **Silvio Cristiano**

Department Department of Architecture

EUniWell Arena Arena 1: Health and Well-Being
Arena 2: Social Equality and Well-Being
Arena 3: Environmental Change and Well-Being
Arena 4: Culture, Multilingualism and Well-Being
Arena 5: Teacher Education and Well-Being

Keywords Urban and regional dynamics, Physical-ecological systems, Spatial studies, Strong sustainability and new-risk resilience, Postgrowth and decoloniality

Recharging the future in DC with AI

Supervisor Prof. **Alberto Reatti**

Department Department of Information Engineering

EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Power Electronics, High-Frequency Power Converter, Wireless Power Transfer, Photovoltaics, Energy Economics, Renewable Energy Integration, Energy Storage, Artificial Intelligence, Electricity Markets

Simulation of Multimodal Rolling Stock (Multimodal means hybrid FC. or battery operated trains)

Supervisor	Prof. Luca Pugi
Department	Department of Industrial Engineering
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Railway, Batteries, Mechatronics, Braking, Traction

Smart Materials and Wearable Technologies: From Artificial Muscles to Human-Computer Interfaces

Supervisor	Prof. Federico Carpi
Department	Department of Industrial Engineering
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Soft actuators, Artificial muscles, Haptics, 3D printing, Rehabilitation

Software Difficulty Functions and Design Diversity for Machine Learning Classifiers

Supervisor	Dr. Tommaso Zoppi
Department	Department of Mathematics and Computer Science
Keywords	Critical systems design, Software reliability engineering, Trustworthy AI, Difficulty function

Trustworthy Autonomous Trains

Supervisor	Prof. Francesco Flammini
Department	Department of Mathematics and Computer Science

EUniWell Arena

Arena 3: Environmental Change and Well-Being

Keywords

Trustworthy autonomous systems, Smart-railways, Safety monitoring

ENVIRONMENTAL SCIENCES AND GEOLOGY (ENV)

Archaeometry and Landscape Archaeology: Materials, Production and Settlement Dynamics

Supervisor	Prof. Elisabetta Gliozzo
Department	Department of History, Archaeology, Geography, Fine and Performing Arts
Keywords	Archaeometry, Landscape archaeology, Material culture, Provenance analysis, Geophysical survey

Bioinspired materials for Cultural Heritage and Building Conservation

Supervisor	Prof. Antonella Trombadore
Department	Department of Architecture
EUniWell Arena	Arena 3: Environmental Change and Well-Being Arena 5: Teacher Education and Well-Being
Keywords	Biomaterials, Cultural heritage, Sustainable design (for recycling, for environment, eco-design), Architecture and green materials

CLIMBEE-AI: Decoding Climate Impacts on Honeybee Health through Advanced Machine Learning and Large Language Models

Supervisor	Prof. Maria Elvira Mancino
Department	Department of Economics and Management
EUniWell Arena	Arena 1: Health and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	HoneyBees, Ecology, Climate, Sustainability

Consumer Behaviour and Sustainable Food Systems: Experimental and Policy-Oriented Research in Agri-Food Economics

Supervisor	Prof. Caterina Contini
Department	Department of Agriculture, Food, Environment and Forestry

EUniWell Arena	Arena 1: Health and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Consumer behaviour, Sustainable food systems, Food choice modelling, Agri-food economics

How eruption starts

Supervisor	Prof. Raffaello Cioni
Department	Department of Earth Sciences
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Volcanology, Volcanic hazards, Volcano physics, Stratigraphy

Near surface applied geophysics and the 17 SDG (Sustainable Development Goals)

Supervisor	Prof. Veronica Pazzi
Department	Department of Earth Sciences
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Near-surface geophysics, Landslides, Seismic vulnerability, GPR, SDG

Postgrowth cities and landscapes seeking social and ecological sustainability in a complex world and in an uncertain century

Supervisor	Prof. Silvio Cristiano
Department	Department of Architecture
EUniWell Arena	Arena 1: Health and Well-Being Arena 2: Social Equality and Well-Being Arena 3: Environmental Change and Well-Being Arena 4: Culture, Multilingualism and Well-Being Arena 5: Teacher Education and Well-Being
Keywords	Urban and regional dynamics, Physical-ecological systems, Spatial studies, Strong sustainability and new-risk resilience, Postgrowth and decoloniality

Urban Food Forests for Climate Adaptation: Tree Physiology and Stress Tolerance in Ornamental and Fruit Species

Supervisor	Prof. Antonella Gori
Department	Department of Agriculture, Food, Environment and Forestry
EUniWell Arena	Arena 1: Health and Well-Being ; Arena 3: Environmental Change and Well-Being
Keywords	Urban food forests, Tree physiology, Abiotic stress (drought), Fruit trees, Urban forestry

LIFE SCIENCES (LIF)

Androgen Receptor–Driven Metabolic Rewiring and Therapy Resistance in Breast Cancer

Supervisor	Prof. Andrea Morandi
Department	Department of Experimental and Clinical Biomedical Sciences
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Cancer metabolism, Metabolic reprogramming, Therapy resistance, Multi-omics, Biomarkers, Precision oncology, Solid tumours, Preclinical models

Animal breeding aimed at improving mitigation and adaptation to climate change

Supervisor	Prof. Francesco Tiezzi
Department	Department of Agriculture, Food, Environment and Forestry
Keywords	Animal Science, Quantitative genetics, Microbiome, Greenhouse gas emission, Climate change adaptation, Biodiversity

Antibody-mediated neurological diseases: from mechanisms to precision diagnostics and therapeutics

Supervisor	Prof. Valentina Damato
Department	Department of Neurosciences, Psychology, Drug Research and Child Health
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Neuroimmunology, Myasthenia gravis, Autoantibodies, Biomarkers, Precision medicine, Cell-based assays, B cells, Translational research, Autoimmune neurology, Immunotherapy

Development of predictive models for epilepsy surgery outcomes

Supervisor	Prof. Carmen Barba
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Department	Department of Neurosciences, Psychology, Drug Research and Child Health
Keywords	Epilepsy, Children, Epilepsy surgery, Neurophysiology, Neuroimaging

Glyconanomaterials for Biomedical Applications

Supervisor	Prof. Barbara Richichi
Department	Department of Chemistry
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Glyconanomaterials, Glycofluorescent probe, Cancer treatment and disease modeling

Hybrid Bio-Nano Sensing Technologies for Rapid, Portable and High-Sensitivity Detection

Supervisor	Prof. Giovanna Marrazza
Department	Department of Chemistry
EUniWell Arena	Arena 1: Health and Well-Being Arena 2: Social Equality and Well-Being
Keywords	Environmental monitoring, Food safety, Healthcare diagnostics

Hybrid lipid nanoparticles and lipoprotein-guided delivery for nucleic-acid therapeutics

Supervisor	Prof. Lucrezia Caselli
Department	Department of Chemistry
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Lipid nanoparticles, Gene delivery, Hybrid systems, Lipoproteins, Structural characterization

Intrinsically Disordered Proteins (IDPs) studied through NMR spectroscopy: opening novel avenues in drug discovery

Supervisor	Prof. Isabella Caterina Felli
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Department Department of Chemistry

EUniWell Arena Arena 1: Health and Well-Being

Keywords IDP, NMR, 13C

Multi-Target Strategies in Medicinal Chemistry: Carbonic Anhydrases as Key Drivers

Supervisor Prof. **Fabrizio Carta**

Department Department of Neurosciences, Psychology, Drug Research and Child Health

EUniWell Arena Arena 1: Health and Well-Being

Keywords Metalloenzymes, Medicinal chemistry

Multifunctional Nanomedicine and 3D Bioprinting for Targeted Cancer Therapy

Supervisor Prof. **Anna Laurenzana**

Department Department of Experimental and Clinical Biomedical Sciences

EUniWell Arena Arena 1: Health and Well-Being

Keywords Nanomedicine, Cancer theragnostic, Nanoparticles, 3D tumor models, Hyperthermia

Multiplexed 3D spatial biology of cancer

Supervisor Prof. **Ludovico Silvestri**

Department Department of Physics and Astronomy

EUniWell Arena Arena 1: Health and Well-Being

Keywords Light-sheet microscopy, 3D spatial biology, Tissue clearing, Multiplexed proteomics

Pediatric infections in real life: epidemiology, outcomes, and antibiotic stewardship

Supervisor	Prof. Elena Chiappini
Department	Department of Health Sciences
Keywords	Pediatric infections, Antibiotics, Children

Personality traits in food experience

Supervisor	Prof. Sara Spinelli
Department	Department of Agriculture, Food, Environment and Forestry
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Sensory science, Taste, Emotions, Personality

Postgrowth cities and landscapes seeking social and ecological sustainability in a complex world and in an uncertain century

Supervisor	Prof. Silvio Cristiano
Department	Department of Architecture
EUniWell Arena	Arena 1: Health and Well-Being Arena 2: Social Equality and Well-Being Arena 3: Environmental Change and Well-Being Arena 4: Culture, Multilingualism and Well-Being Arena 5: Teacher Education and Well-Being
Keywords	Urban and regional dynamics, Physical-ecological systems, Spatial studies, Strong sustainability and new-risk resilience, Postgrowth and decoloniality

Sex and gender-dependent mechanisms in cardiac electrogenesis: an integrated approach

Supervisor	Prof. Elisabetta Cerbai
Department	Department of Neurosciences, Psychology, Drug Research and Child Health
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Pharmacology, Cardiac arrhythmias, Women

Smart Materials and Wearable Technologies: From Artificial Muscles to Human-Computer Interfaces

Supervisor	Prof. Federico Carpi
Department	Department of Industrial Engineering
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Soft actuators, Artificial muscles, Haptics, 3D printing, Rehabilitation

Sustainable Intensification in Agriculture

Supervisor	Prof. Simone Orlandini
Department	Department of Agriculture, Food, Environment and Forestry
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Agronomy, Crop yield, Sustainability, Climate change

Targeting Metabolic Vulnerabilities in Cholangiocarcinoma Stem Cells to Overcome Therapy Resistance

Supervisor	Prof. Chiara Raggi
Department	Department of Experimental and Clinical Medicine
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Cholangiocarcinoma, Cancer stem cells , Tumor metabolism , Single-cell omics , Organoid models

The involvement of phase separation in the mechanisms of onset of neurodegenerative diseases

Supervisor	Prof. Fabrizio Chiti
Department	Department of Experimental and Clinical Biomedical Sciences
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Neurodegeneration, Alzheimer disease, Parkinson disease, ALS, Protein misfolding

The real impact of Microbiome-Immunity axis in Human Diseases

Supervisor	Prof. Amedeo Amedei
Department	Department of Experimental and Clinical Medicine
EUniWell Arena	Arena 1: Health and Well-Being; Arena 3: Environmental Change and Well-Being
Keywords	Immunity, Microbiome, Cancer , Autoimmunity, Neurodegenerative Diseases

The Role of Schwann cells In Chronic Pain

Supervisor	Prof. Francesco Delogu
Department	Department of Health Sciences
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Chronic pain, Schwann cells, Neuroinflammation, TRP channels, Gender pain

Translational Immuno-Oncology in Genitourinary Cancers: Biomarkers and Novel Therapeutic Strategies

Supervisor	Prof. Giandomenico Roviello
Department	Department of Health Sciences
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Immunotherapy, Genitourinary cancers, Biomarkers, Precision oncology, Pharmacogenetics

Urban Food Forests for Climate Adaptation: Tree Physiology and Stress Tolerance in Ornamental and Fruit Species

Supervisor	Prof. Antonella Gori
Department	Department of Agriculture, Food, Environment and Forestry
EUniWell Arena	Arena 1: Health and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Urban food forests, Tree physiology, Abiotic stress (drought), Fruit trees, Urban forestry

MATHEMATICS (MAT)

Behavioral Macroeconomics of Poverty Traps, Inequality, and Green Transition in Modern Economies

Supervisor	Prof. Edgar J. Sanchez Carrera
Department	Department of Economics and Management
EUniWell Arena	Arena 1: Health and Well-Being Arena 2: Social Equality and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Behavioral Macroeconomics, Evolutionary Game Theory, Green Transition, Poverty Traps, Wealth Inequality

CLIMBEE-AI: Decoding Climate Impacts on Honeybee Health through Advanced Machine Learning and Large Language Models

Supervisor	Prof. Maria Elvira Mancino
Department	Department of Economics and Management
EUniWell Arena	Arena 1: Health and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	HoneyBees, Ecology, Climate, Sustainability

Contemporary applications of Optimal Transport Problems

Supervisor	Prof. Luigi De Pascale
Department	Department of Mathematics and Computer Science "Ulisse Dini"
EUniWell Arena	Arena 2: Social Equality and Well-Being
Keywords	Calculus of Variations, Gamma convergence, Optimal transport, Density Functional Theory, Convex analysis

Efficient Vision-Language Adaptation for an Open and Changing World

Supervisor	Prof. Andrew David Bagdanov
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Department	Department of Information Engineering
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Computer Vision, Deep Learning, Vision-language Models, Continual Learning, Efficient Model Adaptation

Multilevel analysis and latent variable models with applications in the social sciences

Supervisor	Prof. Leonardo Grilli
Department	Department of Statistics, Computer Science, Applications
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Multilevel models, Random effects, Latent variable models, Mixture models, Quantile regression

Spline spaces in Banach spaces

Supervisor	Prof. Cesare Bracco
Department	Department of Mathematics and Computer Science "Ulisse Dini"
Keywords	Spline functions, Approximation, Banach spaces, Isogeometric analysis

PHYSICS (PHY)

Bio-inspired Machine Learning: training dynamical systems for classification and regression

Supervisor	Prof. Duccio Fanelli
Department	Department of Physics and Astronomy
Keywords	Deep neural networks, Dynamical systems, Theory of networks, Statistical mechanics, Neuroscience

CLIMBEE-AI: Decoding Climate Impacts on Honeybee Health through Advanced Machine Learning and Large Language Models

Supervisor	Prof. Maria Elvira Mancino
Department	Department of Economics and Management
EUniWell Arena	Arena 1: Health and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	HoneyBees, Ecology, Climate, Sustainability

Cooper quartets in hybrid superconducting devices

Supervisor	Prof. Luca Chirolli
Department	Department of Physics and Astronomy
Keywords	Solid state quantum devices, Superconductivity, Many-body correlations

Decoding galaxy properties with simulation-based inference

Supervisor	Prof. Michele Ginolfi
Department	Department of Physics and Astronomy
Keywords	Astronomy, Galaxies, Artificial Intelligence, Deep Learning, Physics

Efficient Vision-Language Adaptation for an Open and Changing World

Supervisor	Prof. Andrew David Bagdanov
Department	Department of Information Engineering
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Computer Vision, Deep Learning, Vision-language Models, Continual Learning, Efficient Model Adaptation

First Principles Simulation of Spin-Electric coupling in lanthanides and transition metal complexes

Supervisor	Prof. Matteo Briganti
Department	Department of Chemistry
Keywords	Lanthanides, Molecular Magnetism, Ab Initio, Spin-electric, Quantum Computing

Molecular and Hybrid 1D and 2D Magnetic Systems for Spintronics and Quantum Computing by ab initio methods

Supervisor	Prof. Federico Totti
Department	Department of Chemistry
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Spintronics, Quantum Computing, ab initio methods, 2D materials, Molecular Magnetism

Multiplexed 3D spatial biology of cancer

Supervisor	Prof. Ludovico Silvestri
Department	Department of Physics and Astronomy
EUniWell Arena	Arena 1: Health and Well-Being
Keywords	Light-sheet microscopy, 3D spatial biology, Tissue clearing, Multiplexed proteomics

Nonlinear Ultrafast Spectroscopy of Soft Matter: Water, Proteins, and THz Collective Dynamics

Supervisor	Prof. Renato Torre
Department	Department of Physics and Astronomy
EUniWell Arena	Arena 1: Health and Well-Being Arena 3: Environmental Change and Well-Being
Keywords	Ultrafast Spectroscopy, Complex Liquids, THz Dynamics, Biomolecular Hydration, Nonlinear Optics

Postgrowth cities and landscapes seeking social and ecological sustainability in a complex world and in an uncertain century

Supervisor	Prof. Silvio Cristiano
Department	Department of Architecture
EUniWell Arena	Arena 1: Health and Well-Being Arena 2: Social Equality and Well-Being Arena 3: Environmental Change and Well-Being Arena 4: Culture, Multilingualism and Well-Being Arena 5: Teacher Education and Well-Being
Keywords	Urban and regional dynamics, Physical-ecological systems, Spatial studies, Strong sustainability and new-risk resilience, Postgrowth and decoloniality

Quantum Computing Enhanced Learning and Sensing of Physical Data

Supervisor	Prof. Leonardo Banchi
Department	Department of Physics and Astronomy
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Quantum machine learning, Quantum computing, Quantum sensing, Quantum communication, Quantum many-body physics

Quantum Simulation and Computing with two-electron ultracold atoms

Supervisor	Prof. Leonardo Fallani
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Department	Department of Physics and Astronomy
EUniWell Arena	Arena 5: Teacher Education and Well-Being
Keywords	Quantum simulation, Quantum computing, Ultracold atoms, Optical tweezers, Rydberg atoms

Responsive soft materials

Supervisor	Prof. Jacopo Vialto
Department	Department of Chemistry
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Responsive soft materials, Colloids, Interfaces, Active matter, Rheology

Testing gravitational physics with atomic quantum sensors

Supervisor	Prof. Guglielmo M. Tino
Department	Department of Physics and Astronomy
EUniWell Arena	Arena 3: Environmental Change and Well-Being
Keywords	Cold atoms, Atom interferometry, Optical atomic clocks, Precision measurements, Gravitational physics, General relativity, Gravitational quantum physics, Fundamental physics, Antimatter, Anti-hydrogen, Rubidium, Strontium, Squeezing, Entanglement.

Hosting Offers: Detailed Descriptions

The full details for each hosting offer are provided in the following pages, organized into these key sections:

- Project Overview & Research Vision
- Supervisor Profile
- Research Group & Environment
- MSCA Eligibility Requirements
- Application Instructions & Deadlines

Development of novel synthetic methodologies through gold(I)-catalysis

Project Overview and Research Vision

The project aims to explore and expand the boundaries of modern organic synthesis through the development of **innovative methodologies based on gold(I)-catalysis**. Starting from model compounds, the research will progressively extend to a wide variety of substrates, ultimately enabling the application of these methodologies to the **synthesis of complex natural and bioactive compounds**.

The overall objective is to develop **efficient synthetic routes to densely functionalised polycyclic structures**, with potential relevance in pharmaceutical applications. Within this framework, the fellow will engage in both **fundamental and applied aspects of synthetic chemistry**, gaining experience in the design and implementation of cascade reactions as well as in the preparation of structurally complex molecules.

The project is designed to support the fellow's professional development across multiple dimensions. It will provide **advanced training in modern techniques for the preparation and characterisation of organic compounds**, foster **methodological innovation in gold(I)-catalysis**, and promote the development of **scientific independence**, enabling the fellow to progressively conceive and lead complex research projects.

Supervisor Profile: Professor Ernesto Giovanni Occhiato

The selected fellow will be supervised by **Prof. Ernesto Giovanni Occhiato**, Full Professor of Organic Chemistry. Prof. Occhiato is an expert in **synthetic organic chemistry**, with extensive experience in the development of **gold(I)-catalysed cascade reactions**.

His research activity focuses on the **synthesis of natural and bioactive compounds** and on the investigation of **concerted processes**. He has a strong commitment to training highly skilled researchers, providing **hands-on supervision** and supporting the development of both technical expertise and scientific autonomy.

Research Group and Environment

The fellow will be integrated into a specialised research group located at **the DICUS Department**. The group offers a highly supportive environment for advanced research in **synthetic organic chemistry**, with particular expertise in the preparation of **densely functionalised polycyclic compounds via gold-catalysed processes**.

The research infrastructure includes **two dedicated laboratories** equipped with state-of-the-art instrumentation, including **three NMR instruments, ESI-MS, HPLC, and GLC systems**, ensuring comprehensive support for synthesis and characterisation activities.

In addition, the group benefits from access to **university service centres for advanced X-ray crystallography and mass spectrometry (MS)** analysis.

The research team currently includes **two permanent staff members**, alongside PhD students and postdoctoral researchers, creating a **stimulating and collaborative research environment**.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Recommendation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email at: **ernesto.occhiato@unifi.it**

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

First Principles Simulation of Spin-Electric coupling in lanthanides and transition metal complexes

Project Overview and Research Vision

This project focuses on the use of **molecular spins as a platform for quantum technologies**, leveraging their superior chemical tunability compared to solid-state systems. The core objective is to understand and control spin behaviour at the **single-molecule level**, a key challenge for future applications in **quantum information processing**.

Through the application of **cutting-edge first-principles methods**, the research aims to define chemical design rules capable of enhancing **spin-electric coupling**, particularly in lanthanide (4f) complexes. This aspect is crucial for enabling the manipulation of quantum states using electric fields.

The fellow will follow a **training-through-research pathway in computational quantum science**, gaining expertise in **ab initio simulations**, multi-scale modelling, and the integration of **AI techniques in chemical and physical modelling**. The project offers a strong opportunity to develop an international scientific profile within a **highly competitive and rapidly evolving field**.

Supervisor Profile: Professor Matteo Briganti

The fellow will be supervised by **Prof. Matteo Briganti**, Assistant Professor at DICUS and leader of the **Electronic Structure and Molecular Spin Modelling (EST-Lab)** group.

His expertise includes:

- **Computational modelling** based on density functional theory (DFT) and wavefunction-based methods
- Study of **lanthanide and transition metal complexes**, organic radicals, and nanographenes
- Investigation of **light-matter and electric field interactions** for quantum computing applications

He is also a core member of the **Laboratory of Molecular Magnetism (LAMM)**, an internationally recognised centre of excellence in the field.

Research Group and Environment

The fellow will be integrated into the **EST-Lab**, operating within the broader **Laboratory of Molecular Magnetism (LAMM)**.

LAMM is internationally recognised for its contributions to the understanding of **magnetic phenomena at the molecular scale**, including quantum tunnelling and spin coherence. The research environment is **highly interdisciplinary**, combining expertise from chemistry, physics, and materials science.

The group specialises in the **in silico simulation of magnetic molecules**, using an integrated approach that combines **wavefunction-based methods, periodic DFT, and emerging AI techniques**, providing an ideal setting for advanced computational research.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Narrative Curriculum Vitae (CV)
- Two-page Research Proposal

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Matteo Briganti at: matteo.briganti@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Hybrid Bio-Nano Sensing Technologies for Rapid, Portable and High-Sensitivity Detection

Project Overview and Research Vision

This project focuses on the development of **next-generation biosensing technologies** based on the integration of functional nanomaterials with advanced molecular recognition elements such as **aptamers, enzymes, antibodies, and molecularly imprinted polymers**.

The goal is to create **smart sensing platforms** capable of **multiplex and real-time detection** of pollutants and pathogens, with strong applications in **environmental monitoring, food safety, and point-of-care diagnostics**.

A key objective is the translation of laboratory-based technologies into **portable, high-sensitivity devices**, bridging the gap between fundamental research and real-world applications.

The fellow will benefit from a comprehensive training environment, gaining expertise in **biosensor design, nanotechnology, analytical methods**, and also in **transferable skills** such as project management, communication, and proposal writing, supported by strong international collaborations.

Supervisor Profile: Professor Giovanna Marrazza

The selected fellow will be mentored by **Giovanna Marrazza, Full Professor** at the Department of Chemistry "Ugo Schiff". Professor Marrazza is a leading authority in **bioanalytical chemistry and biosensing**, with extensive expertise in:

- **Advanced Transduction Platforms:** Integration of electrochemical, optical, and piezoelectric transduction methods.
- **Nanotechnology:** Expertise in the use of functional nanomaterials and nanoengineered sensing platforms.
- **Methodological Excellence:** Proficiency in electrochemical techniques, microfluidics, and biomolecule immobilization strategies.

Her research is characterized by a strong **interdisciplinary and translational approach**, bridging the gap between fundamental chemistry, nanotechnology, and bioengineering to address real-world challenges in health and the environment.

Research Group and Environment

The fellow will be integrated into the **Biosensor Group**, a dynamic research team operating within well-established laboratories specialized in analytical chemistry.

- **Infrastructure:** The group is equipped with state-of-the-art facilities for **electrochemical analysis** (voltammetry and impedance spectroscopy), **sensor microfabrication**, surface modification, and nanomaterial functionalization.
- **Collaborative Ecosystem:** The group is involved in numerous national and European projects and maintains strong international collaborations, providing a stimulating environment for high-level research and technology transfer.

- **Interdisciplinary Access:** Fellows benefit from access to advanced characterization and testing instrumentation within the department's interdisciplinary facilities.
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MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae
- Research Proposal

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Giovanna Marrazza at: giovanna.marrazza@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Hybrid lipid nanoparticles and lipoprotein-guided delivery for nucleic-acid therapeutics

Project Overview and Research Vision

This project focuses on the development of **hybrid lipid nanoparticles (LNPs)** as advanced platforms for the delivery of **nucleic-acid therapeutics**, including RNA- and DNA-based systems. The research aims to design and characterise innovative nanocarriers capable of improving **targeting efficiency, cellular uptake, and intracellular delivery**, addressing key challenges in the field of nanomedicine.

A distinctive aspect of the project is the exploration of **lipoprotein-guided delivery mechanisms**, inspired by natural biological transport systems. By integrating synthetic lipid nanoparticles with biomimetic strategies, the research seeks to better understand and control the interactions between nanocarriers and biological environments.

The project will investigate how **structural and physicochemical properties**—such as size, composition, surface functionalisation, and lipid organisation—affect nanoparticle behaviour in complex biological systems. This includes the study of **protein corona formation, membrane interactions, and intracellular trafficking pathways**.

Within this framework, the fellow will engage in a **highly interdisciplinary research programme**, combining elements of physical chemistry, biophysics, nanotechnology, and biomedical science. The project is designed to support the development of both **advanced technical expertise** and **scientific independence**, enabling the fellow to contribute to the design of next-generation nanomedicine strategies with strong translational potential.

Supervisor Profile: Dr. Lucrezia Caselli

The fellow will be supervised by **Lucrezia Caselli**, an expert in **biophysical chemistry and nanomedicine**, with a research focus on the design and characterisation of **lipid-based nanocarriers** for biomedical applications.

Her work combines **experimental and analytical approaches** to investigate the interactions between nanomaterials and biological systems, with particular attention to **membrane dynamics, biomolecular interactions, and drug delivery mechanisms**.

Dr. Caselli has significant experience in mentoring early-career researchers and is committed to providing **structured supervision**, fostering both technical development and scientific autonomy.

Research Group and Environment

The fellow will be integrated into a research group within the Department of Chemistry, working in a **highly interdisciplinary environment** at the interface of **physical chemistry, biophysics, and nanomedicine**.

The laboratory infrastructure provides access to **state-of-the-art instrumentation** for the preparation and characterisation of lipid nanoparticles and biomolecular systems. This includes techniques for analysing **particle size and morphology, surface properties, and molecular interactions**, as well as advanced methods for studying **membrane dynamics and nano-bio interfaces**.

The group operates within a collaborative framework, interacting with researchers from complementary disciplines and benefiting from access to **university core facilities** for advanced characterisation and analysis.

The research team includes **PhD students and postdoctoral researchers**, contributing to a dynamic and stimulating scientific environment that supports both collaboration and independent research development.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Degree Certificates: Copy of master's and PhD certificates (or equivalent)
- Reference Letters: Optional

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Lucrezia Caselli at: lucrezia.caselli@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Intrinsically Disordered Proteins (IDPs) studied through NMR spectroscopy: opening novel avenues in drug discovery

Project Overview and Research Vision

This hosting offer is addressed to a fellow interested in leading a research initiative devoted to the development of **improved NMR methods** for investigating interactions involving **Intrinsically Disordered Proteins (IDPs)**.

The project starts from a major limitation in traditional drug discovery. Most established approaches rely on the presence of **well-defined binding pockets** in proteins with stable three-dimensional structures. These strategies, however, often fail when applied to IDPs, since these proteins **lack a stable structure** by definition. This makes them particularly challenging, but also highly relevant targets: many IDPs are implicated in currently incurable conditions, including **cancer and neurodegenerative diseases**.

Against this background, the core vision of the project is to develop **novel NMR experiments** specifically designed to study these difficult and highly dynamic targets. By investigating how IDPs interact with different molecular partners — including **proteins, RNA, small molecules, and metal ions** — the research aims to open **new pathways in drug discovery**, helping to address biological systems that remain largely inaccessible to conventional approaches.

The hosting offer provides a rich framework for professional growth in an emerging scientific field. The fellow will receive **advanced training on cutting-edge NMR instrumentation** and will have the opportunity to contribute directly to the development of experiments at the frontier of **IDP–ligand interactions**. At the same time, the project is strongly interdisciplinary, positioned at the intersection of **chemistry, structural biology, and medicinal chemistry**, and therefore offers a versatile foundation for a future career either in academia or in the pharmaceutical industry.

Supervisor Profile: Professor Isabella Caterina Felli

The selected fellow will be mentored by **Professor Isabella C. Felli**, Professor at the Department of Chemistry “*Ugo Schiff*”. Her research is at the forefront of the scientific community’s interest in **IDPs**, using **NMR spectroscopy as a strategic tool** for their investigation.

Professor Felli specializes in the development of **advanced NMR methodologies** to characterize the interactions of disordered proteins with diverse ligands. Her expertise is particularly valuable because it bridges **fundamental structural biology** with the practical requirements of **modern pharmacology**, offering the fellow a research environment where methodological innovation and biomedical relevance are closely connected.

Research Group and Environment

The fellow will be integrated into the **Center of Magnetic Resonance (CERM)**, located at the **Scientific Campus in Sesto Fiorentino**. CERM offers a **premier technological platform** and provides an ideal, world-class environment for research on **IDPs studied through NMR spectroscopy**.

Within this environment, the group is actively engaged in the development of **novel NMR methods**, the characterization of **IDPs of biomedical relevance**, and the investigation of **multidomain proteins** containing alternating **globular domains** and **intrinsically disordered regions (IDRs)**. The fellow will also have access to **state-of-the-art NMR instrumentation**, specifically optimized for the study of **disordered systems**.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae

Internal Expression of Interest Deadline: 30 May 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Isabella Caterina Felli at: isabellacaterina.felli@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Molecular and Hybrid 1D and 2D Magnetic Systems for Spintronics and Quantum Computing by *ab initio* methods

Project Overview and Research Vision

The University of Florence (UNIFI) is seeking a fellow to lead a research initiative focused on the **electronic structure and magnetic properties of low-dimensional systems**, an area at the frontier of quantum materials and emerging technologies.

The core vision of the project is to exploit **advanced quantum chemical methods**, such as **Density Functional Theory (DFT)** and **Time-Dependent DFT (TD-DFT)**, to investigate **molecular and hybrid one- and two-dimensional magnetic systems**. The research aims to **bridge chemistry, physics, and materials science**, contributing to the development of new technologies in **spintronics and quantum computing**.

Within this framework, the fellow will focus on the ***ab initio* modelling of 2D materials, surfaces, and complex molecular systems**, including **molecular qubits** and **porphyrin-based complexes**. Particular attention will be devoted to the study of **spin interactions** and **photoinduced spin-state switching**, key phenomena for the control of quantum states in functional materials.

This hosting offer provides a comprehensive and structured training pathway. The fellow will develop **advanced technical mastery** through hands-on experience in managing and optimizing **high-performance computing (HPC) infrastructures**, including software configuration and maintenance. At the same time, the project ensures **methodological excellence**, with in-depth training in sophisticated *ab initio* modelling of both **periodic systems and isolated molecules**, addressing complex **structure–property relationships**.

The research environment also offers strong **international exposure**, with opportunities to work with premier supercomputing facilities such as **CINECA** and to engage with an international network of collaborators. Finally, the mentorship approach is specifically designed to foster **professional independence**, supporting the fellow in developing an autonomous research profile at the cutting edge of **materials science and quantum computing**.

Supervisor Profile: Professor Federico Totti

The selected fellow will be mentored by **Professor Federico Totti**, Associate Professor of Chemistry at DICUS and a specialist in **computational chemistry and molecular quantum materials**.

His research expertise includes the modelling of **low-dimensional systems**, with a focus on the **electronic structure and magnetic properties of molecular qubits and coordination frameworks**. He has extensive experience in **quantum methods**, particularly in the study of **magnetic exchange coupling, spin interactions, and TD-DFT approaches**.

In addition, Professor Totti has significant expertise in **infrastructure management**, with extensive experience in handling advanced **high-performance computing systems** and software configurations. He provides a **dynamic and collaborative research environment**, supporting researchers in developing independent research at the interface of **quantum chemistry and materials science**.

Research Group and Environment

The fellow will be integrated into the **Laboratory of Molecular Magnetism (LaMM)**, a highly interdisciplinary research hub where **chemistry, physics, and materials science converge** in the study of **molecular magnetic materials**.

The group includes leading researchers such as **Dr. Matteo Briganti** and has a long-standing experience in hosting **PhD students and postdoctoral fellows**, offering a stimulating and collaborative environment.

A key strength of the laboratory is its access to **elite computing facilities**. The fellow will benefit from dedicated internal HPC resources, including **three Linux clusters with more than 4,600 cores** and a **dedicated H200 GPU node**, enabling large-scale and high-precision simulations.

In addition, the group is strongly connected at the international level. It leverages advanced computational resources from **CINECA**, Italy's largest supercomputing centre, as well as from **international high-performance computing centres in Brazil**, ensuring a truly **global research infrastructure**.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the "2.3.2. Recruited researchers" section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV) including a list of publications and the candidate's specific contributions
- Motivation Letter
- Two Reference Letters

Internal Expression of Interest Deadline: 15 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Federico Totti at: federico.totti@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Multi-Target Strategies in Medicinal Chemistry: Carbonic Anhydrases as Key Drivers

Project Overview and Research Vision

This project is centred on the development of **multi-target strategies in medicinal chemistry**, with a specific focus on **Carbonic Anhydrases (CAs)** as key drivers of disease. It aims to design, synthesise, and biologically evaluate **small-molecule modulators** targeting clinically relevant CA isoforms within a **mechanism-driven drug discovery framework**.

The research is oriented towards the development of **innovative therapeutic and theragnostic agents** addressing diseases with a high societal impact, including **cancer and neurological disorders**. By combining **structure-based design, synthetic chemistry, and biological validation**, the project seeks to translate molecular-level insights into **functional biomedical tools** applicable to both **human and veterinary medicine**.

In this sense, the initiative operates at the interface between **fundamental chemical research and translational applications**, with a clear focus on **real-world impact**.

The fellowship is designed as a comprehensive training and career development pathway. The fellow will achieve **technical excellence** through hands-on experience in **rational drug design, computational modelling, enzymatic assays, and the development of theragnostic agents**. At the same time, particular attention will be devoted to the acquisition of **transferable skills**, including **project management, scientific communication, and innovation and technology transfer**.

The mentoring approach is based on **direct interaction with internationally established researchers**, within a **stimulating and inclusive environment**, and is specifically structured to support the fellow in building a **robust and independent research profile**.

Supervisor Profile: Professor Fabrizio Carta

The selected fellow will be mentored by **Professor Fabrizio Carta**, based in the Section of **Pharmaceutical and Nutraceutical Sciences** within the NEUROFARBA Department. Professor Carta is a **medicinal chemistry-driven researcher** with a strong focus on the **design and mechanistic understanding of bioactive molecules**.

His expertise spans **advanced organic synthesis**, where he applies detailed knowledge of **reaction mechanisms** to drug discovery, and **enzyme modulation**, with internationally recognised contributions to the study and targeting of **Carbonic Anhydrases** through **structure-based drug design approaches**.

A defining feature of his research is its strong **translational orientation**, with extensive work on **structure–activity relationships (SAR) and structure–property relationships (SPR)**, as well as on the development of **diagnostic and therapeutic solutions**. His approach integrates **synthetic chemistry with biological relevance**, aiming to advance drug discovery through **rational, mechanism-based strategies**.

Research Group and Environment

The fellow will be integrated into a **multidisciplinary Research Unit** located at the **University Scientific Campus of Sesto Fiorentino**, within a research environment characterised by strong **collaborative integration across disciplines**.

The group operates at the intersection of **medicinal chemistry, pharmacology, neuroscience, and computational sciences**, providing a truly **interdisciplinary research context**. This environment enables the fellow to engage with different methodological approaches, from molecular design to biological validation.

The host institution provides access to **state-of-the-art infrastructure**, including facilities for **computational drug design, advanced organic synthesis, and in vitro enzymatic profiling**, ensuring full support across all stages of the drug discovery pipeline.

The research unit is **internationally recognised** for its work on **isoform-selective Carbonic Anhydrase inhibitors** and for its significant contributions to **intellectual property development in the pharmaceutical field**, offering the fellow a unique exposure to both academic and innovation-driven research.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae
- Motivation Letter
- Research Proposal

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Fabrizio Carta at: fabrizio.cart@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Multifunctional Nanomedicine and 3D Bioprinting for Targeted Cancer Therapy

Project Overview and Research Vision

This project focuses on the development of **multifunctional nanoparticle-based theranostic platforms** for the treatment of aggressive cancers. It is centred on improving **targeted drug delivery, imaging, and nanomediated hyperthermia**, with particular attention to malignancies such as **melanoma, breast cancer, glioblastoma, and pancreatic cancer**.

A distinctive feature of the research is the use of **state-of-the-art 3D bioprinted multicellular tumor models**, which enable the reproduction of complex tumor architecture and cellular interactions *in vitro*. These models, combined with **spatial omics approaches**, will allow the fellow to investigate in depth the interactions between **nanoparticles and the tumor microenvironment**, including key processes such as **angiogenesis and therapy response**.

The project aims to address one of the major challenges in oncology, namely **chemoresistance**, by targeting the tumor microenvironment and its **metabolic reprogramming**. By integrating nanomedicine with advanced biological modelling, the research seeks to develop more effective and precise therapeutic strategies.

The fellowship is conceived as a **training-through-research pathway** supporting the development of an independent scientific profile. The fellow will gain **technical mastery in nanoparticle design and characterization**, as well as in the creation of **advanced 3D in vitro tumor models**. In parallel, the project offers exposure to **cutting-edge methodologies**, including **omics-based approaches and high-level data analysis**.

Strong emphasis is also placed on the acquisition of **transferable skills**, with dedicated mentorship in **project management, grant writing, and scientific communication**, supported by the University's international network.

Supervisor Profile: Professor Anna Laurenzana

The selected fellow will be mentored by **Professor Anna Laurenzana**, Associate Professor in General Pathology. She leads a **highly interdisciplinary research group** integrating **oncology, nanomedicine, and tissue engineering**.

Her research expertise spans several key areas. She is actively involved in **3D bioprinting**, developing scaffolds that recapitulate **tumor complexity and vascularization in vitro**. She also works on **innovative theranostic approaches**, including the use of a **patented cell-based system** for the targeted release of **gold nanoparticles**.

In addition, her research addresses **advanced therapeutic strategies**, such as **magnetic and plasmonic hyperthermia**, and explores the **synergy between nanotechnology and conventional chemo- and radiotherapy**. A further line of investigation concerns **green synthesis approaches**, focusing on the biological potential of nanoparticles derived from **natural waste materials**, such as **kiwi peels and grape pomace**.

Research Group and Environment

The fellow will be integrated into the **Pathology and Oncology Unit** within the DMSC Department, a research environment characterised by strong **technological capabilities and interdisciplinary collaboration**.

The host institution provides access to **fully equipped laboratories** for **cell culture, molecular biology, and nanoparticle characterization**. Advanced facilities include **spatial transcriptomics platforms, confocal microscopy, metabolic analysis systems, flow cytometry, and histomorphology**, enabling comprehensive investigation across multiple biological scales.

The group operates within a highly collaborative network, maintaining strong interactions with **physicists, chemists, and clinicians**, thereby ensuring a high level of **translational relevance**.

In addition, the laboratory is actively involved in **prestigious national and international projects**, including those funded by **AIRC, PRIN, and Horizon Europe**, providing a dynamic and well-supported research environment.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae
- Motivation Letter
- Research Proposal

Internal Expression of Interest Deadline: 10 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Anna Laurenzana at: anna.laurenzana@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Nonlinear Ultrafast Spectroscopy of Soft Matter: Water, Proteins, and THz Collective Dynamics

Project Overview and Research Vision

This project explores the **ultrafast dynamics of soft matter**, with a particular focus on **water, proteins, and their collective behaviour** at the microscopic level. It is centred on the development of a **multimodal ultrafast spectroscopic approach**, integrating **Optical Kerr Effect (OKE), THz spectroscopy, and transient grating techniques**, to probe **hydration water dynamics in crowded biomolecular environments**.

At the core of the research lies a fundamental question: how do **confinement and interactions with proteins** modify the structure and dynamics of water, and how do these changes influence **biological function**? By addressing this question, the project aims to establish direct links between **microscopic dynamics and biological function and phase behaviour**, advancing our understanding of complex systems.

The approach combines **state-of-the-art ultrafast spectroscopy** with a strong conceptual framework at the interface of **physics, chemistry, and biology**. Particular attention will be devoted to the study of **collective modes in the terahertz (THz) range**, which provide unique access to low-frequency dynamics in biological systems.

Beyond its fundamental relevance, the project has the potential to open new directions in **bio-inspired photonics** and **soft matter physics**, positioning the fellow within a highly innovative research landscape.

The hosting offer is structured to support the fellow's development through a comprehensive training pathway. This includes achieving **technical excellence in ultrafast laser technologies, experimental design, and advanced data analysis**, alongside the development of **complementary skills** such as **project management, scientific communication, and international collaboration**.

The research is embedded within a **vibrant international community**, encouraging continuous interaction between physicists, chemists, and biologists, and providing an ideal environment for ambitious researchers seeking to advance their careers.

Supervisor Profile: Professor Renato Torre

The fellow will be mentored by **Professor Renato Torre**, Full Professor of Experimental Physics, who brings over **three decades of expertise** in **laser-based spectroscopy and ultrafast optics**.

Professor Torre has been a pioneer in the study of **molecular dynamics using advanced femtosecond Ti:Sapphire laser sources** and **time-resolved nonlinear spectroscopy**. His work has significantly contributed to the understanding of **complex liquids, glass-forming systems, and the anomalous behaviour of supercooled water**.

More recently, his research has expanded into **terahertz spectroscopy**, enabling the investigation of **low-frequency collective modes in biological systems**, a rapidly growing and highly impactful area of research.

Research Group and Environment

The fellow will join a **highly interdisciplinary research group** based at the Department of Physics and Astronomy and the **European Laboratory for Non-Linear Spectroscopy (LENS)**, located at the **Scientific Campus of Sesto Fiorentino**.

The group is composed of **five permanent researchers, two postdoctoral fellows, and two PhD students**, fostering a strong culture of **innovation and scientific excellence**.

The experimental infrastructure is a key strength of the host environment, offering access to **state-of-the-art laboratories** dedicated to **Optical Kerr Effect (OKE), transient grating spectroscopy, THz time-domain spectroscopy, and Dynamic Light Scattering**, enabling comprehensive investigation of ultrafast phenomena.

The fellow will also be integrated into **ongoing high-profile research initiatives**, including the **EIC Pathfinder project APACE**, focused on the development of **bio-inspired sunlight-driven lasers**, and the **PNRR I-PHOQS initiative** on ultrafast spectroscopy, providing exposure to cutting-edge collaborative research.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Detailed Curriculum Vitae (including a list of publications).
- Motivation Letter outlining research interests and fit with the group.
- Short Research Proposal outline (2–3 pages).
- Proof of PhD completion (or expected date) and contact details of 2–3 referees.

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Renato Torre at: renato.torre@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Responsive Soft Materials

Project Overview and Research Vision

This project focuses on the **physical chemistry of soft matter systems**, with particular emphasis on the design of **novel stimulus-responsive colloidal systems**, both in bulk and at **fluid interfaces**. The central objective is to establish clear links between **single-particle properties** and the **structural and dynamic behaviour of dense assemblies**, enabling a deeper understanding of how microscopic features determine macroscopic properties.

Within this framework, the research will address several interconnected directions. It includes the **synthesis of colloidal and polymer systems**, alongside the **characterisation of structural and dynamic properties** at multiple levels, ranging from **single-particle behaviour** to **dense suspensions** and systems **confined at fluid interfaces**. Particular attention will be devoted to understanding the relationship between **microscopic structure and the rheological behaviour** of dense suspensions and gels.

An additional research line focuses on **living active matter**, with specific investigation of **bacterial motility in complex environments**, extending the scope of the project towards biologically inspired and out-of-equilibrium systems.

The fellowship is designed as a **training-through-research pathway** in soft matter science. The fellow will develop **technical mastery** through advanced training in **scattering techniques and high-resolution microscopy**, applied to the study of complex soft materials. At the same time, the project provides strong **interdisciplinary exposure**, positioning the research at the interface of **materials science, chemistry, physics, and bioengineering**.

A distinctive element of the mentoring approach is the supervisor's direct experience with the MSCA programme, offering the fellow targeted guidance in **project development, scientific networking, and career progression within the European research landscape**.

Supervisor Profile: Dr. Jacopo Vialetto

The fellow will be mentored by **Dr. Jacopo Vialetto**, researcher at the Department of Chemistry, whose work focuses on the **physical chemistry of soft matter systems**.

His research is centred on the design of **stimulus-responsive colloidal systems**, with particular attention to systems in bulk and at interfaces, and on linking **single-particle properties to collective behaviour in dense assemblies**.

Dr. Vialetto brings direct experience with the MSCA programme, having been awarded a **Marie Curie Individual Fellowship in 2020** (project "*PhotoSoftMat*", grant agreement 888076) at **ETH Zurich (Switzerland)**.

His methodological expertise includes the use of advanced experimental techniques such as **SAXS-SANS (including copolymerization with deuterated monomers), DLS-SLS, confocal microscopy and particle tracking, rheology, and AFM**, enabling a comprehensive investigation of soft matter systems across multiple length and time scales.

Research Group and Environment

The fellow will join the research group headed by **Prof. Marco Laurati and Dr. Jacopo Vialetto**, based in the Department of Chemistry, within a **highly collaborative and interdisciplinary research environment**.

The group operates in close connection with the **Center for Colloid and Surface Science (CSGI)**, and maintains active collaborations with **theoretical research groups**, including **Dr. Emanuela Zaccarelli**, allowing direct comparison between experimental results and **monomer-resolved simulations**.

The research environment also includes strong links with **industry partners**, such as **bioMérieux Spa**, in projects aimed at the development of **synthetic colloidal systems that mimic cellular properties**, reinforcing the translational dimension of the work.

The laboratories are equipped with a wide range of **state-of-the-art instrumentation** for materials synthesis and characterisation, including **Small-Angle X-ray Scattering (SAXS)**, **Dynamic Light Scattering (DLS)**, **rheometry**, **Atomic Force Microscopy (AFM)**, **optical and confocal microscopy**, **UV-vis and IR spectroscopy**, and **scanning electron microscopy (SEM)**.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae
- Motivation Letter

Internal Expression of Interest Deadline: 15 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Jacopo Vialetto at: jacopo.vialetto@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Selective degradation of pathological Tau protein in neuronal models as a disease-modifying strategy for Alzheimer's disease

Project Overview and Research Vision

This project addresses one of the key molecular hallmarks of Alzheimer's disease, namely the **aggregation of phosphorylated Tau (pTau) protein in neuronal models**, and aims to develop innovative strategies for its selective removal. The research focuses on the design of **bifunctional small molecules capable of inducing the degradation of pathological Tau**, targeting a protein that is particularly challenging due to its nature as an **intrinsically disordered protein**.

Within this framework, the project adopts a **multidisciplinary approach in the context of Central Nervous System (CNS) drug discovery**, combining chemical, biological, and computational strategies. A central objective is the development of **peptidomimetic-based degraders**, designed to selectively target and eliminate pathological Tau in neuronal systems, thereby providing a potential **disease-modifying approach for neurodegeneration**.

The research will integrate a wide range of **computational and experimental techniques**, including **ligand design using in silico tools**, advanced **organic synthesis methodologies**—such as **C–H activation, photocatalysis, and microwave-assisted solid-phase peptide synthesis**—and a comprehensive panel of **biochemical and analytical assays**. These include **ELISA**, fluorescence-based techniques such as **FRET and fluorescence polarization**, as well as **high-content screening approaches for fluorescence-based cell imaging and analysis**.

The project is expected to deliver **new molecular entities** and to evaluate their biological profile in **neuronal cell lines**, contributing to the development of innovative therapeutic strategies for Alzheimer's disease. The Department of Chemistry and the hosting research group provide all the necessary **expertise and instrumentation** to ensure high-level training and strong integration with experts in the field of neurodegeneration.

Supervisor Profile: Professor Andrea Trabocchi

The selected fellow will be mentored by **Professor Andrea Trabocchi**, Full Professor of Organic Chemistry, whose research focuses on the **development of small molecules through modern synthetic strategies** and their application to biologically relevant targets.

His work is centred on **organic synthesis, combinatorial chemistry, and medicinal chemistry**, with particular emphasis on **protein–protein interaction inhibitors** relevant to **cancer, Alzheimer's disease, and viral infections**. A key aspect of his research is the development of **peptidomimetics**, which are investigated both as **direct inhibitors** and as **warheads in PROTAC-based degradation strategies**, representing a complementary and innovative therapeutic approach.

Professor Trabocchi is currently coordinating high-impact international research, including the project **“DEEPER” (2025–2028)**, funded by **Wellcome Leap (USA)**, which focuses on the discovery and preclinical development of **¹⁸F-labelled PET ligands for selective targeting of brain estrogen receptors**.

Research Group and Environment

The fellow will be integrated into the **Research Group of Prof. Andrea Trabocchi**, operating within the Department of Chemistry “*Ugo Schiff*”, in a **well-established and highly collaborative research environment**.

The group is equipped with a **fully functional laboratory for organic synthesis and multimode biochemical assays**, and has access to the broader **research infrastructure of the Chemistry Department**, supporting all stages of the drug discovery pipeline.

A key strength of the research environment is the presence of **strong collaborations with expert biologists**, enabling both **cell-based and in vivo studies**, and ensuring a robust connection between chemical design and biological validation.

The group is also actively involved in **translational and clinically oriented collaborations**, including partnerships with **Meyer Children’s Hospital (Florence)** for the development of **glycated bioconjugates of anticancer drugs**, and with **Ospedale Sacco (Milan)** for the development of **direct-acting antivirals against SARS-CoV-2**, contributing to pandemic preparedness efforts.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter

Internal Expression of Interest Deadline: 31 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Andrea Trabocchi at: andrea.trabocchi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Smart polymers for biomedical application

Project Overview and Research Vision

This project focuses on the development of **stimuli-responsive polymers**, a rapidly evolving area in materials science where new systems are required to match the increasingly specific demands of advanced applications. In particular, the research explores **Liquid Crystalline Networks (LCNs)** as highly promising materials for addressing key challenges in **tissue engineering and the development of artificial muscles**.

A central objective of the project is to exploit the unique properties of **acrylate-based LCNs**, which combine **easy processability**, compatibility with **3D printing techniques at different length scales**, and demonstrated **biocompatibility with various cell lines**. These features make them especially suitable for the development of **cell-instructive polymeric scaffolds**, capable of adapting to the functional requirements of biomedical systems.

Within this framework, the research will focus on the **design, synthesis, and structuration of advanced polymeric materials**, integrating **monomer synthesis, LCN-based ink development, and 3D printing technologies**. The overall goal is to engineer materials with tailored mechanical and biological properties, enabling their application in complex biomedical environments.

The fellowship is conceived as a **training-through-research pathway**, providing the fellow with strong technical and scientific foundations. In particular, the candidate will gain hands-on experience in **cutting-edge synthetic strategies, material processing, and multiscale structuration techniques**, while working in a research context that spans **organic chemistry, materials science, and biomedical engineering**.

A distinctive strength of the hosting environment is the supervisor's proven track record in training researchers who have successfully transitioned into both **academic positions and industrial careers**, providing an excellent foundation for long-term professional development.

Supervisor Profile: Professor Camilla Parmeggiani

The selected fellow will be mentored by **Professor Camilla Parmeggiani**, Associate Professor of Industrial Chemistry, an internationally recognised expert in the field of **smart and functional materials**.

Her research spans a broad range of topics related to **molecule-based and polymeric design for advanced materials**, with particular leadership in the development and application of **Liquid Crystalline Networks**, from **photonics to biomedical systems**. She has authored **70 scientific publications, one book, and three patents**, with an **h-index of 34** and over **4,470 citations**, reflecting the impact of her work.

Professor Parmeggiani has extensive experience in **supervision and mentoring**, having guided **PhD students, postdoctoral researchers, and undergraduate students**, and currently leading a dynamic research group. She is also actively involved in **MSCA and international fellowship supervision**, providing valuable expertise in supporting early-career researchers.

Her leadership extends to major research initiatives, including roles as **Co-Coordinator and Work Package leader** in the **FET-PROACTIVE REPAIR project**, as well as coordination and participation in **PRIN and regional projects**, and international collaborations with leading institutions.

Research Group and Environment

The fellow will join the research group led by **Prof. Camilla Parmeggiani**, based at the **Sesto Fiorentino Campus**, within a highly interdisciplinary and well-equipped research environment.

The group includes **Assistant Professor Daniele Martella**, **four postdoctoral researchers**, and **three PhD students**, fostering a collaborative and dynamic atmosphere. Laboratories are distributed across the **Departments of Chemistry and Physics and Astronomy**, and are equipped with modern instrumentation for **material synthesis, characterization, and structuration**, including **UV-vis and IR spectroscopy, SEM, DSC, POM**, and other advanced tools.

A key asset of the environment is the strong integration with **LENS (European Laboratory of Non-Linear Spectroscopy)**, a unique research infrastructure of excellence in Italy, located on the same campus, which provides access to **state-of-the-art facilities**.

The group has extensive experience in **stimuli-responsive functional materials** and maintains strong **international collaborations** with leading institutions, including the **Eindhoven University of Technology** and the **Universidad de Zaragoza**, enhancing the global dimension of the research.

In addition, the group has a **proven track record in training successful researchers**, both in academia (e.g., tenure-track positions at UNIFI) and in industry (e.g., Novac srl, PQE), demonstrating the effectiveness of its research and training approach.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Camilla Parmeggiani at: camilla.parmeggiani@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

A spatial approach to the study of sustainability with a specific focus on Food Systems and Tourism

Project Overview and Research Vision

How do **food systems and tourism evolve across space**, and how can this knowledge support more sustainable territorial development? This project addresses these questions by adopting a **spatial perspective on sustainability transitions**, with a specific focus on **food systems and tourism**.

Grounded in an **Evolutionary Economic Geography framework**, the research investigates the transition towards **sustainable food systems**, from *farm to fork*, including **agroecology and local food market distribution**. At the same time, it explores the challenges of **sustainable and rural tourism**, addressing issues such as **overtourism, local development, and the interconnections between tourism and agri-food systems**.

A key methodological pillar of the project is the use of **Geographical Information Systems (GIS)** to analyse and map the **territorial diffusion of production and consumption patterns**. This spatial approach allows for the generation of **evidence-based insights** to support **local food policies** and sustainable development strategies, with a particular focus on the **Florence area and its regional context**.

The fellow will be directly involved in ongoing research activities related to the **local Food Policy of the Municipality of Florence**, contributing to the analysis of **food production and consumption dynamics** through spatial methods. At the same time, the candidate will have the opportunity to investigate **tourism sustainability**, leveraging the unique case of Florence as a living laboratory for studying **urban and regional tourism dynamics**.

The fellowship offers a **strong training environment** in spatial analysis and sustainability studies. The candidate will develop expertise in **GIS-based methodologies**, engage with **real-world policy challenges**, and work within an interdisciplinary framework connecting **economic geography, sustainability science, and regional development**.

Supervisor Profile: Professor Filippo Randelli

The selected fellow will be mentored by **Professor Filippo Randelli**, Associate Professor of Economic Geography, whose research focuses on **sustainability transitions** from a spatial and evolutionary perspective.

His expertise covers two main and interconnected domains: the transition towards **sustainable food systems**, including **agroecology, local food markets, and food policy**, and the development of **sustainable tourism**, with particular attention to **overtourism and local development dynamics**. These research lines are strongly interconnected through the concept of **rural tourism**.

Professor Randelli adopts a **spatial analytical approach**, making extensive use of **Geographical Information Systems (GIS)** to address complex territorial challenges and support policy-oriented research. His work includes active engagement with **local institutions**, such as the Municipality of Florence, particularly in relation to **food policy development**.

Research Group and Environment

The fellow will be integrated into the **Economic Geography research group** within the Department of Economics and Management (DISEI), a **young and dynamic team** composed of **three Associate Professors and three postdoctoral researchers**.

The group operates within a dedicated **Geographical Information System (GIS) Lab**, where both students and researchers are trained to apply **spatial analysis approaches** to sustainability-related challenges.

A key strength of the environment is its strong **local impact and policy engagement**, exemplified by an ongoing project funded by the **Municipality of Florence**, aimed at supporting the development of **local food policies**.

The research group is also closely connected to **PhD programmes focused on sustainability**, where early-career researchers are encouraged to develop **GIS-based competencies** and interdisciplinary approaches.

The candidate will work within a **highly collaborative and international environment**, interacting with other **young and motivated researchers**, and contributing to a research context that combines **academic excellence with real-world relevance**.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Short Research Proposal
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Filippo Randelli at: filippo.randelli@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

CLIMBEE-AI: Decoding Climate Impacts on HoneyBee Health through Advanced Machine Learning and Large Language Models

Project Overview and Research Vision

Climate variability affects ecological systems through **complex, nonlinear dynamics** that are still only partially understood. This project addresses these challenges by focusing on **honeybee health**, where the interactions between **climatic stressors, physiology, behaviour, and disease dynamics** require robust quantitative modelling.

CLIMBEE-AI aims to develop a **comprehensive analytical framework** linking **climate variability to honeybee health outcomes across spatial and temporal scales**, grounded in **stochastic modelling and volatility analysis**. Building on this quantitative foundation, the project integrates **Machine Learning (ML)** techniques and **Large Language Models (LLMs)** to enhance the identification of hidden patterns and improve predictive capacity.

The research will leverage a rich combination of **heterogeneous datasets**, including **climate records, hive sensor data** (temperature, humidity, activity), and **genomic and pathogen information**. In addition, the project incorporates **unstructured textual sources**—such as scientific literature, beekeeper reports, and policy documents—processed through LLMs to extract relevant knowledge and complement structured data analysis.

Advanced computational approaches, including **deep neural networks, graph-based learning, and time-series forecasting**, will be used to model **colony responses to climate stressors** and to assess their implications for **ecosystem service provision**. The project builds on existing work on **environmental risk indicators**, extending these methodologies to better understand and quantify **climate-related risks affecting pollinators**.

The fellowship offers a **training-through-research pathway** at the intersection of **quantitative methods, environmental modelling, and sustainability science**, providing the candidate with the tools to analyse complex environmental systems and contribute to high-impact research in the field of **climate risk and ecosystem resilience**.

Supervisor Profile: Professor Maria Elvira Mancino

The selected fellow will be mentored by **Professor Maria Elvira Mancino**, Full Professor at the Department of Economics and Management, whose expertise lies in **stochastic analysis, mathematical finance, and volatility estimation**, with applications extending to **environmental systems**.

Her research is centred on the development of **advanced mathematical methodologies**, including **non-parametric volatility estimation and Malliavin calculus**, and their application to real-world problems.

Professor Mancino has a strong track record in applying these approaches to environmental contexts, as demonstrated by her role as Principal Investigator of the project **“Honey BEE-VOLatility: An**

environmental index for assessing climatic risk impact on ecosystem service provision”, as well as her involvement in initiatives such as **weather-indexed insurance schemes for beekeepers.**

Her work bridges **financial econometrics and environmental risk analysis,** providing a rigorous framework for assessing the impact of climate variability on ecological systems.

Research Group and Environment

The fellow will be integrated into a research environment within the **Department of Economics and Management,** where quantitative methods are applied to **environmental and sustainability challenges.**

The group’s research focuses on **non-parametric volatility estimation,** the **application of mathematical tools to environmental problems,** and the development of models to assess **climate-related risks affecting ecosystem services.**

A key strength of the project is the availability of **large and diverse datasets,** combining both **structured and unstructured data sources,** enabling the implementation of advanced modelling approaches. The fellow will work in a collaborative environment that integrates **mathematical modelling, data science, and environmental applications,** supported by expert supervision and ongoing research activities.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Short Research Proposal
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Maria Elvira Mancino at: mariaelvira.mancino@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Archaeology in conflict areas

Project Overview and Research Vision

What does it mean to **preserve cultural heritage in contexts of conflict and post-conflict transformation**? This project addresses this question by focusing on **endangered archaeological heritage**, with particular reference to **Syria and the broader Near East**, combining field-based knowledge with advanced approaches to **data management and digital documentation**.

The research moves beyond traditional archaeological documentation to engage directly with the challenges of **heritage protection, damage assessment, and post-conflict recovery**, including the rehabilitation of **archaeological sites and museum collections**. A central dimension of the project is the development of **structured approaches to archaeological data**, integrating **digital workflows, database design, metadata standards, and data governance**.

Candidates are encouraged to develop projects that combine **theoretical reflection and applied outcomes**, with a strong emphasis on the **sustainable management of archaeological information** in fragile and rapidly changing environments. Particular attention will be given to the use of **GIS-based spatial analysis** and the integration of **archival, survey, and excavation data**, supporting evidence-based strategies for heritage preservation.

The fellowship is conceived as a **training-through-research pathway**, enabling the candidate to develop both **methodological expertise in digital archaeology and heritage studies** and the capacity to design projects with **real-world impact in heritage protection and management**.

Supervisor Profile: Professor Marina Pucci

The selected fellow will be mentored by **Professor Marina Pucci**, Associate Professor at the Department of History, Archaeology, Geography, Fine and Performing Arts (SAGAS), whose research focuses on the **archaeology and cultural heritage of ancient Western Asia**, with particular attention to the **Levant and south-eastern Anatolia**.

Her expertise lies at the intersection of **field archaeology, heritage governance, and digital heritage**, with a strong focus on the **management, structuring, and analysis of archaeological data** in complex contexts, including **conflict and post-conflict areas**.

Her work includes the development of methodologies for **damage assessment, digital documentation, GIS-based analysis, and database design**, as well as practical and theoretical contributions to **museum and site rehabilitation**.

Research Group and Environment

The fellow will be hosted by the **Laboratorio di Archeologia dell'Asia Occidentale (AIWA)**, a specialised research centre dedicated to the archaeology and cultural heritage of the **ancient Near East**, with particular focus on **Syria and south-eastern Anatolia**.

The research environment is strongly **interdisciplinary**, combining expertise in **field archaeology, heritage studies, GIS, digital documentation, database organisation, archival research, and spatial analysis**.

The group is actively involved in **high-impact projects**, including the **rehabilitation of the Aleppo Archaeological Museum**, initiatives on **heritage recovery and community-oriented museography**, and the **digital mapping of Syrian archaeological landscapes**.

The fellow will benefit from access to a wide range of **research resources**, including **excavation archives, structured archaeological datasets, maps, photographic and technical documentation**, as well as ongoing collaborations with **international academic and heritage institutions**.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Research Proposal

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Marina Pucci at: marina.pucci@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Archaeometry and Landscape Archaeology: Materials, Production and Settlement Dynamics

Project Overview and Research Vision

This project focuses on the investigation of the relationships between **raw material procurement, production technologies, and settlement dynamics** through an integrated approach combining **archaeometry and landscape archaeology**.

By bringing together **laboratory-based compositional analyses** and **spatial data**, the research aims to reconstruct **local production systems and resource networks in Central Italy**. In this framework, particular attention is devoted to understanding how **technological choices and material circulation** relate to broader **craft practices and socio-economic systems**, moving beyond traditional documentation towards a more integrated analytical perspective.

The project offers the opportunity to develop research combining **archaeometric techniques, GIS and spatial analysis**, and **geophysical prospection**, within a structured methodological framework. At the same time, it supports the fellow in strengthening their ability to design and implement research, analyse complex datasets, and contribute to international scholarly debates in the field.

Supervisor Profile: Professor Elisabetta Gliozzo

The selected fellow will be mentored by **Professor Elisabetta Gliozzo**, Full Professor specialising in **archaeological science and archaeometry**.

Her research focuses on the **technological and compositional investigation of ancient materials**, including **ceramics, glazes, and mineral resources**, with a strong emphasis on integrating **laboratory analysis with archaeological interpretation**.

A central aspect of her work is the study of **production technologies, provenance, and material circulation**, with particular attention to the relationship between **craft practices and ancient socio-economic systems**. Her approach is characterised by the integration of **analytical methods and archaeological questions**, enabling a deeper understanding of material culture within its broader historical context.

Research Group and Environment

The fellow will be hosted within the **Chair of Archaeological Research Methodologies**, a research group within the SAGAS Department, operating in a strongly interdisciplinary environment.

The group integrates **field archaeology with advanced laboratory-based approaches**, focusing on the study of **materials, production technologies, and circulation networks**.

A key component of the research environment is the ongoing development of the **archaeological map of Montepulciano**, which provides a **well-structured spatial and archaeological dataset** for the reconstruction of **settlement dynamics and land use**.

The fellow will benefit from access to **analytical facilities through established collaborations with specialised laboratories**, enabling the application of techniques such as **POM, SEM-EDS, and EMPA**.

The research environment fosters strong interaction between **archaeology, materials science, and geosciences**, supporting both methodological and interpretative work.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV) (including a full publication list).
- Motivation Letter outlining suitability for the position.
- Preliminary Research Proposal (2–3 pages, optional) aligned with the hosting offer.

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Elisabetta Gliozzo at: elisabetta.gliozzo@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Behavioral Macroeconomics of Poverty Traps, Inequality, and Green Transition in Modern Economies

Project Overview and Research Vision

This research initiative investigates the dynamic interactions between **poverty traps, inequality, and environmental transition** within modern economic systems, with a focus on their implications for **long-run growth, distribution, and sustainability outcomes**.

The project is grounded in a **quantitative and theoretical framework**, where the fellow will develop models to analyse how **institutions, public policy, and green investment** shape economic development over time. Particular attention is devoted to the interplay between **economic growth, wealth distribution, and sustainability**, within a bottom-up research perspective.

Within this framework, the fellow will have the opportunity to design an original MSCA project combining **theoretical, computational, and empirical approaches**, addressing the dynamic relationships between **development, inequality, environmental transition, and policy**.

The fellowship is conceived as a **training-through-research pathway**, providing close supervision in **formal modelling, nonlinear dynamics, evolutionary game theory, and applied econometrics**. The candidate will also benefit from participation in **seminars, workshops, and doctoral activities**, as well as targeted support for **scientific writing and publication strategy**.

In addition, the University of Florence offers dedicated **MSCA support services**, including **guidance materials, personalised assistance, and proposal review**, supporting the candidate throughout the proposal development process.

Supervisor Profile: Professor Edgar J. Sanchez Carrera

The selected fellow will be mentored by **Professor Edgar J. Sanchez Carrera**, Associate Professor of Economics at the Department of Economics and Management (DISEI).

His research lies at the intersection of **behavioral macroeconomics, development economics, and institutional economics**, with a focus on **poverty traps, inequality, economic growth, and environmental transition**.

Methodologically, his work combines **formal theoretical modelling, nonlinear dynamic analysis, evolutionary game theory, and empirical quantitative approaches**, including **applied econometrics and machine learning applications**. This integrated approach enables the study of complex economic systems and long-run dynamics.

Research Group and Environment

The fellow will be integrated into the **Department of Economics and Management (DISEI)**, a **multidisciplinary research environment** with more than **100 professors and researchers** working across economics, business, and related quantitative and social sciences.

The research context is particularly suited to projects on **poverty traps, inequality, economic growth, institutional change, environmental transition, and public policy**. Current research activities include

nonlinear dynamic models of growth, wealth concentration, and poverty traps, as well as projects on **environmental regulation, auditing, and sustainability**.

The fellow will benefit from a vibrant academic environment, including **seminar series, a doctoral research setting, and an active working-paper culture**, as well as access to **interdisciplinary research units** in areas such as **energy and environmental transition and behavioral economics**.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Research Proposal (optional)

Internal Expression of Interest Deadline: 30 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Edgar J. Sanchez Carrera at: edgar.sanchez@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Bioinspired materials for Cultural Heritage and Building Conservation

Project Overview and Research Vision

This research initiative focuses on the development and application of **bio-based and circular materials** for the **conservation and revitalisation of the built environment**, with particular attention to **historical buildings**.

The project aims to investigate the integration of **advanced bio-based materials**, including **recycled textiles and waste products from the agri-food sector**, to improve **energy performance and microclimate comfort** in heritage contexts. The research is positioned at the intersection of **technological innovation and architectural conservation**, combining material experimentation with a **user-oriented Living Lab approach**.

A central component of the project is the use of **Digital Twins**, developed through the integration of **Building Information Modelling (BIM)** and **real-time environmental monitoring systems (sensors and IoT)**, to simulate and evaluate different scenarios of **sustainability, energy efficiency, and building revitalisation**.

Within this framework, the fellow will develop a research project combining **material innovation, environmental monitoring, and digital modelling**, contributing to the broader transition towards a **green and digital transformation of the built environment**.

The fellowship offers a **training-through-research pathway**, including advanced work on **bio-based materials characterisation, Digital Twin implementation, and sustainable design methodologies**, alongside opportunities for **technology transfer and interaction with industry and international research networks**.

Supervisor Profile: Professor Antonella Trombadore

The selected fellow will be mentored by **Professor Antonella Trombadore**, whose research focuses on **technological and architectural innovation for the green-digital transition**.

Her work is centred on the integration of **BIM and Digital Twins** with **dynamic environmental monitoring systems**, enabling the development of predictive models for **energy efficiency, environmental sustainability, and building revitalisation**.

She leads the **beXLab (building environmental eXperience)**, an interdisciplinary laboratory based on a **Living Lab approach**, where architectural design, environmental analysis, and materials science converge to improve **well-being and comfort in built environments**, including schools, homes, offices, and public spaces.

Research Group and Environment

The fellow will be integrated into the **beXLab – building environmental eXperience laboratory**, located at the **Santa Verdiana site** in Florence.

The laboratory operates as a **100 m² Living Lab within heritage buildings**, equipped with **IoT sensors and a Digital Twin platform for real-time monitoring and testing of innovative materials**.

beXLab is part of the **DIDALABS network**, which includes more than **25 laboratories** specialising in **survey, restoration, conservation, thermal imaging, structural testing, XR technologies, and cultural heritage management**, providing a broad infrastructure for experimental and applied research.

The research environment supports **interdisciplinary collaboration** and serves as a platform for **technology transfer**, fostering dialogue with industry and an international network of excellence.

The fellow will also engage with ongoing projects such as:

- **AQUALIVE**, focusing on urban resilience, biodiversity, and environmental comfort through nature-based solutions;
- **SheEmpowered**, a transnational initiative supporting female entrepreneurship in the Mediterranean.

In collaboration with the **Advanced Architecture and Conservation Laboratory**, the fellow will have the opportunity to **develop and test prototypes and mock-ups in real physical conditions**, and to simulate different **integration scenarios and performance outcomes** of innovative bio-based materials.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Abstract of Research Proposal

Internal Expression of Interest Deadline: 31 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Antonella Trombadore at: antonella.trombadore@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Consumer Behaviour and Sustainable Food Systems: Experimental and Policy-Oriented Research in Agri-Food Economics

Project Overview and Research Vision

Understanding how consumers make food choices today means navigating a complex space of trade-offs between **health, sustainability, and price**. This project addresses precisely this challenge, focusing on the behavioural mechanisms that shape decision-making within contemporary food systems.

The research will investigate how consumers evaluate and prioritise different product attributes, using **experimental and quantitative methods** to analyse preferences and decision processes. Particular attention will be devoted to identifying strategies that can enhance the perceived value of **healthy and sustainable food products**, while taking into account the role of multiple actors across the food system.

Within this perspective, the project aims to generate **policy-relevant insights**, contributing to the design of interventions capable of fostering more sustainable consumption patterns.

The fellowship is structured to support the development of an **independent research profile**, combining advanced methodological training with full integration into an active research environment. The fellow will gain hands-on experience in **experimental design, econometric modelling, and interdisciplinary approaches**, while also engaging in **EU-funded projects, teaching activities, and international collaborations**.

Supervisor Profile: Professor Caterina Contini

The selected fellow will be mentored by **Caterina Contini**, Associate Professor at the Department of Agriculture, Food, Environment and Forestry (DAGRI).

Her research focuses on **consumer behaviour in food systems**, with particular attention to sustainability, health, and **credence attributes**. She combines **behavioural theories with quantitative methods** to investigate the psychological, social, and contextual drivers of food choices, including attitudes, social norms, and situational factors shaping trade-offs across product dimensions.

Her methodological expertise includes **survey-based data collection, discrete choice experiments, and structural equation modelling**, applied to topics such as **alternative proteins, food labelling, sustainable diets, and food values**, always with a strong focus on **policy implications**.

Research Group and Environment

The fellow will be hosted at the **Department of Agriculture, Food, Environment and Forestry (DAGRI)**, within a well-established research group specialising in **agri-food economics and sustainable food systems**.

The group includes senior researchers and is closely integrated with **doctoral programmes**, ensuring a strong connection between research and advanced training. Its activities cover areas such as **food choice modelling, short supply chains, rural development, and agri-food marketing strategies**, with a clear emphasis on sustainability.

The research environment is highly international and embedded in **European research networks**, with active participation in projects such as:

- **LIFE EU SHARKS**, focusing on governance and sustainability in food systems;
- **LEGUMINOSE (Horizon Europe)**, addressing legume–cereal intercropping for sustainable agriculture.

The group applies **advanced quantitative and qualitative methodologies**, including behavioural and survey-based approaches, and benefits from **departmental infrastructures and EU-funded project networks**, providing a dynamic and well-connected research setting.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Detailed CV (including publications and methodological skills).
- Motivation Letter outlining research interests and fit.
- Short Research Proposal (max. 2–3 pages) aligned with the proposed topic.
- Two Reference Letters from academic supervisors or senior researchers.

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Caterina Contini at: caterina.contini@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Cultural history of the long European Renaissance

Project Overview and Research Vision

This hosting offer is conceived as an **open and flexible research framework** in the field of **cultural history of the early modern period**, with particular reference to the **long European Renaissance**.

Rather than defining a narrowly delimited topic, the project welcomes proposals that adopt a **cultural history perspective** to explore early modern societies across a broad chronological span, from the 15th to the 18th century. Within this framework, candidates are encouraged to develop original research addressing the **cultural, intellectual, and social transformations** of the period through diverse methodological approaches.

Possible lines of inquiry include the **history of mentalities**, focusing on the evolution of belief systems and intellectual frameworks; the **global history of emotions**, examining emotional expression and regulation in cross-cultural contexts; and broader interpretations of the **“long” Renaissance**, analysing continuities and transformations across time and space.

The fellowship is designed to support the development of an **independent research profile**, offering a stimulating environment where methodological diversity, intellectual exchange, and research autonomy are strongly encouraged.

Supervisor Profile: Professor Igor Melani

The selected fellow will be mentored by **Igor Melani**, Associate Professor at the Department of History, Archaeology, Geography, Fine and Performing Arts (SAGAS).

His research focuses on **Early Modern and Renaissance history**, with particular attention to **cultural history, the history of mentalities, and the global history of emotions**.

His work explores the **social and cultural dynamics of early modern Europe**, combining traditional historiographical approaches with broader perspectives on **intellectual frameworks and intercultural interactions**.

Research Group and Environment

The fellow will be hosted within the **Seminario Permanente di Storia del Rinascimento**, a research environment rooted in the SAGAS Department.

The seminar is conceived as a **free and unstructured ensemble of researchers**, primarily early-career scholars, working on **early modern European history** through a variety of **shared perspectives and methodological approaches**.

This flexible structure fosters **intellectual exchange, peer-to-peer discussion, and independent research development**, offering a collaborative yet non-hierarchical academic setting.

The broader **SAGAS Department** provides a **multidisciplinary environment of excellence**, bringing together expertise in **history, geography, archaeology, and the arts**, and offering a rich context for interdisciplinary dialogue and research.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV).
- Motivation Letter.
- Research Proposal.

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Igor Melani at: igor.melani@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

How eruption starts

Project Overview and Research Vision

Understanding how volcanic eruptions begin remains one of the key challenges in volcanology, with direct implications for **hazard assessment and risk mitigation**. This project focuses on the investigation of the **processes that trigger volcanic eruptions**, through the analysis of deposits formed during their **very initial phases**.

These early deposits—often preserved within larger eruptive sequences—contain crucial information on the **dynamics of magma ascent** and on the processes occurring immediately before eruption onset. By studying their **textural, compositional, and stratigraphic features**, the research aims to reconstruct the sequence of events leading to eruption.

The results are expected to contribute to the **interpretation of monitoring signals and the identification of precursory activity**, ultimately improving the ability to define **eruption scenarios and volcanic hazard assessments**.

The fellowship offers a **training-through-research pathway** across multiple areas of Earth Sciences, including **physical volcanology, stratigraphy, petrology, geochemistry, and geophysics**, allowing the candidate to develop an integrated and interdisciplinary research profile.

Supervisor Profile: Professor Raffaele Cioni

The selected fellow will be mentored by **Professor Raffaello Cioni**, Full Professor at the Department of Earth Sciences.

His research spans a wide range of topics in **volcanology**, including:

- **Field volcanology and geological mapping of volcanic terrains**
- **Physical volcanology of explosive eruptions**, including magma ascent dynamics and depositional processes
- **Volcanic hazard assessment**, including probabilistic approaches and impact scenarios
- **Geochemistry and petrology of volcanic products**, with a focus on magma chamber processes and magmatic volatiles

He has conducted extensive fieldwork at **active and inactive volcanoes worldwide**, including sites in **Italy, Greece, Ethiopia, Iceland, Japan, and Latin America**, contributing to a global understanding of volcanic processes.

Research Group and Environment

The fellow will be integrated into the **Volcanology and Geochemistry Group** at the Department of Earth Sciences, based in the laboratories in **Via La Pira, Florence**.

The group has extensive experience in the study of **volcanic systems worldwide**, with field activities conducted across a wide range of geological contexts, including major volcanic areas in **Europe, Africa, Asia, and the Americas**.

Current research activities focus in particular on:

- **Phreatic activity** at Italian and Japanese volcanoes
- **Mid-intensity explosive eruptions** at sites such as Campi Flegrei, Vulcano Island, and Vesuvius

The group maintains long-standing collaborations with the **National Institute of Geophysics and Volcanology (INGV)** and other international research institutions.

The Department of Earth Sciences provides a **highly stimulating academic environment**, consistently ranked among the **top Earth Science departments in Italy** over the past decade. Research activities span from **field-based studies and geological mapping** to **laboratory-based geochemical and geophysical analyses**, as well as **volcano monitoring**.

The fellow will have access to a wide range of **advanced analytical facilities**, including:

- **EPMA and SEM** for microanalytical investigations
- **FTIR and Raman spectroscopy**
- **static particle analysis**
- dedicated laboratories for **isotopic analysis of rocks and volcanic fluids**

The research environment is described as **informal and collaborative**, with a strong presence of **early-career researchers across different geological disciplines**, fostering interdisciplinary interaction and training.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Research Proposal

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Raffaello Cioni at: raffaello.cioni@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Near Surface Applied Geophysics and the 17 Sustainable Development Goals (SDG)

Project Overview and Research Vision

This research initiative explores the potential of **near-surface applied geophysics** as a non-invasive tool to address a wide range of environmental, engineering, and societal challenges, in alignment with the **United Nations Sustainable Development Goals (SDGs)**.

The project focuses on the use and integration of advanced geophysical techniques—such as **Electrical Resistivity Tomography (ERT), Induced Polarization (IP), Ground Penetrating Radar (GPR), and seismic noise analysis**—to investigate and monitor complex subsurface processes. Within this framework, particular attention is devoted to the characterization of **instability phenomena**, including landslides and sinkholes, as well as to applications in **agro-geophysics, archaeology, and cultural heritage preservation**.

A further line of research concerns the analysis of **site effects induced by earthquakes** and the development of methods for assessing the **seismic vulnerability of buildings and historical structures**, alongside efforts to improve **risk perception, public awareness, and resilience** in relation to geological hazards.

By combining methodological development with real-world applications, the project aims to strengthen the contribution of geophysics to **sustainable development, risk mitigation, and informed decision-making processes**.

The fellowship is designed as a **training-through-research pathway**, allowing the candidate to develop an integrated profile that combines **field acquisition, data processing, and modelling**, within a strongly interdisciplinary and application-oriented context.

Supervisor Profile: Professor Veronica Pazzi

The selected fellow will be mentored by **Veronica Pazzi**, Associate Professor in Applied Geophysics at the Department of Earth Sciences.

Her profile combines solid scientific expertise with a strong international engagement. She currently serves as **Scientific Officer of the EGU NH3 (Landslides and Avalanches) subdivision** and is a member of the **SEG Near-Surface Geophysics Technical Section Global Subcommittee**, in addition to being actively involved in several international scientific societies, including SEG, EAGE, EGU, IAEG, AIGEO, and AIGAA.

Her research activity is centred on the application of geophysical techniques to **engineering geology, environmental systems, and cultural heritage**, supported by extensive postdoctoral experience and additional work in the field of **applied seismology**. Her mentoring approach emphasises the integration of technical competence with interdisciplinary perspectives and real-world impact.

Research Group and Environment

The fellow will be integrated into the **Applied Geophysics research group** within the Department of Earth Sciences, a research environment specialised in **near-surface geophysical investigations**.

The group focuses on the development and application of **non-invasive geophysical techniques** to study and monitor a wide range of geological and environmental processes. Its research spans from the analysis of **instability phenomena** to applications in **agriculture, archaeology, and seismic risk assessment**, maintaining a strong connection between methodological development and applied research.

A distinctive feature of the group is its attention to the broader societal dimension of geosciences, including the study of **risk perception, awareness, and resilience** in relation to natural hazards. The research environment offers opportunities for both **field-based investigations** and **data analysis**, within a collaborative and interdisciplinary setting that encourages interaction across different areas of Earth Sciences.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV) including a list of publications.
- Motivation Letter (explaining the choice of the host institution).
- Research Proposal Idea.
- Certifications (if any).

Internal Expression of Interest Deadline: 31 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Veronica Pazzi at: veronica.pazzi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Digital Twins and Advanced 3D Modelling for Cultural Heritage Documentation and Resilience

Project Overview and Research Vision

Digital technologies are rapidly transforming the way cultural heritage is documented, analysed, and preserved. Within this evolving landscape, this project focuses on the development of **multi-scale digital twins of historical environments**, conceived as dynamic, data-rich models capable of supporting **conservation, monitoring, and risk assessment**.

The research integrates **multi-sensor 3D surveying techniques**—including photogrammetry, terrestrial and mobile laser scanning, and UAV-based acquisition—with advanced modelling approaches such as **HBIM and CityGML**, combined with **AI-based data analysis**. The objective is to build **interoperable and data-driven frameworks** that allow heritage assets to be analysed not only as static objects, but as evolving systems exposed to environmental and anthropogenic pressures.

Particular attention is devoted to the role of digital twins in enhancing the **resilience of cultural heritage**, especially in relation to **climate change impacts and hazard scenarios**, as well as to their application in **virtual restoration and advanced visualisation**. By connecting high-resolution data acquisition with modelling and simulation, the project aims to contribute to more effective and forward-looking strategies for heritage management.

The fellowship is structured as a **comprehensive training-through-research experience**, covering the entire workflow from data acquisition to modelling, interoperability, and dissemination, while supporting the development of an **independent and internationally competitive research profile**.

Supervisor Profile: Professor Grazia Tucci

The selected fellow will be mentored by **Grazia Tucci**, Full Professor at the Department of Civil and Environmental Engineering (DICEA).

Her research focuses on **geomatics applied to cultural heritage**, with particular expertise in **digital documentation, modelling, and valorisation of built heritage**. Her work combines multi-sensor 3D surveying—such as photogrammetry and laser scanning—with the integration of heterogeneous datasets and the development of **information models (HBIM, CityGML)**.

A central element of her research activity is the use of **digital twins** to support analysis, conservation, and risk management of historical environments. This is complemented by work on **advanced visualisation and virtual restoration**, with a strong focus on **resilience to natural and anthropogenic hazards**. Methodologically, her approach integrates **remote sensing, artificial intelligence, and data fusion** within structured and reproducible workflows.

Research Group and Environment

The fellow will be hosted within the **Department of Civil and Environmental Engineering (DICEA)** and will be integrated into the **CHEDAR – Cultural Heritage Digitization, Documentation and Advanced Representation Centre**.

The research group operates at the intersection of **geomatics, digital modelling, and cultural heritage**, with a strong focus on the digital transformation of historical environments. Current activities include the development of **digital twins**, 3D digitisation projects aimed at improving accessibility—such as museum applications—and research on **risk assessment related to climate change and environmental hazards**, including ongoing national and European initiatives such as **PNRR CHANGES and ARTEMIS**.

The environment provides access to **state-of-the-art multi-sensor surveying systems**, including UAV platforms, terrestrial and mobile laser scanners, and photogrammetric tools, alongside facilities for **data processing, HBIM modelling, and immersive visualisation**. Dedicated researchers contribute to the integration of complex datasets, the application of **AI-based analysis**, and the development of **interoperable models**, leveraging extensive real-world case studies.

The group offers a **highly interdisciplinary and internationally oriented setting**, with strong experience in supervising early-stage researchers and a well-established network of international collaborations.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Research Proposal

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Grazia Tucci at: grazia.tucci@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Edge AI for Smart Control of Power Converters in Renewable Energy Systems

Project Overview and Research Vision

As renewable energy systems become increasingly widespread, ensuring their efficient and stable integration into electrical grids is emerging as a central technological challenge. This project addresses this issue by exploring a new generation of **control strategies for power electronic converters**, based on **reinforcement learning and Edge AI**.

The research focuses on the development of adaptive, model-free control approaches designed to operate directly on **resource-constrained embedded platforms**, moving beyond traditional strategies that rely on highly complex and system-specific mathematical models. In this context, the objective is to enable **self-learning control systems** capable of maintaining high performance even in the presence of **component uncertainties, system ageing, and variable operating conditions**.

By combining artificial intelligence with power electronics and control theory, the project aims to improve **grid stability, system efficiency, and renewable energy penetration** under real-world conditions. Particular emphasis is placed on the transition from theoretical modelling to **practical implementation**, ensuring that the developed solutions can be effectively deployed in realistic energy scenarios.

The fellowship is conceived as a **training-through-research experience** that spans the entire research cycle, from algorithm design to real-time implementation and experimental validation, supporting the development of a strong and independent research profile.

Supervisor Profile: Dr. Fabio Corti

The selected fellow will be mentored by **Fabio Corti**, whose research focuses on the modelling, design, and control of power electronic converters for **industrial and real-world energy applications**.

His work addresses key challenges of the energy transition, including the **integration of renewable energy sources into electrical grids**, the development of efficient power conversion architectures, and **smart energy management solutions**. His approach combines **nonlinear control, digital implementation, and artificial intelligence** to improve performance, reliability, and efficiency.

His expertise also extends to **energy storage systems, electric mobility and charging infrastructures**, as well as to **fault diagnosis and monitoring of power systems using data-driven approaches**, providing a comprehensive perspective on modern energy systems.

Research Group and Environment

The fellow will join the **Electrical Energy Engineering Laboratory (3ELab)** within the Department of Information Engineering, a research environment dedicated to the **advanced control and optimisation of modern power systems**.

The group is particularly active in the development of **self-learning control strategies based on reinforcement learning**, with the goal of enhancing robustness against uncertainties and reducing

reliance on traditional model-based approaches. These methods are applied to **power grids and renewable energy systems**, with a clear focus on improving system interactions and operational stability.

The laboratory is equipped with advanced experimental infrastructure, including **real-time simulators and Hardware-in-the-Loop (HIL) platforms**, which enable the validation of control strategies under realistic operating conditions. This setup allows the research to move seamlessly from simulation to implementation, ensuring strong alignment between theoretical development and practical application.

The environment is inherently **multidisciplinary**, bringing together expertise in power electronics, control systems, and embedded technologies, and offering opportunities for collaboration with **industrial partners in the semiconductor and energy sectors**.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (including publication list)
- Short Research Proposal (2–3 pages) aligned with the hosting offer

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Fabio Corti at: fabio.corti@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Efficient Vision-Language Adaptation for an Open and Changing World

Project Overview and Research Vision

Contemporary vision-language models have reached impressive levels of performance, yet they remain fundamentally limited when deployed in real-world environments, where **data distributions evolve, tasks shift, and new concepts continuously emerge**. This project addresses this gap by focusing on how multimodal systems can be made **adaptive, efficient, and robust in open and changing scenarios**.

The research investigates strategies that allow models to **learn continuously without requiring costly retraining or access to the full history of data**, moving beyond static training paradigms. In this context, particular attention is devoted to the design of **resource-efficient adaptation mechanisms**, capable of updating models incrementally while preserving previously acquired knowledge.

The project brings together approaches from **continual learning, domain adaptation, and multimodal representation learning**, with the aim of addressing key challenges such as **catastrophic forgetting, distribution shifts, and the trade-off between stability and plasticity**. A central objective is to develop methods that enable models to generalise to unseen scenarios while remaining computationally efficient, for instance through **parameter-efficient fine-tuning or modular adaptation strategies**.

By grounding these developments in realistic constraints—such as **limited supervision, noisy data, and real-time adaptation requirements**—the research aims to contribute to the next generation of **scalable and deployable multimodal systems**, with applications ranging from robotics to autonomous systems and interactive AI.

The fellowship is conceived as a **training-through-research pathway**, offering the candidate the opportunity to develop a strong and independent research profile at the intersection of machine learning, computer vision, and multimodal AI.

Supervisor Profile: Professor Andrew David Bagdanov

The selected fellow will be mentored by **Andrew David Bagdanov**, Full Professor at the University of Florence and a leading expert in **Deep Learning and Computer Vision**.

His research addresses fundamental challenges in modern machine learning, including the **parameter-efficient adaptation of large vision-language models, plasticity loss in continual learning**, and topics such as **federated learning, model merging, and Green AI**. His work is regularly published in top-tier international venues, including **ICLR, CVPR, ICCV, ECCV, and NeurIPS**, reflecting a strong and consistent scientific impact.

His approach combines theoretical innovation with attention to real-world applicability, fostering research that is both methodologically rigorous and practically relevant.

Research Group and Environment

The fellow will be integrated into the **Media Integration and Communication Center (MICC)**, a well-established research unit at the University of Florence working on a broad spectrum of **Deep Learning and Computer Vision problems**.

MICC brings together faculty members, postdoctoral researchers, and PhD students in a highly collaborative environment where **fundamental research is closely connected to real-world applications**. The group has a strong international reputation and consistently publishes in leading venues such as **ICLR, ICML, NeurIPS, CVPR, ICCV, and ECCV**, positioning it among the most active research centres in the field.

The centre provides access to **dedicated compute infrastructure**, including multiple GPU clusters, enabling large-scale experimentation with state-of-the-art models. It also maintains an extensive network of **international collaborations and industry partnerships**, and is part of the **Modena ELLIS Unit**, offering opportunities for joint research activities and international mobility.

The research environment is particularly well-suited for projects that require a combination of **theoretical development, large-scale experimentation, and application-oriented validation**, supporting the candidate in building a competitive and internationally visible research trajectory.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter

Internal Expression of Interest Deadline: 15 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Andrew David Bagdanov at: andrew.bagdanov@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Multilevel analysis and latent variable models with applications in the social sciences

Project Overview and Research Vision

Understanding complex social phenomena—such as educational outcomes, institutional performance, and inequality—requires statistical models capable of capturing **hierarchical structures, latent processes, and heterogeneous behaviours**. This project focuses on advancing the use of **multilevel models and latent variable approaches** to better interpret and analyse complex data structures typical of the social sciences.

The research is intentionally open in its design and can develop along two complementary directions. On the one hand, it may address **methodological challenges**, such as variable selection strategies, handling missing data, or improving estimation procedures in complex models. On the other hand, it may focus on the **application of advanced statistical modelling** to a substantive empirical case study, particularly in the field of education, where large-scale assessment data provide a rich testing ground for methodological innovation.

By linking methodological development with applied research, the project aims to strengthen the use of **rigorous statistical tools for interpreting real-world social data**, contributing to more robust and policy-relevant insights.

The fellowship offers a structured environment for developing expertise in **modern statistical modelling**, supporting the candidate in building an independent and internationally competitive research profile.

Supervisor Profile: Professor Leonardo Grilli

The selected fellow will be mentored by **Leonardo Grilli**, Full Professor at the Department of Statistics, Computer Science, Applications (DiSIA).

His research focuses on **statistical modelling**, with particular expertise in **multilevel analysis, latent variable models, mixture models, and quantile regression**, applied to complex datasets across different domains, especially education.

He is currently **team leader of a local unit within a national PRIN2022 project on latent variable models**, reflecting an active role in advancing research in this area at the national level.

His work combines methodological rigour with applied relevance, providing a solid foundation for projects that aim to connect statistical innovation with real-world data analysis.

Research Group and Environment

The fellow will join the **Department of Statistics, Computer Science, Applications (DiSIA)** at the University of Florence, located in Viale Morgagni.

The department hosts a **well-established group of researchers working on multilevel analysis and latent variable models**, with applications spanning fields such as education and health.

The research environment is characterised by strong methodological expertise and a collaborative approach, offering opportunities to engage with both **theoretical developments and applied statistical projects**. The department provides access to appropriate computational resources for handling complex datasets and implementing advanced statistical models.

Through its involvement in national research projects and academic networks, the group offers a context that supports **interaction with the broader statistical community** and the development of collaborative research activities.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Research Proposal

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Leonardo Grilli at: leonardo.grilli@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Ecological Macroeconomics and the Global South: Modeling Just Transitions and Structural Change in a Post-Growth Era

Project Overview and Research Vision

How can macroeconomic systems reconcile ecological constraints with development needs in the Global South? This project addresses this question by advancing **ecological macroeconomic modelling** in contexts characterised by structural heterogeneity, institutional diversity, and high climate vulnerability.

Building on the EUROGREEN framework, the research aims to develop a **new generation of multi-sectoral and multi-regional models** capable of capturing the interplay between structural change, resource constraints, and socio-economic development. While existing approaches have largely focused on European economies, this project seeks to extend these models to better reflect the **biophysical, institutional, and developmental specificities of emerging economies**.

A central objective is to bridge the gap between **post-growth macroeconomic frameworks** and real-world development challenges, exploring pathways that combine **macroeconomic stability, social inclusion, and ecological sustainability**. In this perspective, the project contributes both to methodological innovation and to the formulation of **policy-relevant scenarios for just transitions**.

The fellowship offers the opportunity to work at the intersection of **macroeconomics, sustainability science, and development studies**, within a research programme that combines theoretical modelling with strong engagement in international policy debates.

Supervisor Profile: Professor Tiziano Distefano

The selected fellow will be mentored by **Tiziano Distefano**, whose research lies at the intersection of **ecological macroeconomics and development economics**, with a particular focus on the relationship between **biophysical constraints and macroeconomic dynamics**.

He is among the contributors to the development of the **EUROGREEN model**, applied to European economies such as France and Italy, and has led national research projects addressing the nexus between **water resources, climate change, and macroeconomic dynamics**, including multi-regional interactions and spatial heterogeneity.

His work is characterised by a **pluralist methodological approach**, combining Post-Keynesian frameworks with ecological economics, and employing tools such as **input-output analysis and system dynamics** to analyse complex socio-economic systems.

He is actively involved in shaping the field, including editorial roles in collective volumes and scientific journals, and through the organisation of **international conferences and training initiatives dedicated to ecological macroeconomics**.

Research Group and Environment

The fellow will be integrated into a **dynamic research group working on ecological macroeconomics and sustainability transitions**, based in Prato (Florence).

The group operates within **ARCO (Action Research for CO-development)**, a multidisciplinary research centre hosting more than 30 researchers and providing a **project-based and highly collaborative environment** focused on sustainability, development, and social inclusion.

The research team currently includes PhD candidates and postdoctoral researchers engaged in projects on **climate change, resource use, and structural transformation**, supported by access to **advanced socio-economic datasets and computational modelling infrastructure**.

A key strength of the hosting environment is its strong **international network**, with active collaborations across **Latin America and Asia**, including Colombia, Chile, Brazil, and China. This ensures that research is closely connected to **real-world policy challenges** and informed by diverse institutional contexts.

The fellow will also benefit from integration into a broader scientific community built around **international conferences, summer schools, and collaborative research initiatives**, providing opportunities for visibility, networking, and career development.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Research Proposal

Internal Expression of Interest Deadline: 31May 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Tiziano Distefano at: tiziano.distefano@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

History of Late Antiquity and the Early Middle Ages

Project Overview and Research Vision

This hosting offer focuses on the transition from Late Antiquity to the Early Middle Ages (5th–11th centuries), a period marked by significant political, religious, and cultural transformations across the Mediterranean world.

The research builds on established areas of expertise, including **Ostrogothic Italy, late antique and early medieval diplomacy, and the analysis of key historiographical sources such as Cassiodorus, Jordanes, and Procopius of Caesarea**. Particular attention is also given to **African Latin Christianity after Augustine**, as well as to **early medieval coinage** as a source for understanding political organisation and economic structures.

Within this framework, candidates are encouraged to develop projects grounded in the **critical analysis of primary sources**, engaging with broader historiographical debates on the transition from the late Roman world to early medieval societies. The hosting offer remains open in scope within these thematic areas, allowing applicants to develop an independent and original research profile.

Supervisor Profile: Professor Marco Cristini

The selected fellow will be mentored by **Marco Cristini**, Lecturer in Medieval History at the University of Florence.

His research focuses on the political and cultural history of Late Antiquity and the Early Middle Ages, with particular expertise in **Ostrogothic Italy, diplomacy, and the analysis of primary sources in Latin and Greek**. His academic background includes a PhD from the **Scuola Normale Superiore in Pisa**, as well as international research experience at institutions such as the **University of Tübingen** and the **Istituto Italiano di Storia Antica in Rome**.

He is the author of the monograph *Baduila: Politics and Warfare at the End of Ostrogothic Italy* and is currently working on a major study on **African Latin Christianity**, reflecting a sustained engagement with both political history and religious dynamics across the Mediterranean. His research combines close textual analysis with broader historiographical interpretation, offering a solid framework for projects grounded in primary sources.

Research Group and Environment

The fellow will be integrated into the **Department of History, Archaeology, Geography, Fine and Performing Arts (SAGAS)**, a multidisciplinary environment that brings together expertise across a wide range of humanities disciplines.

The department provides a rich intellectual context for the study of long-term historical processes, encouraging dialogue between **history, archaeology, and related fields**, and supporting research that engages with the **“longue durée” of Mediterranean civilisations**.

The research environment is further strengthened by access to the **extensive library collections of the University of Florence** and by the proximity to major archives, libraries, and research institutions in Tuscany, offering valuable resources for projects based on primary sources.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

Prospective candidates are invited to submit the following documentation:

- Curriculum Vitae (CV) including a list of publications.
- Motivation Letter (explaining the choice of the University of Florence as the host institution).
- Proposal Summary.

Internal Expression of Interest Deadline: 15 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Marco Cristini at: marco.cristini@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Late Medieval and Renaissance Manuscript Culture

Project Overview and Research Vision

The study of manuscript culture remains central to understanding the intellectual, scientific, and social transformations of the late medieval and Renaissance periods. This hosting offer focuses on research in **palaeography, codicology, and the history of the book**, with particular attention to the **production, circulation, and use of manuscripts** in vernacular and professional contexts.

Proposals are especially encouraged on **scientific manuscripts**—such as mathematical and medical texts written in the vernacular—as well as on **late medieval cursive scripts** and their use in both documentary and book contexts, including **notarial and mercantile traditions**. These areas reflect current research lines within the host environment and offer a solid basis for projects grounded in **primary sources**.

Candidates are also invited to integrate **traditional descriptive and analytical approaches with digital methodologies**, contributing to the development of **digital palaeography and manuscript studies**. In this perspective, the project supports research that connects **close material and textual analysis** with broader questions of **transmission, use, and historical context**.

The fellowship provides a research environment where **methodological rigour and technical skills** are developed in parallel, supporting the consolidation of an **independent research profile** based on archival work and analytical competence.

Supervisor Profile: Professor Irene Ceccherini

The selected fellow will be mentored by **Irene Ceccherini**, Associate Professor of **Palaeography, Codicology, and Diplomatics** at the University of Florence.

Her research focuses on the **history of Latin scripts in the late Middle Ages and the Renaissance**, with particular attention to **cursive scripts, manuscript culture, and the history of the book**. She also works on the **scientific cataloguing of medieval manuscripts**, the **history of libraries**, and the **edition of documentary sources**.

She obtained her PhD at the University of Florence and has carried out research at leading international institutions, including the **École Pratique des Hautes Études and IRHT-CNRS (Paris)**, the **University of Oxford (Bodleian Libraries and Lincoln College)**, and the **Staatsbibliothek in Berlin**.

Her current research activity includes projects on **vernacular scientific manuscripts** and **late medieval cursive scripts**, as well as collaborations with the **Archivio di Stato di Firenze** and the **Manoscritti Datati d'Italia initiative** for manuscript cataloguing.

Research Group and Environment

The fellow will be integrated into the **Department of History, Archaeology, Geography, Fine and Performing Arts (SAGAS)**, a leading centre for historical and manuscript studies.

The department has a long-standing tradition in **palaeography and codicology**, and benefits from strong interdisciplinary connections, particularly with philologists at the **Department of Literature**,

Philology and Linguistics (DILEF). This creates a research environment where textual, material, and linguistic perspectives can be brought together in a coherent analytical framework.

A distinctive strength of this hosting environment is the **unique concentration of archival and manuscript collections in Florence**, including major libraries and archives where ongoing collaborative research and digitisation projects are conducted. This provides exceptional opportunities for **direct engagement with primary sources**, supported by well-established institutional partnerships.

The University of Florence offers a research-oriented setting with **strong infrastructural support and access to specialised facilities**, allowing candidates to combine archival research, cataloguing activities, and digital analysis within a single integrated environment.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

Prospective candidates are invited to submit the following documentation:

- Curriculum Vitae (CV).
- Motivation Letter.
- Publication Sample.
- Referees' E-mail Contacts.

Internal Expression of Interest Deadline: 19 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Irene Ceccherini at: irene.ceccherini@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Network Spillovers in Heterogeneous Agent Models: From Micro Interactions to Macroeconomic Outcomes

Project Overview and Research Vision

Economic systems are increasingly characterised by **complex interdependencies**, where shocks propagate through networks of firms, sectors, and countries. Understanding how these connections shape macroeconomic outcomes is at the core of this project, which investigates the role of **network structures** and **agent heterogeneity** in driving economic dynamics.

The research focuses on how interactions at the **micro level**—between firms, households, and institutions—generate aggregate outcomes through **spillover mechanisms** operating across **production and financial networks**. Particular attention is given to **global value chains** and interconnected financial systems, where local disturbances can be amplified and transmitted across multiple layers of the economy.

To address these questions, the project combines **agent-based modelling (ABM)** and **stock-flow consistent (SFC) approaches** with **data-driven analysis**, allowing for the study of economies characterised by **heterogeneity, non-linearity, and evolving network structures**. This framework makes it possible to explore issues such as **macroeconomic stability, inequality, and policy effectiveness**, linking micro-level behaviour to global economic patterns.

The fellowship offers the opportunity to work within a research environment that integrates **theoretical modelling, computational methods, and empirical analysis**, supporting the development of an **independent research profile** in the field of computational and applied macroeconomics.

Supervisor Profile: Professor Giorgio Ricchiuti

The selected fellow will be mentored by **Giorgio Ricchiuti**, Associate Professor at the Department of Economics and Management.

His research focuses on **macroeconomic dynamics under heterogeneity**, combining **agent-based models** and **empirical analysis**. He studies how **expectations, financial frictions, and network structures** shape business cycles, monetary policy transmission, and inequality, in line with what described in the EoI .

A second research line examines **global value chains and firm dynamics** using network-based approaches, while more recent work explores how countries respond to **climate change and climate-related risks**, combining theoretical models and empirical evidence within **multi-country network frameworks**.

Research Group and Environment

The fellow will be hosted at the **School of Economics and Management**, within a research environment characterised by strong expertise in **macroeconomics, computational methods, and applied economics**.

The group is actively engaged in projects on **heterogeneous agents macroeconomics, global value chains, and climate-related risks**, including the development of **agent-based models of monetary**

policy and inequality, network-based analyses of **firm dynamics and foreign direct investment (FDI)**, and empirical studies on **climate shocks and economic behaviour** .

The research environment provides access to **large-scale firm-level and international datasets**—such as **trade data and FDI networks**—as well as to **computational resources for simulation-based models**, enabling the integration of theoretical frameworks with empirical validation.

The fellow will be embedded in an **active international research network** and supported in developing an **independent research profile**, while benefiting from close supervision and integration into ongoing projects.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (including a full publication list).
- Motivation Letter (max 1–2 pages) outlining research interests and fit.
- Short Research Proposal (2–3 pages) related to the project themes.
- One Writing Sample (published paper or working paper).
- Contact details of two referees.

Internal Expression of Interest Deadline: 15 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Giorgio Ricchiuti at: giorgio.ricchiuti@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Pathways to parenthood: infertility, assisted reproduction and relationship dynamics

Project Overview and Research Vision

Understanding how individuals navigate the path to parenthood in the context of infertility and medically assisted reproduction (MAR) is central to this research initiative. The project focuses on the interplay between **fertility intentions, barriers to parenthood, and relationship well-being**, addressing how these dimensions evolve across the life course.

Using **survey data**, the research examines how individual experiences and constraints shape pathways to parenthood and how these are linked to **partnership dynamics**. Particular attention is given to **decision-making processes, social inequalities in access to reproductive technologies**, and the ways in which individuals experience infertility and the transition to parenthood.

The project situates reproductive choices within a broader socio-demographic framework, connecting **life-course trajectories, family dynamics, and well-being outcomes**. In this perspective, it aims to contribute both to empirical evidence and to the understanding of how structural and individual factors interact in shaping reproductive behaviours.

The fellowship offers the opportunity to develop an **independent research agenda** within a research environment that combines **advanced quantitative methods** with strong expertise in socio-demographic analysis.

Supervisor Profile: Professor Valentina Tocchioni

The selected fellow will be mentored by **Valentina Tocchioni**, Associate Professor at the Department of Statistics, Computer Science, Applications “G. Parenti”.

Her research focuses on **socio-demographic processes across the life course**, with particular expertise in **fertility, childlessness, and assisted reproductive technologies (ART)**. She applies advanced quantitative methods, including **event-history analysis, sequence analysis, and causal inference techniques**, to investigate how individual life trajectories are shaped by social and economic conditions .

Her work also explores the interrelationships between **fertility, union formation and dissolution, and well-being**, as well as broader topics such as **gender dynamics** and inequalities across different stages of life.

Research Group and Environment

The fellow will be integrated into the **Population and Society Unit (UPS)** at the Department of Statistics, a research group working on population and social processes through a **multidisciplinary approach**.

The group conducts research on **family demography, population health, demographic ageing, migration, and social inequality**, and has strong expertise in the **integration of different data sources**, including survey and administrative data .

It operates in collaboration with **Florence Population Studies**, in partnership with the Department of Political and Social Sciences of the European University Institute, and is actively involved in **national and international research projects**.

The environment provides a collaborative and internationally connected setting, with opportunities to engage in **seminars, workshops, and joint research activities**, supporting both methodological development and scientific independence.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Letter of Recommendation (optional)

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Valentina Tocchioni at: valentina.tocchioni@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Personality traits in food experience

Project Overview and Research Vision

Understanding why the same food can generate profoundly different experiences across individuals is at the core of this research initiative. The project aims to develop a theoretical framework linking **personality traits to sensory variability**, identifying distinct “**sensory-personality signatures**” that shape how food is perceived and evaluated.

By bridging **sensory science and personality psychology**, the research explores how individual differences influence **taste responsiveness** (e.g. sweet and sour), **hedonic evaluation**, and the **temporal dynamics of eating experiences**. In doing so, it contributes to rethinking how food perception is conceptualised, moving beyond average responses to focus on variability between individuals.

The project also connects these dimensions to broader questions of **food preferences, choices, and behaviour**, with potential implications for personalised nutrition and food innovation.

The fellowship offers the opportunity to develop an **independent research profile** within an interdisciplinary environment that integrates experimental approaches, sensory methodologies, and quantitative analysis.

Supervisor Profile: Professor Sara Spinelli

The selected fellow will be mentored by **Sara Spinelli**, Associate Professor at the University of Florence.

Her research focuses on the factors influencing **food preferences and choices**, with particular attention to the role of **personality traits, gender/sex, and sensitivity to tastes and emotions**.

Her work also addresses **vulnerable populations**, including children, individuals with obesity, and cancer patients experiencing taste alterations, and extends to **food innovation**, particularly in the development of **healthy and sustainable personalised products**.

Research Group and Environment

The fellow will be integrated into **SensoryLab – UNIFI**, an interdisciplinary research environment dedicated to the study of food perception and consumer behaviour.

The laboratory is equipped with **sensory cabins for controlled evaluations**, a **mobile laboratory**, and instruments for **anthropometric and physiological data collection**, supporting experimental research across different contexts .

The research group includes senior researchers and a team of PhD candidates working on topics such as **fat perception and diet, food innovation for children, food experience in cancer patients, expectation measurement, and odour-emotion memory** .

This environment offers a strong combination of **experimental infrastructure, interdisciplinary expertise, and ongoing research activities**, providing the fellow with opportunities to engage in both fundamental and applied research.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Research Proposal (optional)

Internal Expression of Interest Deadline: 15 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Sara Spinelli at: sara.spinelli@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Political Spaces and Systems in Medieval Cities (11th–15th Centuries)

Project Overview and Research Vision

The political and social history of European cities between the 11th and 15th centuries represents a key field for understanding the transformation of power structures in the late Middle Ages. This hosting offer focuses on the analysis of **urban political systems**, with particular attention to the spaces, practices, and relationships through which political life was organised and expressed.

The research addresses the functioning of **political spaces and systems**, the role of **networks of solidarity**, and the interactions between different actors within the urban context. Special emphasis is placed on the relationships between **urban powers**, as well as on the connections and tensions between **local authorities and monarchical powers**, within a broader European framework.

Within this perspective, the project encourages proposals that investigate how political action was structured, negotiated, and represented in medieval cities, combining social and institutional approaches with the analysis of interactions and relational dynamics.

The fellowship is designed to support the development of an **independent research profile**, within a context that promotes methodological reflection and engagement with both traditional historical approaches and digital tools.

Supervisor Profile: Professor Pierluigi Terenzi

The selected fellow will be mentored by **Pierluigi Terenzi**, based at the Department of History, Archaeology, Geography, Fine and Performing Arts (SAGAS).

His research focuses on the **political and social history of European cities in the late Middle Ages**, with particular expertise in **political spaces and systems, networks of solidarity, and the relationships between urban and monarchical powers**. His work is centred on understanding how these dynamics shaped urban societies between the 11th and 15th centuries.

Research Group and Environment

The fellow will be integrated into a research group dedicated to the study of **political and social dynamics in medieval urban contexts**.

The group's activities focus on the analysis of interactions between urban actors, the functioning of political systems, and the broader relations linking cities to regional and monarchical frameworks. Within this environment, the fellow will take part in ongoing research activities and will be supported through **methodological guidance**, the use of **digital tools for historical analysis**, and inclusion in an **international network of collaborations**.

The Department of SAGAS provides a multidisciplinary setting that encourages dialogue across different areas of historical research, offering a solid context for projects combining social, political, and institutional perspectives.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Abstract of the proposal

Internal Expression of Interest Deadline: 10 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Pierluigi Terenzi at: pierluigi.terenzi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Postgrowth cities and landscapes seeking social and ecological sustainability in a complex world and in an uncertain century

Project Overview and Research Vision

Contemporary urban and territorial systems are increasingly shaped by conditions of **resource constraints, environmental pressures, and systemic uncertainty**. Within this context, this hosting offer focuses on the exploration of **postgrowth perspectives** in urban and landscape design, addressing the challenge of combining **ecological sustainability and social equity** in a period characterised by multiple and interconnected crises.

The project is grounded in a **transdisciplinary approach**, bringing together perspectives from urban and landscape design, social metabolism studies, systems thinking, political ecology, and critical geography. It aims to investigate how spatial systems—across urban, regional, and landscape scales—can be reinterpreted in light of biophysical limits, power relations, and evolving socio-ecological dynamics.

Rather than defining a single predefined research trajectory, the hosting offer encourages the development of **candidate-driven proposals**, to be refined through an initial phase of discussion and conceptualisation. Within this framework, research may address themes such as spatial metabolism, energy and material flows, planetary urbanisation, and the spatial implications of degrowth, combining theoretical reflection with applied perspectives.

The fellowship supports the development of an **independent research profile** within a field that connects spatial design, sustainability science, and critical socio-environmental analysis.

Supervisor Profile: Professor Silvio Cristiano

The selected fellow will be mentored by **Silvio Cristiano**, Tenure-Track Assistant Professor of Urban and Landscape Design and Planning.

His research is centred on **systems thinking and diagramming**, with a focus on the analysis of **energy and material flows, spatial metabolism, and socio-ecological dynamics**. His work integrates approaches from **thermodynamics, political ecology, and critical geography** to investigate how spatial systems operate under conditions of environmental constraint and structural change.

His research explores themes such as **postgrowth spatial studies, the spatial politics of degrowth, planetary urbanisation, and strong sustainability**, with the aim of understanding how urban and regional systems can be reconfigured in response to climate change, resource scarcity, and emerging risks.

Research Group and Environment

The fellow will be integrated into the **Laboratory of Regional Design**, a research environment characterised by **multi- and transdisciplinary collaboration** and engagement with both academic and non-academic partners.

The laboratory brings together faculty members and collaborators working on **urban and regional dynamics, ecological systems, and spatial transformations**, combining theoretical research with applied perspectives. The group operates within an open research framework that connects local activities with broader **international scientific networks**, including collaborations across different geographical contexts.

Within this setting, the fellow will be involved in ongoing research activities and will benefit from an environment that supports **conceptual development, interdisciplinary exchange, and the integration of diverse knowledge systems**, including perspectives related to the Global South and non-Western epistemologies.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit **whatever they feel is relevant** to support their application (e.g., CV, motivation letter, or research proposal).

Internal Expression of Interest Deadline: 19 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Silvio Cristiano at: silvio.cristiano@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Prosperity Fashion: Design and Socio-Technical Transitions in the Fashion Industry

Project Overview and Research Vision

The transition towards more sustainable and responsible fashion systems represents one of the key challenges for contemporary design and manufacturing sectors. This project focuses on how **design, digital technologies, and sustainability assessment** can contribute to enabling **circular transitions** within the fashion and textile industry.

The research explores the interaction between **material innovation, production processes, business models, and cultural dimensions**, recognising that sustainability transitions in fashion are inherently **socio-technical** in nature. Within this framework, the project aims to investigate how design can act as a driver of systemic change, supporting the reconfiguration of both production and consumption patterns.

Possible research directions include **circular and ethical design approaches, AI-supported design and decision-making processes, life cycle assessment (LCA) and sustainability metrics, as well as the development of new materials and recycling processes**. Particular attention is given to the integration of technological innovation with environmental and social considerations.

The fellowship supports the development of an **independent research profile** at the intersection of design, sustainability, and technological innovation, with a strong orientation towards both theoretical reflection and applied research.

Supervisor Profile: Dr. Paolo Franzo

The selected fellow will be mentored by **Paolo Franzo**, whose research operates at the intersection of **design, technology, and innovation** in the textile, fashion, and manufacturing sectors.

His work focuses on **sustainable textile systems, circular economy strategies, and the development of innovative materials and production processes**, combining **design-driven approaches, qualitative research, and applied experimentation**. A distinctive aspect of his research is the strong emphasis on **interdisciplinary and intersectoral collaboration**, often involving industry partners to bridge research and practice.

He is particularly interested in the integration of **digital technologies and Artificial Intelligence into design processes**, contributing to the development of new approaches to innovation within the fashion system.

Research Group and Environment

The fellow will be integrated into the **REI Design Lab**, an interdisciplinary research environment focused on **digital transformation and sustainability in design, fashion, and communication**.

The laboratory operates as a collaborative space combining **design research, experimentation, and technology transfer**, with access to shared workspaces, prototyping facilities, and digital tools supporting applied research activities. Ongoing work includes national and European projects—such

as initiatives on **circular economy, digital manufacturing, and AI integration in design processes**—developed in collaboration with academic, industrial, and cultural partners.

The fellow will also benefit from interaction with **SusFashionLab**, an interdepartmental research unit integrating expertise across design, engineering, chemistry, economics, and sustainability. This environment provides opportunities to work across disciplines and sectors, engaging directly with **real-world case studies and innovation processes**.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Paolo Franzo at: paolo.franzo@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Spatial Mismatch in Sustainability Transitions: GeoAI, Energy Systems, and Climate Risk

Project Overview and Research Vision

Sustainability transitions are often characterised by uneven territorial outcomes, where environmental potential, socio-economic conditions, and policy frameworks do not align. This project focuses on these **spatial mismatches**, investigating how such misalignments shape the geography of energy transition and climate risk.

The research aims to analyse how **environmental resources, institutional settings, and socio-economic structures** interact across space, producing differentiated patterns of development and vulnerability. Particular attention is given to processes through which local conditions are filtered by policy and governance frameworks, generating uneven outcomes across regions.

To address these questions, the project develops advanced spatial modelling approaches combining **GeoAI, spatial econometrics, and simulation methods**, including cellular automata. These tools allow for the integration of high-resolution environmental, socio-economic, and institutional data, supporting the analysis of both impacts and adaptive responses.

Applications include the study of **solar photovoltaic deployment**, as well as the assessment of **climate risks**, with a focus on **sea-level rise and salinisation processes affecting agricultural systems**. The overall objective is to contribute to a more robust understanding of how sustainability transitions can be made more **spatially balanced and policy-relevant**.

The fellowship supports the development of an independent research profile at the intersection of **economic geography, spatial data science, and sustainability transitions**, combining methodological rigour with applied, policy-oriented research.

Supervisor Profile: Professor Federico Martellozzo

The selected fellow will be mentored by **Federico Martellozzo**, Associate Professor of Economic Geography, whose research focuses on **spatial data science and GIS-based modelling** applied to sustainability transitions and regional development.

His work combines **geospatial analysis, machine learning, and spatial econometrics** to investigate the territorial dynamics of energy transition, climate change impacts, and spatial inequalities. A distinctive aspect of his research is the development of **high-resolution spatial models** designed to support **policy-relevant decision-making**, with particular attention to institutional and socio-economic filtering processes.

His research agenda is inherently interdisciplinary, operating at the interface of **economic geography, environmental science, and data-driven policy analysis**.

Research Group and Environment

The fellow will be integrated into a research group within the **Department of Economics and Management (DISEI)**, embedded in the **LISSET Lab (Laboratory for Innovation, Sustainability, and Economic Territories)** and affiliated with **ARCO (Action Research for CO-development)** and the **S3W PhD programme in Sustainable Development and Climate Change**.

The group operates at the intersection of **spatial analysis, sustainability, and policy**, and includes PhD candidates, postdoctoral researchers, and master's students, creating a collaborative and international research environment. Current research activities focus on **energy transition processes, climate change impacts, and regional resilience**, combining geospatial modelling, machine learning, and simulation approaches such as cellular automata.

The research environment provides access to **advanced GIS and remote sensing tools** (including QGIS, ArcGIS, and Google Earth Engine), as well as to **high-resolution spatial datasets** such as Copernicus and the Global Human Settlement Layer (GHSL). The group also maintains active collaborations with public institutions and international partners, ensuring strong integration with **policy-oriented and interdisciplinary research contexts**.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the "2.3.2. Recruited researchers" section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Academic CV
- Motivation Letter describing research interests and potential fit with the proposed topics
- Short outline of research ideas (max. 1–2 pages, optional)
- Contact details of 2 referees (optional)

Internal Expression of Interest Deadline: 20 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Federico Martellozzo at: federico.martellozzo@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

The political legacies of armed conflict and political violence

Project Overview and Research Vision

Armed conflict and political violence leave long-lasting effects that extend well beyond the immediate period of instability, shaping institutional development, political behaviour, and security dynamics over time. This project focuses on these **long-term political legacies**, investigating how past episodes of violence continue to influence contemporary processes of **democratization and governance**.

The research examines the consequences of **civil wars, ethnic conflicts, and authoritarian rule**, with particular attention to how these experiences affect institutional trajectories and patterns of political participation. A central objective is to understand the mechanisms through which historical violence translates into persistent differences in political attitudes, state capacity, and conflict dynamics.

To address these questions, the project combines **theoretically grounded approaches with advanced quantitative methods**, including the use of large-scale datasets and experimental techniques. This framework enables the analysis of both macro-level patterns and micro-level behaviours, linking historical processes to present-day political outcomes.

The fellowship supports the development of an independent research profile in the field of **conflict studies and international security**, with a strong emphasis on empirically grounded and methodologically rigorous research.

Supervisor Profile: Professor Stefano Costalli

The selected fellow will be mentored by **Stefano Costalli**, Professor at the Department of Political and Social Sciences, whose research focuses on **political violence, civil wars, peacekeeping, and democratization processes**.

His work examines the **long-term consequences of armed conflict and authoritarianism**, combining theoretical approaches with quantitative analysis. His research agenda also includes **ethnic conflict, political realism, and international security**, with a consistent focus on empirically driven political research.

Research Group and Environment

The fellow will join a dynamic and internationally oriented research environment within the **Department of Political and Social Sciences (DSPS)**.

The hosting environment is characterised by ongoing research activities on the **consequences of political violence in Italy during the 1970s and 1980s**, as well as by recent work based on **survey experiments in Mali**, analysing local support for international military interventions. A new research line on **European rearmament** further expands the scope of the group's activities.

These projects provide opportunities for both **advanced quantitative analysis and original data collection**, allowing the fellow to engage directly with empirical research.

The department also benefits from strong internal complementarities, with expertise in **peacekeeping, post-conflict development, and electoral behaviour**, and is part of a newly established **inter-university centre on conflict studies and international security**, in collaboration with the Universities of Bologna, Genova, and Milan. This creates a solid platform for **collaboration, mobility, and international networking**.

The fellow will be supported in developing an independent research agenda aligned with these themes, benefiting from **mentoring, regular seminars, and training in quantitative methods, academic writing, and grant development**, alongside opportunities for **teaching and international collaboration**.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Research Proposal

Internal Expression of Interest Deadline: 15 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Stefano Costalli at: stefano.costalli@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Transnational Families, Gender, and Intersectionality in a Mobile World

Project Overview and Research Vision

Contemporary migration processes are deeply shaped by inequalities related to gender, class, race, and generation. This project focuses on the **gendered dimensions of transnational migration**, examining how power relations unfold across the interface between **public and private spheres** through an intersectional perspective.

The research welcomes projects that explore themes such as **migrant and transnational families**, the **sociology of emotions**, **intra-European mobility**, and the processes of **citizenship and identity formation**. Particular attention is also given to **racialisation and “othering” processes**, as well as to the **politicisation of family diversity** and social movements related to gender and migration.

Methodologically, the project places strong emphasis on **ethnographic, comparative, and multi-sited research designs**, supporting analyses that capture the complex interactions between **gender, race/ethnicity, class, and generation**. This approach enables an in-depth understanding of how inequalities are produced, negotiated, and transformed in transnational contexts.

The fellowship offers the opportunity to develop an independent research profile in the field of **migration, gender, and social inequalities**, within a research environment that combines theoretical reflection with empirically grounded qualitative research.

Supervisor Profile: Professor Elisabetta Zontini

The selected fellow will be mentored by **Elisabetta Zontini**, Associate Professor of Sociology at the University of Florence.

Her research focuses on the **gendered aspects of transnational migration**, adopting an intersectional perspective to analyse power relations across social domains. Her work has addressed topics such as the **transformation of European families**, **care work**, **practices of citizenship**, and the **impact of Brexit on migrants**, primarily through **ethnographic and comparative research designs**.

She holds a PhD from the University of Sussex and has held research positions at institutions including the University of Oxford and the University of Nottingham. She is actively involved in international academic networks and serves as **Associate Editor of *Families, Relationships and Societies*** and as a member of the editorial boards of *Sociology* and the book series *Global Migration and Social Change*.

Research Group and Environment

The fellow will be integrated into the **Sociology group** within the Department of Social and Political Sciences (DSPS).

The research environment is characterised by a strong focus on **qualitative and ethnographic research**, with expertise in the study of migration, families, and social inequalities. The group is

embedded in **international research networks**, providing opportunities for collaboration and academic exchange.

The hosting context supports innovative approaches to **multi-layered social analysis**, encouraging projects that connect micro-level experiences with broader social and political processes. The fellow will benefit from an environment that values **methodological rigor in qualitative research** and engagement with contemporary debates on migration, citizenship, and social change.

The fellowship includes support for developing an independent research agenda, alongside opportunities for **publishing, international networking, and participation in academic events**, in line with the supervisor's strong editorial and international profile.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the "2.3.2. Recruited researchers" section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Brief Research Proposal

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Elisabetta Zontini at: elisabetta.zontini@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

W-Motion - Women in Motion: Migration and Silent U.S. Cinema

Project Overview and Research Vision

The early U.S. film industry, prior to the rise of Hollywood, was characterised by a geographically and socially diverse production landscape in which women played a significant—yet often overlooked—role. This project focuses on recovering and analysing the **contribution of migrant women to early American cinema**, with particular attention to the production hub of **Fort Lee, New Jersey (1907–1920)**.

During this period, Fort Lee hosted more than twenty studios where women—many of them immigrants—worked not only as actresses, but also as **directors, editors, and screenwriters**. Despite this presence, their creative and technical contributions have remained largely marginalised in film historiography.

The project aims to address this gap through **archival research and historiographical reconstruction**, contributing to a more comprehensive understanding of early cinema as a site of **migration, labour, and gendered participation**. It places particular emphasis on the recovery of **invisible or under-documented forms of work**, and on the relationship between mobility and cultural production.

The fellowship offers the opportunity to develop an independent research profile at the intersection of **film studies, migration history, and gender studies**, with a strong focus on primary sources and archival methodologies.

Supervisor Profile: Professor Cristina Landelli

The selected fellow will be mentored by **Cristina Landelli**, Full Professor at the SAGAS Department.

Her research focuses on **cinema and women's studies**, with particular expertise in **international silent cinema and early film pioneers**, as well as in **Italian and global film history**.

Her work is characterised by a sustained engagement with the role of women in the film industry, and by a strong connection to international research initiatives in early cinema studies.

Research Group and Environment

The fellow will be integrated into an **international research network** connecting the University of Florence and **Columbia University**, where the outgoing phase of the fellowship will be hosted, followed by the return phase in Florence.

The project is closely linked to the **Women Film Pioneers Project**, providing a well-established framework for archival research on women in early cinema and for engagement with ongoing historiographical debates.

At the University of Florence, the fellow will be based at the **Multimedia Lab (SAGAS, via Capponi)**, with access to digital and audiovisual facilities, including **Virtual Reality tools**, supporting both research and dissemination activities.

The hosting environment combines **archival research expertise, digital tools, and international collaboration**, offering a setting in which historical investigation and methodological innovation can be effectively integrated.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter

Internal Expression of Interest Deadline: 13 May 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Cristina Iandelli at: cristina.iandelli@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Whose Liberty? Slavery, the Past, and the Atlantic World

Project Overview and Research Vision

The eighteenth-century Atlantic world was marked by intense debates on **liberty, slavery, and rights**, shaped by the circulation of ideas across Europe, Africa, and the Americas. This project investigates how **political languages and uses of the past** were mobilised and reinterpreted within this interconnected context.

The research focuses on how **classical, religious, and historical frameworks** were adapted by different actors—including **non-European voices**—to engage with the political and moral challenges of the Atlantic crisis. By examining texts, images, and practices, the project explores how concepts such as liberty, authority, and rights were negotiated across diverse cultural and geographical settings.

Particular attention is given to the **global circulation of ideas** and to the role of intellectual exchange in shaping debates on slavery and emancipation. By integrating European and non-European perspectives, the project contributes to current historiographical discussions on **global and inclusive histories of political thought**.

The fellowship offers the opportunity to develop an independent research profile at the intersection of **intellectual history, global history, and Atlantic studies**, with a strong emphasis on comparative and interdisciplinary approaches.

Supervisor Profile: Professor Giovanni Tarantino

The selected fellow will be mentored by **Giovanni Tarantino**, Associate Professor at the University of Florence.

His research focuses on **early modern intellectual and cultural history (c. 1600–1800)**, with particular attention to **political languages, religious dissent, and the circulation of ideas across European and Atlantic contexts**.

His work examines how concepts such as liberty, authority, and toleration were shaped through **texts, images, and practices**, combining intellectual history with the **history of emotions and global history**.

As a mentor, he supports fellows in developing **interdisciplinary and comparative research approaches**, fostering independent and internationally competitive research profiles.

Research Group and Environment

The fellow will be hosted within **GLOBHIS (Interuniversity Center for Global History Studies)**, a leading research network established in 2019 by the Universities of Florence, Trieste, Piemonte Orientale, and Tuscia.

GLOBHIS promotes research on **intercultural relations from the early modern to the modern period (16th–20th centuries)**, with a strong focus on global connections between **Italian, European, and extra-European contexts**.

The centre provides a **dynamic international and interdisciplinary environment**, offering access to:

- extensive academic networks and collaborative partnerships
- seminars, conferences, and advanced training activities
- major **library and archival collections**
- **digital humanities tools and publishing platforms**

This setting enables the integration of **archival research, comparative analysis, and digital methodologies**, while supporting both scholarly and public-facing dissemination.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Research Proposal

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Giovanni Tarantino at: giovanni.tarantino@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Competition Policy and Regulation in Digital Markets in the age of AI

Project Overview and Research Vision

Digital markets are characterised by **platform-based competition, data-driven strategies, and increasing reliance on artificial intelligence**. These developments raise fundamental questions for competition policy and regulation, particularly regarding **market power, consumer behaviour, and the design of regulatory frameworks**.

This project investigates how AI and digital technologies are reshaping competitive dynamics in markets characterised by **two-sided platforms, big data, and algorithmic interactions**. Key research directions include the impact of AI on market power, the regulation of digital media and information (including issues related to fake news), and the modelling of merger effects in environments where users and firms engage in **multi-homing and platform competition**.

Methodologically, the project operates at the intersection of **industrial organization, applied economic theory, and econometrics**, with a strong emphasis on the development and application of **structural models**. The aim is to provide rigorous, evidence-based insights into how digital markets function and how policy can effectively address emerging challenges.

The fellowship offers the opportunity to develop an independent research profile in **competition economics and digital market regulation**, combining theoretical modelling with empirical analysis.

Supervisor Profile: Professor Lapo Filistrucchi

The selected fellow will be mentored by **Lapo Filistrucchi**, Full Professor at the Department of Economics and Management.

His research focuses on the **economics, competition policy, and regulation of digital markets**, with internationally recognised expertise in the **law and economics of two-sided markets**.

His work combines **applied economic theory, econometrics, and legal analysis**, including the development of **structural econometric models to estimate merger effects** and contributions to the theory and practice of **market definition in platform environments**.

His recent research also addresses the economics of **data collection, algorithmic price discrimination, and AI-driven market dynamics**.

Research Group and Environment

The fellow will be integrated into the **Department of Economics and Management**, within a research environment active in **industrial organization and digital market analysis**.

The group includes scholars working on digital markets and industrial organization, and is complemented by collaborations with leading international institutions, including:

- the **University of Bologna**
- the **Joint Research Centre (JRC) of the European Commission in Sevilla**
- the **Centre for Digital Society at the European University Institute (EUI)**

A distinctive strength of this hosting environment is access to a **unique dataset on online users' consumption of digital news**, developed in collaboration with Bologna and JRC-Sevilla.

The research setting combines **theoretical modelling, empirical analysis, and policy-relevant applications**, fostering work at the interface between economics and regulation.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the "2.3.2. Recruited researchers" section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Research Proposal (draft outline)
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Lapo Filistrucchi at: lapo.filistrucchi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Decoding Market Dynamics: Heterogeneity, High-Frequency Data & Economic Networks

Project Overview and Research Vision

Understanding how **heterogeneous agents interact within financial networks** and how these interactions generate systemic risk is a central challenge in contemporary economics. This project addresses this issue by focusing on the analysis of **financial interconnections, investor behaviour, and high-frequency market dynamics**.

The research aims to investigate how **heterogeneous behavioural rules and investor sentiment** influence price formation and the propagation of shocks, with particular attention to **interbank markets and financial networks**. By combining high-frequency data with network-based approaches, the project explores how local interactions scale into **macro-level instability and systemic risk**.

Methodologically, the project integrates **agent-based modelling, statistical ensemble methods, econometric estimation, and large-scale computational simulations**. This framework allows for the analysis of **non-linear dynamics, evolving network structures, and shock transmission mechanisms** in complex economic systems.

The fellowship offers the opportunity to develop an independent research profile at the intersection of **computational economics, network analysis, and financial modelling**, within a research environment that combines theoretical and data-driven approaches.

Supervisor Profile: Professor Leonardo Bargigli

The selected fellow will be mentored by **Leonardo Bargigli**, Full Professor of Economics.

His research focuses on the analysis of **complex economic systems**, with particular emphasis on **financial and credit networks, interbank markets, and systemic risk**. His work combines **computational simulations, network-based modelling, and statistical methods** to study how economic shocks propagate across interconnected systems.

He has contributed to the development and calibration of **network-based financial models** and to the application of **statistical ensemble models** for analysing economic and financial networks. His research also investigates the role of **heterogeneous expectations and investor sentiment** using high-frequency data.

Research Group and Environment

The fellow will be integrated into a **highly interdisciplinary research environment** within the Department of Economics and Management.

The hosting context includes:

- The **NETBHEE Lab (Network, Behavioral, Heterogeneity and Evolution in Economics)**, focusing on heterogeneous agents and their interactions in economic systems

- The **Center for the Study of Complex Dynamics (CSDC)**, an interdepartmental research hub connecting Economics with Physics, Mathematics, and Engineering

This environment provides access to **advanced computational resources, large-scale datasets, and interdisciplinary expertise**, supporting research on complexity, networks, and economic dynamics. The fellow will benefit from close interaction with researchers working on **network science, nonlinear dynamics, and high-frequency econometrics**.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Short Project Proposal (draft outline)
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Leonardo Bargigli at: leonardo.bargigli@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

AI-Driven Digital Heritage: 3D Reconstruction, Analysis and Innovation for Cultural Heritage

Project Overview and Research Vision

The reconstruction and interpretation of cultural heritage assets through digital technologies is an increasingly relevant challenge at the intersection of engineering, computer vision, and the humanities. This project focuses on the development of **AI-driven methodologies for generating 2.5D and 3D representations from paintings and visual artworks**.

The research investigates the use of **generative AI and foundation models** to reconstruct geometrically and semantically consistent representations, enabling the creation of **digital twins for cultural heritage applications**. By integrating **computer vision, neural rendering, and geometric modelling**, the project aims to advance methods for the analysis, conservation, and digital exploration of artworks.

Particular attention is given to the development of approaches that ensure **physical plausibility, semantic consistency, and interoperability** of reconstructed models, supporting applications in diagnostics, conservation, and immersive environments.

The fellowship offers the opportunity to develop an independent research profile in a multidisciplinary context combining **artificial intelligence, digital modelling, and cultural heritage engineering**.

Supervisor Profile: Professor Rocco Furferi

The selected fellow will be mentored by **Rocco Furferi**, Full Professor at the Department of Industrial Engineering.

His research focuses on the integration of **reverse engineering, 3D vision systems, and additive manufacturing** for product and process innovation. He develops **computational and AI-based methodologies** for modelling, simulation, and optimization across industrial, biomedical, and cultural heritage applications.

His approach combines **experimental validation, digital modelling, and technology transfer**, with strong involvement in European and industry-driven projects, and extensive experience in supervising multidisciplinary research.

Research Group and Environment

The fellow will join the **ReVIP Lab (Reverse Engineering, Computer Vision, Rapid & Virtual Prototyping)** at the Department of Industrial Engineering, University of Florence.

The lab is a multidisciplinary research group working on **digital manufacturing and AI-driven engineering applications**, with expertise in 3D vision, reverse engineering, additive manufacturing, and data-driven modelling. The research environment is characterised by strong integration between methodological development and applied research, with ongoing involvement in major national and European initiatives such as PNRR CHANGES and Tuscany Health Ecosystem. The lab provides access to advanced infrastructure, including 3D scanning systems, RGB-D sensors, additive manufacturing technologies, and high-performance computing tools, and operates in close collaboration with

museums, healthcare institutions, and industrial partners, enabling access to real-world datasets and experimental validation environments

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Rocco Furferi at: rocco.furferi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

AI-Driven Edge-to-Cloud Continuum for Integrated 6G Terrestrial and Non-Terrestrial Networks (NTN)

Project Overview and Research Vision

This project addresses a key challenge in next-generation communication systems: how to efficiently manage computation and data processing across distributed and heterogeneous 6G environments.

With the growing integration of terrestrial and non-terrestrial networks, including satellite systems, new approaches are required to ensure low-latency and energy-efficient operations. **The project aims to design intelligent strategies for computation offloading and resource allocation across the edge-to-cloud continuum.**

The research will explore the integration of distributed machine learning techniques with edge computing architectures, focusing on real-time processing in decentralized environments. **Applications include smart cities and intelligent transportation systems.**

The fellow will follow a training-through-research pathway combining modelling, simulation, and experimental validation, while developing expertise in distributed AI and emerging 6G technologies.

Supervisor Profile: Professor Daniele Tarchi

The selected fellow will be mentored by **Daniele Tarchi**, Associate Professor at the Department of Information Engineering.

His research focuses on **terrestrial and satellite communication networks**, with particular expertise in the Edge-to-Cloud Continuum, distributed machine learning, and energy-aware computation offloading. His work addresses cross-layer optimization problems in 6G and IoT systems, combining joint computing and communication approaches with latency- and energy-aware strategies .

He has authored more than 170 publications and serves in editorial roles for international journals, while also coordinating national and international research projects, contributing to a collaborative and internationally connected research environment.

Research Group and Environment

The fellow will be hosted by the **Data Communications Networks & Systems Lab (DaCoNetS)** at the Department of Information Engineering, University of Florence.

The lab is a well-established research environment dedicated to **next-generation networking systems**, structured around complementary expertise in data networks and telematics systems. Research activities focus on 6G ecosystems, including Edge-to-Cloud Continuum architectures, AI-enabled networks, IoT/IIoT systems, and integrated terrestrial and satellite networks .

Ongoing projects address application domains such as Smart Cities, intelligent transportation, and emerging communication paradigms, including quantum communications. The lab provides access to advanced computational resources and specialized simulation platforms, as well as experimental

facilities for IoT prototyping and Software Defined Radio testbeds. Dedicated datasets support research in network modelling and distributed machine learning, within a multidisciplinary and internationally connected environment.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (including a full list of publications).
- Motivation Letter (highlighting alignment with research areas).
- Brief Research Statement or Project Outline (1–2 pages).

Internal Expression of Interest Deadline: 31 May 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Daniele Tarchi at: daniele.tarchi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Coupling Geothermal Energy with High-Performance Thermal Storage

Project Overview and Research Vision

This project addresses a key challenge in the transition towards sustainable energy systems: how to enhance the efficiency and flexibility of geothermal energy through advanced thermal storage solutions.

While geothermal systems provide a stable renewable source, their integration into dynamic energy systems remains constrained by performance and energy management limitations. **The project aims to develop innovative strategies to couple geothermal energy with high-performance thermal storage technologies**, improving system efficiency across both heating and cooling applications.

The research will focus on the integration of advanced heat pumps and storage solutions, including thermochemical systems and phase change materials, supported by non-equilibrium thermodynamics and exergy-based analysis. **Particular attention will be devoted to modelling and optimization approaches capable of improving system performance under real operating conditions.**

Within this framework, the fellow will engage in a training-through-research pathway combining experimental validation and advanced numerical modelling, while exploring emerging tools such as Physics-Informed Neural Networks (PINNs).

Supervisor Profile: Professor Lorenzo Talluri

The selected fellow will be mentored by **Lorenzo Talluri**, researcher at the Department of Industrial Engineering.

His expertise lies in the **analysis and optimization of thermal energy systems**, with a strong focus on thermodynamics, heat transfer, and exergy-based performance assessment. His research covers refrigeration technologies, heat pumps, and energy storage solutions, with particular emphasis on **thermochemical and PCM-based systems**.

He has a comprehensive background in geothermal energy applications for both heating and cooling, and his work focuses on the integration of geothermal systems with advanced storage and heat pump technologies to improve efficiency and sustainability. His research also includes **high-temperature heat pumps, CO₂ mixtures, and entropy generation analysis**, alongside emerging modelling approaches such as PINNs.

Research Group and Environment

The fellow will be integrated into the **Thermo Group** at the Department of Industrial Engineering.

The group is dedicated to thermodynamics and heat transfer and has progressively expanded its research towards **energy storage technologies and high-temperature heat pump systems**, alongside modelling and environmental assessment of energy systems. It is actively involved in national and international projects, including Horizon Europe initiatives such as THUNDER and GEOSYN, as well as PRIN projects.

The research environment includes a **well-equipped experimental laboratory**, featuring advanced test benches for the validation of innovative energy storage and heat transfer solutions, as well as facilities for CFD simulations. The team is composed of academic staff, postdoctoral researchers, and PhD students, providing a collaborative and research-oriented setting.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Certifications (if any)

Internal Expression of Interest Deadline: 1 August 2025 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Lorenzo Talluri at: lorenzo.talluri@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Decoding galaxy properties with simulation-based inference

Project Overview and Research Vision

Understanding the physical and kinematic properties of galaxies requires the integration of numerical simulations, observational data, and advanced statistical inference. This project operates at the intersection of these domains, with the aim of developing **simulation-based inference methodologies** for the study of galaxies and their interstellar medium.

The research focuses on combining state-of-the-art models for **spectral energy distributions, chemical composition, photoionization processes, and dynamical properties** with machine learning techniques. In particular, it explores how neural networks can be trained to perform **robust and domain-invariant inference** directly on observational data, reducing the gap between simulations and real-world measurements.

By linking physically grounded modelling with data-driven approaches, the project aims to improve the accuracy and scalability of galaxy property estimation, contributing to ongoing developments in **galaxy evolution studies and computational astrophysics**.

Supervisor Profile: Professor Michele Ginolfi

The selected fellow will be mentored by **Michele Ginolfi**, tenure-track assistant professor at the Department of Physics and Astronomy.

His research focuses on **galaxy evolution**, combining observational data from major facilities such as ALMA, VLT/MUSE, HST, and JWST with machine learning techniques. His work integrates deep learning and computer vision methods to analyse astrophysical data, and extends to interdisciplinary applications in areas such as medical imaging, cultural heritage, and data sonification.

He is also actively involved in teaching Physics, Astronomy, and Data Science, providing a research environment where methodological development and training are closely connected.

Research Group and Environment

The fellow will be integrated into a research group working across the **Department of Physics and Astronomy** at the Scientific Campus in Sesto Fiorentino and the **Arcetri site**, near the Astronomical Observatory.

The group combines **numerical simulations, observational data, and machine learning approaches** to study galaxy evolution. It includes faculty members and researchers from the INAF Astrophysical Observatory of Arcetri and currently hosts several students and postdoctoral researchers.

The team is actively involved in observational programmes with major facilities such as **JWST, VLT, and ALMA**, focusing on the interstellar medium and the interaction between galaxies and active galactic nuclei, both in the nearby Universe and at high redshift.

In addition, the research environment offers opportunities to engage with a broader interdisciplinary network working on artificial intelligence applications, complex systems, and data science.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Short Motivation Letter
- Research Proposal

Internal Expression of Interest Deadline: 01 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Michele Ginolfi at: michele.ginolfi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Deepfake Visual Media Forensics

Project Overview and Research Vision

The rapid development of generative artificial intelligence has made the creation of highly realistic synthetic images and videos increasingly accessible, raising significant concerns related to **media authenticity, disinformation, and digital trust**.

This project addresses these challenges by focusing on the **analysis and detection of AI-generated visual content**, in both controlled laboratory conditions and real-world scenarios. The objective is to develop reliable forensic methodologies capable of operating across heterogeneous and evolving generative frameworks.

The research concentrates on three main directions. A first line of work concerns the **robustness and generalization** of detection methods across different generative architectures. A second focuses on maintaining performance when content undergoes **post-processing or compression on social media platforms**, a key requirement for practical deployment. A third direction explores **open-set attribution**, aiming to identify the generative model responsible for a given piece of content and moving beyond binary detection toward more advanced provenance analysis.

The project combines methodological development with application-oriented research, contributing to current challenges in multimedia forensics and information security.

Supervisor Profile: Professor Alessandro Piva

The selected fellow will be mentored by **Alessandro Piva**, Associate Professor at the Department of Information Engineering and head of the **Multimedia Forensics Laboratory (FORLAB)**.

His research activity focuses on **Information Forensics and Security** and **image and video processing**, with particular attention to deepfake detection and source attribution . His work also includes data hiding, signal processing in the encrypted domain, and the development of multimedia analysis techniques for cultural heritage, medical, and industrial applications .

He has authored more than 200 scientific publications and is an **IEEE Fellow**, reflecting a strong and internationally recognised research profile

Research Group and Environment

The fellow will be integrated into the **Signal Processing and Communications Laboratory (LESC)** and will work in close connection with **FORLAB**.

The research group has long-standing experience in **multimedia processing and protection**, including watermarking, cryptography, signal processing in the encrypted domain, and multimedia forensics . Within this area, the team has developed methods for image and video forgery detection based on the analysis of acquisition, editing, and coding traces, which are directly relevant to the study of synthetic media .

The group has participated in several funded projects, including **UNCHAINED** and **FENCE** (DARPA), and is currently involved in the EU-funded project **DETECTOR** .

This environment provides access to specialised laboratories, datasets, and ongoing research activities in multimedia forensics.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Research Proposal

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Alessandro Piva at: alessandro.piva@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Experimental Research on Battery and Electronic Systems Reliability with AI-based Prognostics in Advanced Measurement Laboratory

Project Overview and Research Vision

This project addresses a critical challenge in modern energy and electronic systems: how to accurately predict reliability and lifetime in complex and data-rich environments.

Lithium-ion batteries and electronic systems are central to a wide range of applications, yet their degradation mechanisms remain difficult to model under real operating conditions. **The project proposes the development of a data-driven framework for reliability assessment and Prognostics and Health Management (PHM)**, combining experimental evidence with advanced modelling approaches.

The research integrates controlled experimental testing—such as accelerated aging and environmental stress—with artificial intelligence techniques for predictive modelling and fault diagnosis. **The objective is to enable accurate lifetime prediction and proactive system monitoring**, improving the safety and performance of energy storage and electronic systems.

Within this framework, the fellow will engage in a training-through-research pathway combining advanced experimental metrology and AI-based modelling, contributing to the development of robust and scalable methodologies in a highly applied research context.

Supervisor Profile: Professor Lorenzo Ciani

The selected fellow will be mentored by Lorenzo Ciani, Full Professor of Measurements and Reliability at the University of Florence.

His research focuses on Reliability, Availability, Maintainability, and Safety (RAMS) of electrical and electronic systems, with a strong emphasis on experimental validation and metrological analysis. His expertise includes the design and implementation of reliability testing procedures—such as ESS, burn-in, HTOL, and accelerated aging—and the development of experimental setups for system characterization across multiple industrial domains, including automotive, biomedical, railway, and energy systems.

He has extensive experience in fault detection and diagnosis, risk and safety assessment (FMECA, FMEDA, FTA, HAZOP), and advanced instrumentation. **His research also covers data-driven Prognostics and Health Management (PHM), with particular focus on Lithium-ion batteries using AI-based approaches**, as highlighted in the supervisor's expertise description .

Research Group and Environment

The fellow will join the Measurement, Reliability and Safety Laboratory (MRS-Lab) at the Department of Information Engineering, University of Florence.

The laboratory provides a highly specialized experimental environment for testing, measurement, and reliability analysis of electrical and electronic systems. **It is equipped with advanced infrastructure**

for battery and system characterization, including multi-channel battery and supercapacitor testing systems, climatic and temperature/humidity chambers, thermostatic ovens for accelerated life testing, and safety-controlled environments.

Measurement capabilities are supported by high-speed data acquisition systems, precision instrumentation, and electrochemical impedance spectroscopy (EIS), alongside additional facilities for vibration testing. **The research group also provides access to extensive datasets derived from real experimental campaigns on batteries and supercapacitors**, enabling the development and validation of data-driven and AI-based models.

The environment is strongly collaborative and application-oriented, with active links to industry and participation in joint laboratories, offering a stimulating setting for interdisciplinary and impact-driven research.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV) (including a full publication list)
- Short Research Proposal (optional, max 2 pages)
- Motivation Letter (1–2 pages) outlining research interests and fit with the topic
- Contact details of at least two referees

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Lorenzo Ciani at: lorenzo.ciani@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

From Single Agents to Trustworthy AI Ensembles: Software Architecture for LLM-Based Multi-Agent Systems

Project Overview and Research Vision

The increasing shift from single AI agents to complex, interacting systems raises fundamental questions about how such architectures can be designed, evaluated, and trusted.

In this context, the project explores how Large Language Model (LLM)-based multi-agent systems can be systematically architected and assessed. As these systems become more widespread in real-world applications, ensuring their reliability, maintainability, and long-term sustainability becomes a central challenge.

The research focuses on the definition of **quality models, architectural patterns, and empirical evaluation methods** to support the development of robust agentic AI systems operating in software-intensive environments.

Supervisor Profile: Dr. Roberto Verdecchia

The selected fellow will be mentored by Roberto Verdecchia, a software engineering researcher at the University of Florence.

His research focuses on the use of empirical methods to improve software development and system evolution, with particular attention to software architecture, technical debt, software sustainability (including Green AI), and software testing.

Methodologically, his work combines **quantitative approaches—such as controlled experiments, repository mining, and source code analysis—with qualitative methods including grounded theory, focus groups, and ethnographic studies** .

His research is characterized by a strong emphasis on methodological rigor and on the applicability of results to real-world software systems.

Research Group and Environment

The fellow will be hosted by the Software Technologies Lab (STLab) at the Department of Information Engineering.

STLab conducts research at the intersection of formal and empirical software engineering, with focus areas including software architecture, technical debt, empirical methods, real-time and safety-critical systems, and edge-to-cloud computing. **The lab combines scientific rigor with strong industrial relevance**, maintaining active collaborations with both academic and industry partners .

The research group is currently involved in several ongoing projects, including RESTART (digital twins for telecommunications), ADVENTURE (railway systems evaluation), AISS (AI-based service management), and QUASAR (Industry 4.0). It also operates SWARM Lab, a joint industry–academia laboratory.

The environment provides access to empirical datasets, software analysis tools, and facilities for model-driven engineering and quantitative system evaluation, supporting both theoretical and applied research.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (including a full publication list).
- Motivation Letter (max. 1 page, explaining fit with the project).
- Research Statement (max. 2 pages, outlining the vision for the project).
- Two Reference Letters from academic supervisors or collaborators.

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Roberto Verdecchia at: roberto.verdecchia@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Generative Methods for 3D Human Face and Body

Project Overview and Research Vision

Recent advances in generative models have achieved remarkable realism in 2D image domains, while comparable progress in 3D and non-Euclidean representations remains more limited.

This project addresses this gap by focusing on the development of generative models for **non-Euclidean data structures**, such as point clouds, meshes, and graphs, applied to the modelling of the human face and body.

A central challenge lies in extending these models to the **temporal domain**, enabling the generation of coherent and realistic dynamic sequences over time. In this perspective, the research aims to disentangle spatial and temporal components, improving both the interpretability and controllability of generated outputs, while maintaining consistency and realism.

The project is positioned at the intersection of **geometric deep learning and generative AI**, with a strong application-oriented dimension. On the one hand, it addresses analytical tasks such as identity and expression recognition and medical analysis (including applications in pain detection, stroke recovery, and neurodegenerative disease monitoring). On the other, it supports the generation of realistic and controllable 3D human representations for use in virtual reality, human–avatar interaction, and digital media.

The fellowship offers a research environment where **methodological development and application-driven research are closely integrated**, supporting the fellow in building an independent profile in AI-driven 3D vision.

Supervisor Profile: Prof. Stefano Berretti

The selected fellow will be mentored by **Stefano Berretti**, Associate Professor in Computer Engineering at the University of Florence.

His research focuses on **Artificial Intelligence and 3D Computer Vision**, with particular attention to the modelling and analysis of human faces and bodies in non-Euclidean domains. His work spans generation, recognition, and interpretation of 3D data, as well as shape analysis, segmentation, and classification.

He has published extensively in leading international venues such as **CVPR, ECCV, and TPAMI**, contributing to the advancement of AI methods for geometric data.

Research Group and Environment

The fellow will be integrated into the **Media Integration and Communication Center (MICC)**, a specialised research centre within the Department of Information Engineering.

The research group works on the development of **AI and computer vision methods for geometric data**, combining theoretical modelling with application-oriented research. Current activities include 3D shape analysis, generative modelling of faces and human behaviour, and reconstruction techniques based on approaches such as 3D Morphable Models.

The environment provides a **technically strong and collaborative setting**, where different strands of research—from generative AI to geometric learning—are brought together within a coherent framework.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (including a full publication list).
- Motivation Letter

Internal Expression of Interest Deadline: 20 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Stefano Berretti at: stefano.berretti@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Human-Centric Manufacturing Systems for Industry 5.0: Skills, Adaptability and Technology Integration

Project Overview and Research Vision

The transition towards Industry 5.0 highlights the need to rethink the role of human operators within advanced manufacturing systems.

This project focuses on the design and implementation of **human-centred manufacturing environments**, where human contribution is not treated as a constraint but as a key resource for improving system performance, resilience, and sustainability.

The research investigates how production systems can be configured to better support **skills development, adaptability, and informed decision-making**, with particular attention to the interaction between workers and digital technologies. Rather than viewing automation as a substitute for human activity, the project explores how human involvement can be integrated as a strategic component of industrial processes.

Within this framework, the research aims to develop **models, methods, and support tools** applicable to real manufacturing contexts. These may include approaches to enhance human–technology interaction, facilitate competence development, and support adaptive work organisation. Specific technological enablers—such as AI-based support systems or digital representations of human activity—may be considered as part of a broader human-centred perspective.

A strong emphasis is placed on the **practical relevance of the research**, with validation through modelling, simulation, and case-based or industry-oriented applications.

The fellowship offers a research environment where **methodological development and applied industrial research are closely integrated**, supporting the fellow in building an independent profile in the field of Industry 5.0 and human-centric manufacturing.

Supervisor Profile: Prof. Romeo Bandinelli

The selected fellow will be mentored by **Romeo Bandinelli**, Associate Professor in Management Engineering at the University of Florence.

His research lies at the intersection of **product lifecycle management (PLM), supply chain and innovation management, and digital transformation**, with a particular focus on human-centred manufacturing systems.

His work combines methodological and applied perspectives, especially in industrial contexts such as the fashion and luxury sectors. He is co-founder of the **IT4Fashion conference** and of the university spin-off **Balance**, and actively contributes to the **IFIP WG 5.1 community** on product lifecycle management.

Research Group and Environment

The fellow will be integrated into research activities carried out within the **Agricola** and **Fashion for Future** labs in Florence.

The group operates at the intersection of **advanced supply chain management and digital transformation**, combining modelling approaches with applied industrial research. Activities include simulation modelling, data analytics, IoT integration, and the development of digital solutions for manufacturing and logistics systems.

Current projects provide a concrete research context, including initiatives on:

- predictive models and data-driven optimisation for supply chains,
- integration of AI and IoT to improve climate resilience in manufacturing,
- blockchain-based traceability in production systems.

The environment offers a **practice-oriented and collaborative setting**, with strong links to industrial applications and ongoing projects, allowing the fellow to combine theoretical contributions with real-world validation.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (including a full publication list).
- Motivation Letter (max. 1 page, explaining fit with the project).
- Research Statement (max. 2 pages, outlining the vision for the project).
- Two Reference Letters from academic supervisors or collaborators.

Internal Expression of Interest Deadline: 31 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Romeo Bandinelli at: romeo.bandinelli@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Isogeometric Modeling and 4D Printing of Patient-Specific Shape-Changing Biomedical Devices

Project Overview and Research Vision

The integration of advanced computational mechanics and additive manufacturing is opening new possibilities for the design of adaptive biomedical devices.

This project focuses on the development of an **isogeometric analysis (IGA)-based computational framework** for the simulation and optimization of smart, shape-changing structures integrated with 4D printing technologies.

The research targets **patient-specific biomedical applications**, with particular attention to cardiovascular devices such as adaptive stents. By combining high-fidelity numerical modelling with optimization strategies, the project aims to enable the design of structures tailored to individual anatomical geometries and functional requirements, with the goal of improving performance and reducing post-treatment complications.

Within this framework, the research will explore the interaction between **computational modelling, advanced manufacturing, and material behaviour**, contributing to the development of robust and predictive design methodologies for adaptive systems.

The fellowship offers the opportunity to work in a setting where **theoretical modelling and experimental validation are closely connected**, supporting the development of an independent research profile in computational mechanics and biomedical engineering.

Supervisor Profile: Prof. Enzo Marino

The selected fellow will be mentored by **Enzo Marino**, Associate Professor of Solid and Structural Mechanics at the University of Florence.

His research focuses on **nonlinear computational mechanics and advanced numerical methods**, with a particular emphasis on **isogeometric analysis (IGA)**. His work addresses the modelling of complex, shape-changing structures, with applications in smart systems and advanced materials.

Recent research activities include the development of computational approaches for **patient-specific 4D-printed cardiovascular devices**, combining structural mechanics with advanced manufacturing technologies.

Research Group and Environment

The fellow will be integrated into a research group based at the **Department of Civil and Environmental Engineering**, within a multidisciplinary environment covering structural, environmental, hydraulic, and geotechnical engineering.

The group's activities focus on **computational and structural mechanics**, with applications to smart structures, nonlinear dynamics, biomechanics, and advanced manufacturing, including 4D printing. Current research includes the development of isogeometric computational methods integrated with additive manufacturing for patient-specific biomedical devices.

The research environment provides access to dedicated facilities, including:

- **3D printing technologies** (FDM and laser-based systems)
- **Dynamic Mechanical Analysis (DMA)** equipment for material characterization

This setting enables the integration of **numerical modelling and experimental validation**, supporting both methodological development and application-oriented research.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV): Maximum 2 pages.
- Motivation Letter: Maximum 1 page.
- References: Contact details of two referees.

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Enzo Marino at: enzo.marino@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Multiplexed 3D spatial biology of cancer

Project Overview and Research Vision

Spatial biology is rapidly transforming cancer research, yet current approaches remain largely limited to two-dimensional analysis.

This project aims to extend light-sheet microscopy to enable **multiplexed imaging of more than ten molecular targets in three dimensions**, opening new possibilities for high-content spatial analysis of cancer tissues.

The proposed approach is based on a **combinatorial color-coding strategy**, in which each molecular marker is associated with a unique combination of fluorescent tags. This framework introduces two main challenges. On the **chemical side**, current whole-mount immunostaining protocols need to be extended to support multiple markers per antibody. On the **computational side**, it is necessary to design coding schemes that avoid signal overlap and ensure reliable interpretation.

The fellow will contribute to one of these two directions—**biochemical or computational**—while interacting closely with the rest of the team. The overall objective is to advance current methodologies in 3D histology and move towards **scalable, high-dimensional spatial biology**.

The fellowship provides an opportunity to work at the interface of **optics, chemistry, and data analysis**, within a research framework that combines methodological development with application to complex biological systems.

Supervisor Profile: Prof. Ludovico Silvestri

The selected fellow will be mentored by **Ludovico Silvestri**, Associate Professor at the Department of Physics and Astronomy.

His research focuses on **3D high-resolution imaging of intact biological tissues using light-sheet microscopy**, integrating chemical, optical, and computational methods. His work spans applications from whole mouse brains to human cancer samples, with the aim of decoding the structural complexity of biological systems.

He is also co-founder of the spin-off **Clepio Biotech**, reflecting a strong orientation toward technological development and translation.

Research Group and Environment

The fellow will join the **Laboratory of Systems Biophotonics**, an international and interdisciplinary research group.

The team includes a senior scientist, an MSCA Global Fellow, a postdoctoral researcher, and several PhD and post-master researchers. The group is actively involved in international collaborations, including projects with **IPMC-CNRS (France)** and the **University of Bern**, focused on neuroscience and 3D cancer characterization .

The laboratory provides access to advanced experimental infrastructure, including **two custom-made light-sheet microscopes** dedicated respectively to whole-brain imaging and multiplexed imaging of cleared samples.

The environment combines **method development and application-driven research**, with strong integration into international networks across Europe and the United States.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae
- Motivation Letter

Internal Expression of Interest Deadline: 01 August 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Ludovico Silvestri at: ludovico.silvestri@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Operational Excellence and Data-Driven Optimization for Sustainable Industrial Systems

Project Overview and Research Vision

Industrial and logistics systems are under increasing pressure to improve efficiency while reducing waste and supporting more sustainable production models.

This hosting offer focuses on the development of **data-driven and optimization-based methodologies** for the analysis and improvement of complex industrial processes. The research aims to integrate advanced analytics, process modelling, simulation and emerging technologies to support decision-making and enhance operational performance.

The project is positioned within the broader field of **Operational Excellence**, with attention to industrial process optimization, logistics management, performance improvement and sustainable manufacturing. Rather than addressing sustainability as a separate objective, the research considers it as an integral dimension of operational design, where efficiency, value creation and waste reduction are analysed within the same methodological framework.

The fellow will contribute to the development of models, methods or tools capable of supporting organizations in improving production and logistics processes. Research activities may combine quantitative and qualitative approaches, with the aim of producing results that are both methodologically robust and relevant for real industrial contexts.

The fellowship offers the opportunity to build an independent research profile in **data-driven industrial optimization**, within an environment that connects scientific analysis with practical challenges in manufacturing and logistics.

Supervisor Profile: Prof. Filippo De Carlo

The selected fellow will be mentored by **Filippo De Carlo**, Associate Professor at the Department of Industrial Engineering.

His expertise covers **Operations Management, Maintenance Management, Logistics, Sustainability, Production Optimization, Lean Production and Operational Excellence**. His research focuses on the improvement of industrial and logistics processes through the application of structured methodologies, systems analysis and optimization-oriented approaches.

His work is particularly aligned with the development of methods that support organizations in increasing value, reducing waste and achieving high operational standards in complex production environments.

Research Group and Environment

The fellow will be hosted by the **OE-STAR – Operational Excellence: Systems, Technology, Analysis & Research** group, based at the Department of Industrial Engineering in Viale Morgagni, Florence.

The group promotes research in **Operational Excellence** through the development and application of advanced methodologies for industrial process optimization, logistics management and performance

improvement. Its approach combines systems analysis, data-driven methods, emerging technologies and rigorous research to support sustainable innovation in complex industrial contexts .

The research environment provides access to computational tools, industrial datasets and research facilities within the Department of Industrial Engineering. It also offers opportunities for collaboration with academic and industrial partners, supporting projects that combine methodological development with application-oriented validation.

The fellow will benefit from training in scientific methodologies, project development, dissemination and transferable skills, with opportunities to participate in international conferences, workshops and networking activities.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae
- Motivation Letter
- Research project

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Filippo De Carlo at: filippo.decarlo@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Post-detection scenario reconstruction of Advanced Persistent Threats

Project Overview and Research Vision

Advanced Persistent Threats are among the most difficult cyberattacks to interpret because they are stealthy, long-lasting, and composed of multiple coordinated steps.

This project focuses on the development of strategies for **runtime detection and post-detection analysis** of Advanced Persistent Threats (APTs), with the aim of moving beyond the identification of single malicious events towards the reconstruction of the broader attack scenario.

The research will investigate methods based on **attack graph reconstruction and causality analysis**, enabling the identification of hidden correlations between events and a clearer understanding of the attacker's actions, progression, and acquired privileges within complex infrastructures.

By combining intrusion detection, anomaly detection, and post-event analysis, the project aims to support more effective interpretation of complex attacks and to provide actionable knowledge after detection has occurred.

The fellowship offers the opportunity to work at the intersection of **cybersecurity, dependable systems, anomaly detection, and machine learning**, within a research environment strongly oriented towards experimental validation and collaborative research.

Supervisor Profile: Prof. Andrea Ceccarelli

The selected fellow will be mentored by **Andrea Ceccarelli**, Associate Professor at the Department of Mathematics and Computer Science "Ulisse Dini".

His research focuses on the design and assessment of **dependable and secure systems**, including systems-of-systems, with a strong preference for experimental approaches. In recent years, his work has also addressed the security and safety of AI systems, particularly through the analysis of their behaviour under anomalous inputs and the definition of countermeasures.

His current research is strongly connected to **intrusion detection systems, anomaly detection, and machine learning-based approaches** for the identification of complex threats, including Advanced Persistent Threats .

Research Group and Environment

The fellow will join the **Resilient Computing Lab (RCL)**, affiliated with the Department of Mathematics and Computer Science "Ulisse Dini".

RCL conducts research and experimentation on **dependable and secure systems, infrastructures, and systems-of-systems**. Its activities include the design and experimental assessment of reliable, safe, and secure computer-based systems; quantitative evaluation of dependability, security, and quality of service; and applications of trustworthy AI and machine learning, especially anomaly detection, in critical systems .

The lab has more than ten years of experience in intrusion detection, anomaly detection, and the creation of related datasets. It provides access to **high-performance servers for machine learning training** and robotic equipment for proof-of-concept activities in cyber-physical systems. The fellow will work in a collaborative environment with daily interaction among professors, researchers, postdocs, and students.

The group is involved in regional, national, and European collaborative projects and maintains active links with universities and companies, offering opportunities for scientific exchange, applied validation, and interaction with external partners.

Training opportunities include technical training through relevant master-level courses and summer schools on security and dependability, as well as soft-skills training, including project management, through PhD-level activities.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Research Proposal

Internal Expression of Interest Deadline: 1 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Prof. Andrea Ceccarelli at: andrea.ceccarelli@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Recharging the future in DC with AI

Project Overview and Research Vision

The large-scale integration of renewable energy is reshaping electricity systems, creating new challenges for storage, market design, and system efficiency.

This project explores how **energy storage and AI-driven forecasting** can support the integration of renewable sources into electricity markets. As renewable generation increases, variability and uncertainty affect price formation, grid stability, investment incentives, and long-term system costs. Within this context, storage technologies and predictive analytics can play a key role in improving system management and reducing inefficiencies.

The research will combine **econometric methods, energy system modelling, machine learning, and large-scale energy datasets** to assess the impact of storage deployment and AI-based decision tools on market outcomes. Particular attention will be given to price volatility, investment signals, welfare distribution across producers and consumers, and the role of market design in supporting efficient adoption of storage and intelligent systems.

The project also aims to evaluate how AI-based forecasting and storage technologies can improve renewable integration and reduce curtailment, while considering the regional and distributional implications of these transformations.

The fellowship offers the opportunity to develop an independent research profile at the intersection of **energy economics, renewable energy integration, artificial intelligence, and electricity markets**, contributing to policy-relevant research on the transition towards a more resilient and low-carbon energy system.

Supervisor Profile: Professor Alberto Reatti

The selected fellow will be mentored by **Alberto Reatti**, Full Professor at the Department of Information Engineering, University of Florence.

His research focuses on **power electronics, high-frequency power converters, renewable power sources, wireless power transfer, and the reliability of switching power converters**. His expertise includes high-frequency resonant and pulse-width modulated DC-DC power converters, resonant DC-AC inverters, modelling and control of converters, and high-frequency magnetic devices.

Professor Reatti is also responsible for cultural and scientific cooperation agreements at the Department of Information Engineering. Since 2019, he has been listed among the top 2% most cited researchers worldwide; according to the data provided in the Eol, his profile includes 182 indexed publications, 3,157 citations, and an h-index of 31.

Research Group and Environment

The fellow will join a research group within the **Department of Information Engineering**, operating across the facilities in Via di Santa Marta and Via Alderotti in Florence.

The group includes **Alberto Reatti, Rosa Mastromauro, Fabio Corti, and Gabriele Maria Lozito**, and works on topics related to power electronics, renewable energy systems, electrical engineering, and

measurement technologies. The hosting environment includes the **Power Electronics Laboratory** and the **Electrical Engineering and Measurements Laboratory (LEM)**, with equipment for power electronics testing and access to relevant software tools .

The group is involved in EU-funded projects and interdepartmental collaborations within the University of Florence, providing a research setting where technical expertise in power electronics can interact with broader questions related to renewable integration, storage, and AI-supported energy system management.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Research Proposal (draft outline)

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Alberto Reatti at: alberto.reatti@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Simulation of Multimodal Rolling Stock (Multimodal means hybrid FC. or battery operated trains)

Project Overview and Research Vision

The transition towards more sustainable railway systems requires new approaches to the modelling, simulation and management of hybrid and battery-operated rolling stock.

This project focuses on the simulation of **multimodal railway vehicles**, intended as hybrid fuel-cell or battery-operated trains, with the aim of exploring alternatives to internal combustion engine powered rolling stock.

The research will investigate innovative system architectures and energy management strategies for railway applications, with particular attention to the integration of **on-board storage systems**. These systems can contribute to improving energy efficiency, sustainability and operational performance, especially when combined with appropriate traction and braking control strategies.

Within this framework, the fellow will work on the modelling and simulation of railway traction and braking systems, including hybrid configurations and battery-based solutions. The project may involve the use of real-time simulation approaches and system-level modelling tools to assess performance, support design choices and evaluate energy management criteria.

The fellowship offers the opportunity to develop an applied research profile in **railway mechatronics, sustainable mobility and simulation-based design**, within a research environment closely connected to the railway industrial district in Tuscany and Italy.

Supervisor Profile: Professor Luca Pugi

The selected fellow will be mentored by **Luca Pugi**, Associate Professor at the Department of Industrial Engineering.

His research focuses on the modelling of **mechatronic systems**, with particular expertise in railway traction and braking systems. The Moving/MCUBE lab has consolidated experience in hybrid and battery-operated trains, as well as in the simulation of pneumatic and electro-pneumatic braking systems .

His work also covers sustainable mobility, batteries, smart electro-mechanical systems, Hardware-in-the-Loop simulation and real-time modelling, with a strong application-oriented component linked to railway engineering.

Research Group and Environment

The fellow will be integrated into the **Moving/MCUBE Lab**, a research environment active in mechatronics and railway engineering.

The lab works closely with industrial partners in the railway sector, including **Italcertifer, Trenitalia and Hitachi Rail**, and most PhD students and researchers are involved in activities connected to industrial collaboration. This provides the fellow with direct exposure to an active railway innovation ecosystem in Tuscany and Italy .

The group has access to experimental and simulation facilities, including a test rig for cells in Calenzano and hardware for real-time simulation of Simulink models, such as **dSPACE and CompactRIO RT targets**. The research environment also provides access to software tools including **Matlab-Simulink, Simcenter Amesim, Comsol, Simpack and Altair FEM suite**, as well as shared databases for LCA and sustainability evaluations.

This setting supports research that combines **simulation, experimental validation and industrial relevance**, allowing the fellow to work on railway systems with a clear application-oriented perspective.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Research Proposal (to be refined with the hosting structure)

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Luca Pugi at: luca.pugi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Smart Materials and Wearable Technologies: From Artificial Muscles to Human-Computer Interfaces

Project Overview and Research Vision

Smart materials and additive manufacturing are opening new possibilities for the development of soft, bio-inspired technologies for healthcare and human-computer interaction.

This hosting offer focuses on the use of **smart materials and 3D printing fabrication processes** to develop soft actuators, sensors, and artificial muscle technologies. The research is positioned at the interface of materials science, mechanical engineering, bioengineering, and wearable technologies.

The candidate may develop a project related to one of three main research directions: wearable soft pneumatic actuators for rehabilitation and human-computer interfaces; wearable haptic devices for human-computer interaction; or smart materials and 3D printing approaches for new artificial muscle technologies in tissue engineering.

Across these areas, the common objective is to design and fabricate **functional soft systems** capable of interacting with the human body or supporting biomedical applications. Depending on the candidate's background and research interests, the project may focus more strongly on device design, material development, fabrication processes, or application-oriented validation.

The fellowship offers the opportunity to develop an independent research profile in **smart materials, soft actuation, wearable technologies, and biomedical engineering**, within a specialised research group working on soft matter-based artificial muscles and transducers.

Supervisor Profile: Professor Federico Carpi

The selected fellow will be mentored by **Federico Carpi**, Professor at the Department of Industrial Engineering and head of the **SMART Research Group – Soft Matter ARTificial muscles and Transducers**.

His research focuses on the development of **soft actuators, sensors, and artificial muscle technologies** based on smart materials. His work combines materials, fabrication processes, and device-level engineering, with applications in tissue engineering, rehabilitation technologies, wearable systems, and human-computer interfaces.

Through the SMART Research Group, he provides scientific mentoring for projects that combine **soft matter, additive manufacturing, and bio-inspired engineering**.

Research Group and Environment

The fellow will be integrated into the **SMART Research Group**, based at the Department of Industrial Engineering.

The group develops technologies based on **smart materials and 3D printing** for soft actuators, sensors, and artificial muscles. Its activities cover wearable soft pneumatic devices, haptic interfaces, and artificial muscle technologies for tissue engineering, offering a research environment where materials development and device design are closely connected.

The hosting environment is particularly suitable for candidates interested in translating **functional soft materials** into wearable or biomedical technologies, with the possibility to define the final MSCA project in close dialogue with the supervisor and according to the candidate's expertise.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the "2.3.2. Recruited researchers" section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV) as a PDF file (max size: 5 MB)

Internal Expression of Interest Deadline: 10 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Federico Carpi at: federico.carpi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Software Difficulty Functions and Design Diversity for Machine Learning Classifiers

Project Overview and Research Vision

Machine learning classifiers often rely on diversity to improve reliability, yet the mechanisms through which diversity contributes to better performance remain only partially understood.

This project revisits foundational models of software design diversity and explores how they can be applied to machine learning classification. In particular, the research will consider classical models such as **Eckhardt–Lee, Littlewood–Miller, and Popov–Strigini**, using them as a conceptual basis to analyse difficulty functions, classifier failures, and diversity-seeking decisions.

A distinctive advantage of working with machine learning systems is the possibility of generating large populations of classifiers, making it possible to empirically estimate **difficulty functions**, measure correlations among failures, and systematically assess how different forms of diversity affect classification performance.

The project will also address **reject-enabled classifiers**, namely classifiers equipped with a “do not know” option. From a software architecture perspective, this allows classifiers to be treated as self-checking components, capable of identifying uncertainty and triggering alternative strategies when predictions may be unreliable.

Particular attention will be given to **operational profiles**, since real-world input distributions are rarely balanced and can significantly affect reliability. By connecting empirical machine learning observations with the conceptual foundations of software reliability, the project aims to clarify when diversity helps, when it does not, and how it can be interpreted in view of more trustworthy AI systems.

Supervisor Profile: Dr. Tommaso Zoppi

The selected fellow will be mentored by **Tommaso Zoppi**, researcher at the Department of Mathematics and Computer Science “Ulisse Dini”.

His research focuses on **critical systems design, software reliability engineering, anomaly detection, trustworthy AI, and safety**. His expertise is particularly relevant for projects at the intersection of dependable software systems and machine learning, where reliability, uncertainty, and robustness need to be analysed through both conceptual models and experimental evidence.

His work is connected to the design and evaluation of dependable and secure systems, with attention to the practical implications of trustworthy AI in critical contexts.

Research Group and Environment

The fellow will be integrated into the **Resilient Computing Lab (RCL)**, affiliated with the Department of Mathematics and Computer Science “Ulisse Dini”.

RCL conducts research and experimentation on **dependable and secure systems, infrastructures, and systems-of-systems**. The group is involved in national and European projects, including FESR,

Horizon-JU-CHIPS-2024 and Eureka!-Eurostars initiatives, and collaborates with companies and research institutes such as RFI, ProgressRail, CNR-Pisa and RSE.

The research environment provides a suitable context for work on software reliability, trustworthy AI, anomaly detection, and critical systems. It offers opportunities to connect theoretical modelling with experimental validation and to engage with real-world challenges emerging from collaborative research projects.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Research Proposal
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Tommaso Zoppi at: tommaso.zoppi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Trustworthy Autonomous Trains

Project Overview and Research Vision

The increasing automation of transport systems raises new challenges for safety, security and trustworthiness, particularly in critical infrastructures such as railways.

This project focuses on the development of **methodologies and tools for the model-based trustworthiness assessment of autonomous transport systems**, with specific attention to smart-railway applications.

The research will investigate how autonomous railway systems can be assessed and monitored in terms of safety, reliability and cyber-physical security. Possible directions include model-based risk assessment, safety monitoring, anomaly detection, conformance checking and the use of digital twins to support the analysis of system behaviour in complex operational scenarios.

The objective is to contribute to the design and evaluation of **trustworthy autonomous systems** for next-generation railway infrastructures, supporting the identification of risks, deviations and abnormal behaviours before they compromise system dependability.

The fellowship offers the opportunity to develop an independent research profile at the intersection of **dependable computing, autonomous systems, cyber-physical security and intelligent transportation**, within a research environment connected to ongoing European projects and collaborative activities.

Supervisor Profile: Professor Francesco Flammini

The selected fellow will be mentored by **Francesco Flammini**, Full Professor at the Department of Mathematics and Computer Science “Ulisse Dini”.

His expertise covers **trustworthy autonomous systems, dependable computing, critical infrastructure protection, model-based risk assessment, digital twins, conformance checking, safety monitoring, anomaly detection, cyber-physical security, intelligent transportation, Industrial Internet of Things and smart-railways** .

His research is particularly relevant for projects addressing the safety and security of autonomous systems operating in critical and cyber-physical environments.

Research Group and Environment

The fellow will be integrated into the **Resilient Computing Lab (RCL)**, affiliated with the Department of Mathematics and Computer Science “Ulisse Dini”.

The research activity will be connected to **ongoing EU research projects**, with opportunities for cooperation with other postdoctoral researchers and PhD students . The lab provides a suitable environment for work on dependable computing, trustworthy autonomous systems, safety monitoring and smart-railway applications.

This setting will allow the fellow to combine methodological development with project-based research, engaging with topics related to autonomous transport systems and the trustworthiness of critical infrastructures.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Research Proposal (optional)
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Francesco Flammini at: francesco.flammini@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Urban Food Forests for Climate Adaptation: Tree Physiology and Stress Tolerance in Ornamental and Fruit Species

Project Overview and Research Vision

Urban food forests can contribute to climate adaptation by combining ecosystem services, biodiversity, and local food production within urban green infrastructures.

This project focuses on the **physiological and biochemical responses of trees to abiotic stresses** in urban food forest systems, with particular attention to drought tolerance and species performance under changing environmental conditions.

The research will investigate plant water relations, gas exchange, hydraulic traits and metabolic adaptations, including primary and secondary metabolites. By integrating these approaches, the project aims to identify **resilient ornamental and fruit tree species**, as well as management strategies suitable for urban environments.

A specific emphasis will be placed on tree species that can support multifunctional urban landscapes, where environmental benefits, productivity and climate resilience are considered together. The outcomes are expected to contribute to the design of **climate-resilient urban green infrastructures** that combine ecosystem services with local food production.

The fellowship offers the opportunity to work at the interface of **plant ecophysiology, urban forestry, tree crops and climate adaptation**, combining laboratory-based analyses with field measurements in real urban contexts.

Supervisor Profile: Professor Antonella Gori

The selected fellow will be mentored by **Antonella Gori**, researcher at the Department of Agriculture, Food, Environment and Forestry.

Her expertise includes **plant ecophysiology, tree crops, gas exchange, plant hydraulics, plant physiology, fruit trees, polyphenols, nutraceutical compounds and secondary metabolites**. Her research focuses on physiological and biochemical responses of trees in urban, ornamental and productive systems, with particular attention to abiotic stress and plant–environment interactions.

She is involved in the European LIFE project **RE-CLOAK**, focused on nature-based solutions for climate adaptation. Within this project, she serves as Work Package leader and contributes to the study of tree physiological responses and drought stress tolerance, including work on *Quercus ilex*.

Research Group and Environment

The fellow will join the research group led by **Antonella Gori and Francesco Ferrini** at DAGRI, based in Sesto Fiorentino.

The group works on **tree physiology and biochemistry**, with a focus on trees in urban, ornamental and productive systems, including fruit trees. Its research combines fundamental and applied approaches to understand tree responses to abiotic stress, plant physiological processes and plant–environment interactions.

The research environment provides access to laboratories dedicated to **plant gas exchange measurements, water relations and hydraulic traits**, as well as biochemical analysis platforms including **HPLC-DAD and GC-MS** for the study of primary and secondary metabolites. Additional facilities include laboratories for tree crops and plant sciences, environmental control units, experimental fields, greenhouses and climatic chambers .

The fellow will be able to combine laboratory-based analyses with **field trials and measurements in urban settings**, assessing tree performance under real-world conditions and interacting with ongoing research activities, including PhD projects and international collaborations.

MSCA Eligibility Requirements

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Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Antonella Gori at: antonella.gori@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Contemporary applications of Optimal Transport Problems

Project Overview and Research Vision

Optimal transport theory continues to generate new mathematical questions while providing tools for the analysis of complex models in physics and applied mathematics.

This hosting offer focuses on contemporary developments in **optimal transport**, with particular attention to problems whose structure is still not fully understood. Possible research directions include the study of solutions to **multimarginal optimal transport problems** and L^∞ **optimal transport**, as well as applications of optimal transport techniques to models arising in Density Functional Theory.

A specific line of interest concerns **molecular dissociation in Density Functional Theory**. Several approaches in this area rely on the different scaling properties of the terms appearing in the energy, especially kinetic energy and electron–electron interaction. However, in the Levy–Lieb–Kohn–Sham energy these terms are not separated, which raises challenging mathematical questions and may require tools inspired by optimal transportation.

The project may also address **variational approximations** connected to these problems, contributing to the mathematical analysis of models where convex analysis, Gamma convergence, optimal transport and Density Functional Theory interact.

The fellowship offers the opportunity to develop an independent research profile in **calculus of variations, optimal transport and mathematical aspects of Density Functional Theory**, within an active mathematical environment and in dialogue with international collaborators.

Supervisor Profile: Professor Luigi De Pascale

The selected fellow will be mentored by **Luigi De Pascale**, Full Professor at the Department of Mathematics and Computer Science “Ulisse Dini”.

His research focuses on **calculus of variations, convex analysis, optimal transport, the Monge–Kantorovich problem and Density Functional Theory**. In particular, he works on the structure of solutions to optimal transport problems that are not yet fully understood, including multimarginal and L^∞ transport problems.

His work in Density Functional Theory addresses the relationship between wave-functions and single-particle densities, as well as the role of different choices of electron–electron interaction terms. He also develops variational approximations used across these areas of mathematical analysis.

Research Group and Environment

The fellow will be based at the **Department of Mathematics and Computer Science “Ulisse Dini”** in Florence.

The department hosts several active research groups and provides a lively mathematical environment, with a weekly seminar on Friday afternoons and several international conferences organised each year. Professor De Pascale works mainly with foreign collaborators, including researchers based in **Paris, Toulon, the UK and Canada**, who regularly visit the department.

The fellow will therefore join a research setting that supports interaction with PhD students, postdoctoral researchers and international visitors, offering opportunities for scientific exchange within the broader mathematical community.

MSCA Eligibility Requirements

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Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Luigi De Pascale at: luigi.depascale@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Androgen Receptor–Driven Metabolic Rewiring and Therapy Resistance in Breast Cancer

Project Overview and Research Vision

Therapy resistance remains one of the central challenges in breast cancer research, particularly when tumour cells adapt their metabolism to survive under treatment pressure.

This project focuses on how **androgen receptor signalling** reshapes tumour metabolism and contributes to resistance to anti-cancer therapies in breast cancer. The research will investigate how metabolic reprogramming supports tumour survival and affects responses to treatments such as chemotherapy, PARP inhibitors and hormone-based therapies.

The project will combine **advanced cellular models, genetic perturbation approaches and integrative multi-omics analyses**, including transcriptomics, metabolomics and lipidomics. Through this approach, the fellow will contribute to the identification of metabolic vulnerabilities and predictive biomarkers that may support more effective and AR-directed therapeutic strategies.

The broader objective is to understand how metabolic alterations influence tumour behaviour and therapy response, contributing to the development of **biomarker-driven patient stratification strategies** and precision oncology approaches in solid tumours.

The fellowship offers the opportunity to work at the interface of **cancer metabolism, therapy resistance, multi-omics and translational oncology**, combining experimental work with computational data analysis in a multidisciplinary research environment.

Supervisor Profile: Professor Andrea Morandi

The selected fellow will be mentored by **Andrea Morandi**, Full Professor at the Department of Experimental and Clinical Biomedical Sciences “Mario Serio” and leader of the **Tumor Biochemistry Team (TBT)**.

His research focuses on the role of **metabolic reprogramming in cancer initiation, progression and response to therapy**. In particular, his work investigates how metabolic alterations actively drive tumour behaviour and contribute to resistance to anti-cancer treatments. His expertise includes cancer metabolism, therapy resistance, multi-omics approaches, biomarkers, precision oncology, solid tumours and preclinical models.

His research combines experimental cellular models with bioinformatics and multi-omics data analysis to identify molecular mechanisms underlying therapy resistance and actionable metabolic vulnerabilities.

Research Group and Environment

The fellow will be integrated into the **TBT – Tumor Biochemistry Lab**, a multidisciplinary research group focused on cancer metabolism and therapy resistance.

The team includes staff scientists, postdoctoral fellows, PhD students and computational researchers, enabling close integration between **wet-lab approaches and bioinformatics expertise**. Ongoing

projects investigate metabolic reprogramming in solid tumours, particularly breast cancer, with attention to lipid and amino acid metabolism, ferroptosis sensitivity and endocrine therapy resistance. The laboratory provides access to cellular and molecular biology facilities, preclinical cancer models and integrated multi-omics datasets. It also benefits from clinical collaborations, including with **Careggi Hospital**, and from international research networks supporting translational and patient-oriented studies.

This environment allows the fellow to combine experimental modelling, omics-based analysis and biomarker discovery within a research setting strongly oriented towards translational cancer biology.

MSCA Eligibility Requirements

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Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Research Proposal
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Andrea Morandi at: andrea.morandi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Animal breeding aimed at improving mitigation and adaptation to climate change

Project Overview and Research Vision

Livestock systems are increasingly required to respond to climate change by improving both environmental sustainability and animal resilience.

This hosting offer focuses on the development of **animal breeding approaches aimed at supporting climate change mitigation and adaptation**, with particular attention to livestock selection strategies that can improve heat tolerance and reduce greenhouse gas emissions.

The research may address innovative breeding schemes for cattle, swine or sheep, combining quantitative genetics with environmental and biological information. A specific area of interest concerns the inclusion of **microbial information and host-microbiome interactions** in genetic selection, with the aim of improving the efficiency and sustainability of livestock production systems.

The project is mainly based on **dry-lab research**, with possible field data collection depending on the specific research design. It offers the opportunity to work on methodological developments in livestock selection, while engaging with questions related to climate resilience, biodiversity and sustainable animal production.

The fellowship provides a research environment where **animal science, quantitative genetics and microbiome-informed selection** are connected to current challenges in climate change adaptation and mitigation.

Supervisor Profile: Professor Francesco Tiezzi

The selected fellow will be mentored by **Francesco Tiezzi**, Associate Professor at the Department of Agriculture, Food, Environment and Forestry.

His expertise lies in **animal science, quantitative genetics, microbiome research, greenhouse gas emissions, climate change adaptation and biodiversity**. His research focuses on breeding schemes aimed at improving livestock performance and resilience, with particular attention to mitigation and adaptation strategies in the context of climate change.

A key line of research concerns the study of **host-microbial interactions in livestock** and their possible integration into genetic selection methods.

Research Group and Environment

The fellow will join a research group based at **Via delle Cascine 5, Florence**, active in animal science with a specific focus on animal breeding and quantitative genetics.

The group works on livestock species including **dairy and beef cattle, swine and sheep**, and develops breeding approaches aimed at improving mitigation and adaptation to climate change. Its research is mainly dry-lab based, with some field data collection, and focuses on improving the efficiency of livestock selection methods.

The laboratory offers an English-speaking research environment, with networking opportunities across Europe and the United States. This context is suitable for candidates interested in combining methodological work in quantitative genetics with applied questions in sustainable livestock production.

MSCA Eligibility Requirements

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Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter

Internal Expression of Interest Deadline: 31 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Francesco Tiezzi at: francesco.tiezzi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Antibody-mediated neurological diseases: from mechanisms to precision diagnostics and therapeutics

Project Overview and Research Vision

Antibody-mediated neurological diseases offer a powerful model for studying how immune dysregulation translates into clinical heterogeneity and variable treatment response.

This hosting offer focuses on the study of disorders such as **myasthenia gravis, NMOSD, MOGAD and autoimmune encephalitis**, combining clinical cohorts with translational immunology to better understand disease mechanisms and improve diagnostic and therapeutic strategies.

The project will investigate immune mechanisms, biomarker discovery and treatment stratification through the integration of **single-cell and multi-omics profiling**, functional characterisation of autoantibodies, and clinical data analysis. Particular attention may be given to myasthenia gravis, with the aim of identifying biomarkers of disease heterogeneity and treatment response.

The research will also contribute to the development of **AI-supported multimodal diagnostic strategies**, connecting laboratory data, clinical phenotyping and real-world evidence within a precision medicine framework.

The fellowship offers the opportunity to work at the interface of **clinical neurology, immunology, translational neuroscience and data-driven diagnostics**, contributing to research with direct relevance for patient-oriented care.

Supervisor Profile: Professor Valentina Damato

The selected fellow will be mentored by **Valentina Damato**, Associate Professor at the Department of Neurosciences, Psychology, Drug Research and Child Health.

She is a clinician-scientist in **neuroimmunology**, with expertise in antibody-mediated neurological diseases, including myasthenia gravis, NMOSD, MOGAD and autoimmune encephalitis. Her research integrates clinical cohorts with translational immunology to identify biomarkers, clarify disease mechanisms and advance precision medicine approaches.

Her methodological expertise includes **cell-based assays, flow cytometry, immunocytochemistry, in vitro models and serological profiling**, combined with clinical data analysis and real-world studies. She leads a multidisciplinary programme linking laboratory discoveries to clinical applications, including diagnostic algorithm development and therapeutic stratification.

Research Group and Environment

The fellow will join the **Florence Autoimmune Neurology (FAN) Laboratory**, a translational neuroimmunology research lab integrated within **Careggi Hospital** in Florence.

The FAN Group combines clinical and experimental approaches to study antibody-mediated neurological diseases. It provides access to **large, deeply phenotyped patient cohorts**, advanced laboratory techniques, biobanking, clinical trial infrastructure, neuroimaging resources and national

registries. Ongoing projects focus on biomarker discovery, immune profiling and precision diagnostics in myasthenia gravis and related disorders.

The research environment is multidisciplinary, bringing together clinician-researchers, postdoctoral fellows, PhD students and international collaborators. The fellow will benefit from structured supervision, opportunities for training in advanced laboratory methods and clinical research design, and support in developing an independent research profile within autoimmune neurology and translational neuroscience.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Valentina Damato at: valentina.damato@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Development of predictive models for epilepsy surgery outcomes

Project Overview and Research Vision

Epilepsy surgery can significantly improve outcomes for children with drug-resistant epilepsy, but predicting individual trajectories remains a major clinical challenge.

This hosting offer focuses on the development of **machine learning models for the individualized prediction of seizure and non-seizure outcomes after epilepsy surgery**. The project aims to support clinical decision-making by integrating complex patient-level data and identifying factors associated with post-surgical outcomes.

The research will be positioned at the interface of **paediatric epileptology, clinical neurophysiology, neuroimaging and data-driven modelling**. By developing predictive tools, the project seeks to improve counselling for families and support earlier referrals for surgical evaluation when appropriate.

The fellow will work in a clinical research context where advanced diagnostic data, presurgical evaluation and multidisciplinary expertise can be combined to address a highly relevant problem in paediatric epilepsy care. Depending on the candidate's background, the project may focus on model development, data integration, outcome definition, or validation strategies.

The fellowship offers the opportunity to contribute to research with direct clinical relevance, combining **epilepsy surgery, neurophysiology, neuroimaging and predictive modelling** within a specialised paediatric setting.

Supervisor Profile: Professor Carmen Barba

The selected fellow will be mentored by **Carmen Barba**, Associate Professor of Child Neurology and Psychiatry at the University of Florence and Director of the **Laboratory of Clinical Neurophysiology and Neuropsychology** at Meyer Children's Hospital IRCCS.

Her main area of expertise is **epilepsy surgery**, with a strong focus on paediatric epileptology. She has coordinated or participated in several national and European research projects, including the FP7-funded **DESIRE** project, where she served as work package coordinator and member of the steering committee. More recently, she coordinated a PRIN project on machine learning in epilepsy surgery and a University of Florence-funded project on optical genome mapping in children with drug-resistant epilepsy.

She is also involved in major professional networks in the field, including the **European Reference Network EpiCARE** and the Italian League Against Epilepsy, where she leads the Commission on Epilepsy Surgery.

Research Group and Environment

The fellow will be hosted at the **Clinical Neurophysiology and Neuropsychology Laboratory** at Meyer Children's Hospital IRCCS in Florence.

The laboratory is actively involved in **non-invasive and invasive presurgical evaluation**, including SEEG, in close collaboration with neurosurgeons, neuropathologists and neuroimaging experts. The clinical research environment is based within the Neuroscience and Human Genetics Department at Meyer Children's Hospital IRCCS, an international reference centre for the genetic diagnosis and medical and surgical treatment of rare and complex paediatric epilepsies.

Available facilities include outpatient and inpatient clinics, morphological and functional MRI, neuropsychological tools, long-term EEG monitoring, robot-assisted SEEG and surgery, as well as advanced neuropathology, neurogenetics and neurobiology laboratories for histopathological and genetic studies on different tissues.

This setting offers a strong opportunity to combine **clinical expertise, advanced diagnostic infrastructure and data-driven research**, with training opportunities also supported by the supervisor's role as Director of the Residency School in Child Neurology and Psychiatry at the University of Florence.

MSCA Eligibility Requirements

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Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Research Proposal (draft outline)

Internal Expression of Interest Deadline: 10 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Carmen Barba at: carmen.barba@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Glyconanomaterials for biomedical applications

Project Overview and Research Vision

Glyconanomaterials offer promising opportunities for the development of new tools at the interface of chemistry, nanoscience and biomedicine.

This hosting offer focuses on the design and development of **glyconanomaterials for biomedical applications**, with particular attention to systems that may support cancer-related studies and disease modelling.

The research may involve the synthesis, functionalisation and characterisation of glyco-based nanomaterials and **glycofluorescent probes**, with the aim of exploring their potential use in biomedical contexts. By exploiting the recognition properties of carbohydrates and the functional versatility of nanomaterials, the project can contribute to the development of chemical tools for the study and targeting of biological processes.

Depending on the candidate's expertise, the project may focus more strongly on synthetic chemistry, nanomaterial preparation, probe development, or preliminary biomedical applications. The fellowship offers the opportunity to work in a specialised environment where **carbohydrate chemistry, nanomaterials and biomedical-oriented research** are closely connected.

Supervisor Profile: Professor Barbara Richichi

The selected fellow will be mentored by **Barbara Richichi**, based at the Department of Chemistry "Ugo Schiff" of the University of Florence.

Her research activity is focused on the development of **glyconanomaterials for biomedical applications**, with particular interest in glyco-based systems and glycofluorescent probes. The hosting offer is positioned at the intersection of chemistry and life sciences, with applications related to cancer treatment and disease modelling.

Research Group and Environment

The fellow will be integrated into the **GlycoFluoNano Lab** at the Department of Chemistry "Ugo Schiff". The lab provides a focused research setting for projects on **glyconanomaterials and glycofluorescent probes**, within a department active in chemical research and connected to biomedical application areas. The offer is also associated with the EURAXESS research areas **Chemistry** and **Life Sciences**, and with **EUniWell Arena 1: Health and Well-Being**.

Given the concise information available in the original form, I would avoid adding further claims on infrastructure, specific techniques, collaborations or clinical translation unless confirmed by the supervisor.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and

should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter

Internal Expression of Interest Deadline: 31 May 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Barbara Richichi at: barbara.richichi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Pediatric infections in real life: epidemiology, outcomes, and antibiotic stewardship

Project Overview and Research Vision

Real-world clinical data can provide essential evidence to improve the management of paediatric infections in everyday healthcare settings.

This hosting offer focuses on the epidemiology, clinical outcomes and treatment strategies of common and severe infections in children, with particular attention to **antibiotic use, antimicrobial resistance and antibiotic stewardship**.

The project may be developed as a multicentre or single-centre study using retrospective and/or prospective clinical datasets. Possible areas of investigation include respiratory infections, osteomyelitis, invasive bacterial diseases and other clinically relevant paediatric infections. The research will aim to identify risk factors, describe disease progression and assess treatment outcomes in real-life settings.

A central objective is to support **more appropriate and evidence-based clinical management**, by analysing how children are treated in routine care and how antibiotic strategies can be optimized. Depending on the candidate's background, the project may focus on clinical epidemiology, statistical analysis of longitudinal data, outcome definition, antimicrobial resistance, or stewardship-related interventions.

The fellowship offers the opportunity to work at the interface of **paediatric infectious diseases, clinical epidemiology and antibiotic stewardship**, within a hospital-based research environment with access to real-world clinical data and multicentre research networks.

Supervisor Profile: Professor Elena Chiappini

The selected fellow will be mentored by **Elena Chiappini**, Associate Professor at the Department of Health Sciences and paediatrician with expertise in infectious diseases.

Her research covers common and severe paediatric infections, including respiratory tract infections, osteomyelitis, lymphadenitis, tuberculosis, HIV and invasive bacterial diseases, including *Streptococcus pyogenes*. She applies **clinical epidemiology approaches**, mainly within cohort studies, and uses statistical methods such as mixed-effects models and time-to-event analyses to investigate risk factors, disease progression and treatment outcomes in real-world settings.

She is also involved in the development of national and international guidelines for the management of fever and several paediatric infections, and works on infections in vulnerable populations, including migrant, travelling and internationally adopted children, with attention to screening strategies.

Research Group and Environment

The fellow will join the **Paediatric Infectious Disease Unit** at Meyer Children's Hospital IRCCS in Florence, within a university hospital setting combining clinical activity and research in paediatric infectious diseases.

The research group works on the real-world management of common and severe infections, using mainly retrospective and prospective clinical datasets. Current activities include studies on respiratory, invasive and musculoskeletal infections, antimicrobial resistance and antibiotic use. The group collaborates within national networks and contributes to guideline development.

The environment provides access to clinical data, hospital diagnostic services and basic statistical support, and is suitable for clinical and epidemiological research, including participation in multicentre studies. The fellow will have regular interaction with clinicians and researchers and exposure to a broad range of paediatric infectious disease cases, including cases involving diverse and vulnerable populations.

This setting offers a solid basis for clinically oriented research, with practical skills applicable to both academic and healthcare contexts.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (including a full publication list).
- Short Motivation Letter (max 1 page).
- Brief Research Proposal or project idea (max 2 pages, aligned with the profile).
- Names and contact details of 1–2 referees.
- Up to 2 selected publications (or preprints).

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Elena Chiappini at: elena.chiappini@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Sex and gender-dependent mechanisms in cardiac electrogenesis: an integrated approach

Project Overview and Research Vision

Sex and gender differences play an important role in cardiac electrophysiology and may influence the risk of life-threatening arrhythmias.

This hosting offer focuses on the mechanisms underlying the higher arrhythmogenic risk observed in women, with particular attention to the role of estrogens and to the greater exposure to drug-related side effects, including those associated with hormones, antidepressants and immunosuppressants.

The project will investigate **sex- and gender-dependent mechanisms in cardiac electrogenesis** using relevant ex vivo and in vitro models. The aim is to clarify how hormonal, pharmacological and cellular factors may affect cardiac electrical activity and contribute to arrhythmia susceptibility.

The research will be developed within an integrated framework combining **cardiac pharmacology, electrophysiology, imaging, molecular biology and disease modelling**. Depending on the candidate's background, the project may involve experimental models based on human induced pluripotent stem cells differentiated toward cardiac phenotypes, engineered cardiac tissue, cardiac organoids, ion channel studies, or the analysis of clinically relevant data.

The fellowship offers the opportunity to work at the interface of **cardiac electrophysiology, pharmacology, sex/gender medicine and translational cardiovascular research**, contributing to a better understanding of mechanisms that may support more tailored therapeutic approaches.

Supervisor Profile: Professor Elisabetta Cerbai

The selected fellow will be mentored by **Elisabetta Cerbai**, Full Professor of Pharmacology at the University of Florence.

Her expertise includes **cardiac pharmacology, cardiomyopathies, induced pluripotent stem cells, cardiac organoids, electrophysiology, imaging techniques, spectroscopy, engineered cardiac tissue, ion channels and arrhythmias**.

Her research focuses on cardiac electrophysiology and pharmacology, with particular attention to cellular and molecular mechanisms involved in cardiac electrogenesis and arrhythmogenic risk. Her work combines experimental models, advanced electrophysiological and imaging techniques, and translational perspectives relevant to cardiovascular disease.

Research Group and Environment

The fellow will join the **Laboratory of Cardiac Pharmacology and Electrophysiology** and the **OptoCard Unit (UNIFI-CNR)**, located in Florence.

The research group includes faculty members, technicians, postdoctoral researchers and PhD students, and works in close collaboration with the OptoCard Unit. The laboratories are equipped for **electrophysiological and imaging studies**, including MEA systems, and provide access to animal

facilities, cell culture and molecular biology infrastructures, cytofluorimetry, and BLS2 facilities for cell and animal experiments.

An established collaboration with the local hospital offers the possibility to work with **human cardiac samples from surgery** and clinical data related to relevant cardiac diseases, including hospitalization, drug administration and cardiological diagnoses. The research environment is interdisciplinary, bringing together expertise in biophysics, cell and molecular biology, modelling, imaging, iPSC culture and differentiation, neuron–cardiomyocyte co-cultures, and engineered heart tissue.

This setting will allow the fellow to develop a broad experimental and translational skill set, while working in daily contact with researchers and clinicians from complementary disciplines.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae
- Motivation Letter

Internal Expression of Interest Deadline: 31 May 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Elisabetta Cerbai at: elisabetta.cerbai@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Sustainable intensification in agriculture

Project Overview and Research Vision

Sustainable intensification in agriculture addresses one of the central challenges of contemporary food systems: increasing productivity while reducing environmental pressure and preserving natural resources.

This hosting offer focuses on the development and assessment of agronomic approaches that can improve crop performance under different environmental and management conditions. The research will consider how efficient practices, innovative technologies and improved crop management can support food production while maintaining ecological balance, economic viability and social sustainability.

The project may involve the analysis of crop responses to meteorological, climatic, territorial and farm-level factors, with particular attention to **resource use efficiency, crop productivity and sustainability indicators**. Possible research directions include precision agriculture, remote sensing, modelling, decision support systems, crop phenology, and the evaluation of water and carbon footprints or Life Cycle Assessment approaches.

The fellow will work within an applied agronomic research framework, where experimental field activities, data analysis and modelling can be combined to assess crop growth, development and final yields. The research may also address innovative cultivation systems, including soilless cultivation of vegetables and the introduction of wild species into cultivation.

The fellowship offers the opportunity to develop an independent research profile in **agronomy, agroclimatology, precision agriculture and sustainable crop management**, within a research environment connected to real agricultural contexts and collaborative projects.

Supervisor Profile: Professor Simone Orlandini

The selected fellow will be mentored by **Simone Orlandini**, Full Professor at the Department of Agriculture, Food, Environment and Forestry.

His research focuses on **agronomy, agrometeorology and agroclimatology**, with applications in the agro-environment. His work examines the interactions between soil, atmosphere and crops, and analyses agronomic techniques that can enhance positive factors while reducing risks such as diseases, frost and erosion.

A significant part of his research concerns modelling and information technology in agriculture, particularly the development of **decision support systems** for farm management and land-use planning. His work also addresses climate variability and climate change through trend analyses, vulnerability assessments, mitigation and adaptation strategies, and impact evaluations on major crops.

Research Group and Environment

The fellow will be integrated into the **Agronomy Laboratory** at DAGRI, located in Florence.

The laboratory studies the relationships between crops, environmental factors and agronomic techniques, with research activities covering plant ecophysiology, growth, development and yield formation under different meteorological, climatic, territorial, farm and management conditions. It also works on precision agriculture, remote sensing, modelling and positioning systems, as well as soilless cultivation and field experiments on major herbaceous and tree crops.

The research environment provides access to instruments and data resources for agronomic and environmental analysis, including SPAD, planimeter, ceptometer, TDR sensors, pH/conductivity meter, oximeter, colorimeter, radiometer, portable gas analyser, crop and pedoclimatic databases, satellite imagery and a multispectral camera. The laboratory also benefits from collaborations with public institutions, research centres and private companies, supporting field trials across different agricultural contexts.

This setting allows the fellow to combine **experimental research, modelling, remote sensing and sustainability assessment**, with the aim of producing results applicable to real-world agricultural systems.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Research Proposal

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Simone Orlandini at: simone.orlandini@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Targeting Metabolic Vulnerabilities in Cholangiocarcinoma Stem Cells to Overcome Therapy Resistance

Project Overview and Research Vision

Cholangiocarcinoma remains a challenging liver malignancy, in part because cancer stem cells can contribute to tumour progression, relapse and resistance to therapy.

This hosting offer focuses on the study of **metabolic vulnerabilities in cholangiocarcinoma stem cells**, with the aim of identifying mechanisms that sustain tumour growth and therapeutic resistance.

The project will investigate how **cancer stem cells and metabolic reprogramming** contribute to disease progression and treatment failure. By integrating single-cell omics, patient-derived organoids and functional assays, the research aims to identify metabolic dependencies that may represent novel therapeutic targets.

A key objective will be to connect experimental models with clinically relevant questions, using patient-derived systems and translational approaches to better understand how tumour metabolism influences relapse and resistance. Depending on the candidate's expertise, the project may focus on single-cell data analysis, organoid-based modelling, functional validation of metabolic pathways, or the identification of candidate targets for metabolism-based therapeutic strategies.

The fellowship offers the opportunity to work at the interface of **translational cancer biology, liver malignancies, tumour metabolism and precision oncology**, within a research environment combining molecular approaches, patient-derived models and clinical collaborations.

Supervisor Profile: Professor Chiara Raggi

The selected fellow will be mentored by **Chiara Raggi**, Associate Professor at the University of Florence. Her research focuses on **liver cancer biology and translational oncology**, with particular expertise in cholangiocarcinoma. Her work investigates the role of cancer stem cells, metabolic reprogramming and microenvironmental interactions in tumour progression and therapy resistance.

Her scientific background includes international research experience at the **National Cancer Institute** in the United States and at **Istituto Clinico Humanitas** in Milan. Her laboratory combines molecular and cellular approaches with clinically relevant models, providing a suitable environment for projects aimed at identifying mechanisms and targets with translational potential.

Research Group and Environment

The fellow will be integrated into the research group led by **Chiara Raggi** at the Department of Experimental and Clinical Medicine, based at the **Centro Polivalente Cubo 2**.

The group works on **translational cancer biology**, with a specific focus on liver malignancies such as cholangiocarcinoma. Ongoing projects investigate cancer stem cells, tumour metabolic reprogramming and microenvironmental interactions as drivers of tumour progression and therapy resistance.

The laboratory provides access to molecular and cellular biology facilities, including cell culture systems, **3D tumour models such as organoids and spheroids**, advanced imaging, flow cytometry and omics-based analyses. The group also benefits from clinical collaborations that enable access to patient-derived samples and datasets, as well as institutional core facilities supporting genomics, bioinformatics and preclinical research.

This environment allows the fellow to combine **experimental work, omics-based analysis and translational validation**, interacting with clinicians, biologists and data scientists within a collaborative research setting.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV), including a full publication list
- Motivation Letter (max. 1–2 pages) outlining research interests and career goals
- Brief Research Proposal (optional, 1–2 pages) aligned with the proposed topic
- Contact details of 2 referees (or reference letters, if available)

Internal Expression of Interest Deadline: 1 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Chiara Raggi at: chiara.raggi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

The involvement of phase separation in the mechanisms of onset of neurodegenerative diseases

Project Overview and Research Vision

Protein misfolding and aggregation are central processes in several neurodegenerative diseases, including Alzheimer's disease, Parkinson's disease and amyotrophic lateral sclerosis.

This hosting offer focuses on the role of **liquid-liquid phase separation (LLPS)** in the formation of amyloid fibrils and other protein aggregates associated with neurodegenerative disorders. The project aims to investigate how phase separation processes may influence the transition of proteins from soluble states to misfolded aggregates, and how these aggregates contribute to cellular dysfunction.

The research will combine **biophysical studies using purified proteins** with in vitro approaches based on cell culture models. Particular attention will be given to the mechanisms by which soluble proteins assemble into ordered aggregates and to the cellular effects of the resulting species, especially early-forming oligomers.

The project is positioned within a broader research framework addressing **mechanisms of disease pathogenesis, biomarker identification and drug discovery**. Depending on the candidate's expertise, the work may focus more strongly on protein biophysics, LLPS analysis, aggregation kinetics, cellular toxicity, or the interaction between aggregates and cellular environments.

The fellowship offers the opportunity to work at the interface of **chemistry, biophysics, biochemistry, molecular biology and cell biology**, contributing to the study of fundamental mechanisms involved in protein misfolding diseases.

Supervisor Profile: Professor Fabrizio Chiti

The selected fellow will be mentored by **Fabrizio Chiti**, Full Professor at the Department of Experimental and Clinical Biomedical Sciences "Mario Serio".

His research focuses on **protein misfolding and aggregation** in neurodegenerative and protein deposition diseases. The group studies diseases such as Alzheimer's disease, Parkinson's disease and amyotrophic lateral sclerosis, using approaches from chemistry, biophysics, biochemistry, molecular biology, cell biology and pharmacology.

His work addresses the mechanisms through which soluble proteins form ordered aggregates, including amyloid fibrils and amyloid-like inclusions, and how these species contribute to cellular dysfunction. Particular attention is given to early aggregate species, which are often especially relevant for toxicity.

Research Group and Environment

The fellow will join the **Laboratory for the Study of Protein Misfolding Diseases**.

The laboratory adopts a multi-angle approach to investigate protein folding, aggregation and toxicity. Experimental work includes molecular biology and biochemical methods for gene manipulation and

protein purification, together with biophysical techniques for the characterization of folding and aggregation processes.

The research environment provides access to techniques including **turbidimetry, intrinsic and dye-associated fluorescence, FRAP and 3D-FRAP, circular dichroism, FTIR spectroscopy, static and dynamic light scattering, microfluidics, plate readers, stopped-flow devices and electron microscopy**. Infrastructures for protein engineering and high-throughput purification of protein variants are also available.

Studies on the interaction between protein aggregates and cells are supported by protocols assessing cell viability, oxidative stress, calcium homeostasis, apoptosis and colocalisation with protein markers. The laboratory uses confocal microscopy, superresolution STED microscopy, FACS and brightfield microscopy, while additional techniques such as NMR, AFM, SAXS, cryo-EM and molecular dynamics simulations are accessible through established collaborations.

The group has an international research atmosphere and active collaborations with laboratories in several countries, including the United Kingdom, the United States, Belgium, the Netherlands, Spain and others. This setting allows the fellow to combine **experimental training, international collaboration and mechanistic research** on protein misfolding diseases.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV).
- Very brief Motivation Letter (maximum 500 characters).

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Fabrizio Chiti at: fabrizio.chiti@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

The real impact of Microbiome-Immunity axis in Human Diseases

Project Overview and Research Vision

The microbiome–immunity axis is increasingly recognised as a key factor in the regulation of human health and in the development of inflammation-related diseases.

This hosting offer focuses on the mechanisms through which the **microbiome modulates human immune responses**, with particular attention to conditions such as cancer, autoimmune diseases, infections and neurodegenerative disorders.

The project is framed within the concept of **Circular Health**, which considers humans as holobionts: complex biological systems interconnected with their environment. From this perspective, the research may address the dysregulation of the microbiota–immunity axis across different contexts, including human, animal, plant and environmental microbial niches.

The aim is to contribute to a better understanding of how microbial ecosystems interact with immune function and how these interactions may influence disease onset, progression or response to treatment. Depending on the candidate's profile, the project may focus on clinical research, immune profiling, microbiome-related mechanisms, analytical methods, or the development of diagnostic approaches.

The fellowship offers the opportunity to work at the interface of **immunology, microbiome research, cancer biology, autoimmunity and translational biomedical research**, within a setting that connects academic research with broader health and environmental perspectives.

Supervisor Profile: Professor Amedeo Amedei

The selected fellow will be mentored by **Amedeo Amedei**, Full Professor at the Department of Experimental and Clinical Medicine.

His research focuses on **cancer immunology** and on the role of the **microbiota–immunity axis** in inflammation-related diseases, particularly cancer, autoimmunity and neurodegenerative disorders. More recently, his research interests have also expanded to micro- and nanoplastics and their possible impact on human health.

His expertise includes adaptive immunity, T cells, microbiome research, microbiome–immunity interactions, cancer, autoimmune diseases and neurodegenerative diseases. His profile also reports an extensive scientific production and a strong citation record.

Research Group and Environment

The fellow will be integrated into **MIA-LAB – Microbiome-Immunity Axis Lab**, dedicated to the study of the microbiome–immunity axis in human health.

MIA-LAB focuses on the role of microbiome–immunity interactions in inflammation-related conditions, including cancer, autoimmune diseases, infections and neurodegenerative disorders. The laboratory adopts a **Circular Health** perspective and has established a joint research framework involving the

Department of Experimental and Clinical Medicine, the Department of Agriculture, Food, Environment and Forestry, and Synbiotec Laboratories.

The lab aims to develop analytical methods with applications in clinical research, agri-food analysis and agronomic practices. Its activities are oriented towards the study of complex microbial ecosystems across human, animal, plant and environmental contexts, with possible applications in diagnostic platforms, product development and research-driven innovation.

This environment offers the fellow the possibility to work in an **interdisciplinary research setting**, connecting immunology and microbiome science with clinical, environmental and applied perspectives.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae
- Motivation Letter

Internal Expression of Interest Deadline: 02 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Amedeo Amedei at: amedeo.amedei@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

The Role of Schwann cells In Chronic Pain

Project Overview and Research Vision

Chronic and neuropathic pain conditions remain difficult to treat, partly because the cellular mechanisms that sustain persistent pain are still not fully understood.

This hosting offer focuses on the role of **Schwann cells and neuron–glia interactions** in chronic pain, with particular attention to neuro-immune mechanisms and female-prevalent pain conditions, such as endometriosis-associated pain.

The project will investigate how non-neuronal cells, hormonal modulation and inflammatory pathways contribute to the maintenance of persistent pain. Particular attention will be given to the role of **Schwann cells**, TRP channel signalling, neuroinflammation and oxidative stress in modulating nociceptive signalling.

The research will integrate **in vivo and in vitro approaches**, including rodent disease models, behavioural pain assays, molecular techniques and translational studies involving patient-derived samples. Depending on the candidate's background, the project may focus on molecular mechanisms, gene manipulation strategies, transcriptomic profiling, inflammatory pathways, or the identification of sex-specific therapeutic targets.

The fellowship offers the opportunity to work at the interface of **neurobiology, pain research, molecular biology and translational medicine**, contributing to the study of mechanisms that may inform more targeted approaches to chronic pain.

Supervisor Profile: Professor Francesco Delogu

The selected fellow will be mentored by **Francesco De Logu**, Associate Professor at the Department of Health Sciences.

His expertise focuses on **neurobiology and pain research**, with particular attention to the cellular and molecular mechanisms underlying chronic and neuropathic pain. His work integrates in vivo and in vitro approaches, including rodent models of disease, behavioural pain assays and advanced molecular techniques.

He has specific expertise in **gene manipulation strategies**, including AAV vectors and RNA interference, transcriptomic profiling, inflammatory and oxidative stress pathways, and neuron–glia interactions. His research also links preclinical findings with patient-derived samples and clinical data, supporting a translational approach to pain biology.

Research Group and Environment

The fellow will join the **Laboratory of Clinical Pharmacology and Experimental Oncology** at the Department of Health Sciences.

The research group investigates the cellular and molecular mechanisms of pain, with a specific focus on **neuron–glia interactions** and the role of non-neuronal cells in chronic and neuropathic pain conditions. Ongoing projects explore the contribution of Schwann cells to pain across different disease

models, including genetic disorders, inflammatory conditions and cancer-associated pain, with emphasis on TRP channel signalling and neuroinflammation.

The laboratory provides facilities for molecular biology, cell culture and biochemistry, as well as dedicated infrastructure for in vivo studies, including rodent behavioural assays for pain assessment. The group has expertise in viral vector design, gene silencing, transcriptomic analysis and flow cytometry, and benefits from clinical collaborations that enable the integration of patient-derived samples.

This environment allows the fellow to combine **mechanistic experimental research and translational perspectives**, with training in molecular, cellular and in vivo approaches relevant to chronic pain and sex-specific pain conditions.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Research Proposal
- Motivation Letter

Internal Expression of Interest Deadline: 27 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Francesco Delogu at: francesco.delogu@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Translational Immuno-Oncology in Genitourinary Cancers: Biomarkers and Novel Therapeutic Strategies

Project Overview and Research Vision

Genitourinary cancers increasingly require treatment strategies that integrate clinical evidence, biomarker research and translational oncology.

This hosting offer focuses on the identification and validation of **predictive biomarkers of response and resistance to immunotherapy-based combinations** in genitourinary cancers, including renal, urothelial and prostate cancer.

The project will integrate **clinical data, real-world evidence and translational analyses**, including pharmacogenetics, to support more accurate patient stratification and treatment selection. Particular attention may be given to immunotherapy, targeted therapies, combination approaches such as immuno-TKI strategies, and the management of treatment-related toxicities.

The research aims to contribute to **biomarker-driven therapeutic strategies** in genitourinary oncology, connecting clinical questions with translational methods and routinely collected data. Depending on the candidate's background, the project may focus on clinical study design, real-world data analysis, biomarker validation, pharmacogenetic approaches, or the integration of clinical and biological datasets.

The fellowship offers the opportunity to work at the interface of **medical oncology, precision oncology, immunotherapy and translational research**, within a clinical-academic environment connected to patient care and ongoing research activities.

Supervisor Profile: Professor Giandomenico Roviello

The selected fellow will be mentored by **Giandomenico Roviello**, Associate Professor in Medical Oncology at the University of Florence and clinical oncologist at **AOU Careggi**.

His research focuses on **clinical and translational oncology**, with particular expertise in genitourinary cancers, including renal, urothelial and prostate cancer. His work integrates clinical data, biomarker discovery and therapeutic strategies, with attention to immunotherapy, targeted therapies and combination approaches, including immuno-TKI treatments.

He has experience in retrospective and prospective clinical studies, real-world evidence generation, meta-analyses, clinical trial design, biostatistics and translational research, with a growing interest in pharmacogenetics and treatment-related toxicity.

Research Group and Environment

The fellow will be based at the **Medical Oncology Unit, University of Florence and Careggi Hospital**, and at the **CUBO Research Center** in Florence.

The research group integrates clinical oncology and translational research, with ongoing projects on **biomarkers of response and resistance to immunotherapy and targeted therapies** in genitourinary cancers, as well as on treatment-related toxicities. Current activities include retrospective and

prospective clinical analyses, real-world data studies and collaborative translational research initiatives.

The environment provides access to **well-annotated clinical databases, institutional registries and biobanked biological samples**. It also includes clinical trial units, data management and biostatistics support, and collaborations with molecular biology and genomics laboratories within the university network.

This setting allows the fellow to combine **clinical research, real-world evidence and translational biomarker analysis**, working within a multidisciplinary context where clinical questions can be connected to molecular and pharmacogenetic approaches.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Research Proposal
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Giandomenico Roviello at: giandomenico.roviello@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Spline spaces in Banach spaces

Project Overview and Research Vision

Spline functions are a central tool in numerical analysis, widely used for approximation problems and for the numerical solution of differential equations.

Traditionally, splines are defined as piecewise polynomial functions on finite-dimensional spaces. This hosting offer explores a more general question: whether and how spline theory can be extended to **infinite-dimensional domains**, with particular attention to Banach spaces.

The project aims to contribute to the development of a theoretical framework for **spline spaces beyond the classical finite-dimensional setting**. Such a framework may open new directions in approximation theory and numerical methods, including the possible extension of isogeometric approaches from Partial Differential Equations to Functional Differential Equations.

The research will focus on two main objectives: building a spline theory in non-classical settings and assessing its effectiveness in suitable applications. Depending on the candidate's background, the project may address theoretical aspects of approximation in Banach spaces, the construction of spline-like spaces, or numerical applications related to differential problems.

The fellowship offers the opportunity to work in **numerical analysis, approximation theory, spline functions and isogeometric analysis**, within a mathematical environment with established expertise and international connections in spline research.

Supervisor Profile: Professor Cesare Bracco

The selected fellow will be mentored by **Cesare Bracco**, Associate Professor at the Department of Mathematics and Computer Science "Ulisse Dini".

His research focuses on **spline theory** and its applications to data approximation and the solution of Partial Differential Equations. In recent years, he has worked on spline spaces on partially unstructured meshes, including **T-splines, LR-splines and hierarchical splines**, which allow local refinement and are suitable for adaptive methods in data approximation and PDEs through the isogeometric approach.

His broader research interests also include scattered data interpolation, approximation in Banach spaces, discontinuity detection, fractal interpolation and approximation.

Research Group and Environment

The fellow will join the **Numerical Analysis Group** at the Department of Mathematics and Computer Science "Ulisse Dini".

The group currently includes four faculty members, one research fellow and one PhD student, and is connected to a broad network of international collaborations. Its members are often involved in national and international research projects, providing a suitable environment for scientific exchange in numerical analysis and approximation theory.

The department also provides access to a local computing server for heavier numerical computations. The fellow will benefit from interaction with researchers who have long-standing international experience in spline theory and from access to their scientific networks.

This setting supports research that combines **theoretical development and numerical experimentation**, with potential applications to approximation problems and differential equations.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Research Proposal
- Motivation Letter

Internal Expression of Interest Deadline: 9 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Cesare Bracco at: cesare.bracco@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Bio-inspired Machine Learning: training dynamical systems for classification and regression

Project Overview and Research Vision

Artificial neural networks have achieved remarkable results, but their training still relies largely on learning strategies that differ substantially from biological processes.

This hosting offer focuses on the development of **bio-inspired dynamical models** that can be trained to perform classification and regression tasks through learning strategies beyond the conventional back-propagation paradigm.

The project aims to bridge the gap between artificial neural networks and neuroscience by exploring models that are both biologically inspired and computationally efficient. The trained systems will be analysed using tools from **network theory, dynamical systems and out-of-equilibrium statistical mechanics**, with the aim of understanding how apparently intelligent behaviour emerges in artificial systems.

The research is positioned within the broader field of **complex systems physics**, with applications ranging from neuroscience to machine learning. Depending on the candidate's background, the project may focus on model development, learning dynamics, theoretical analysis, numerical simulations, or the interpretation of trained models through physical and network-based approaches.

The fellowship offers the opportunity to work at the interface of **physics of complex systems, explainable machine learning, dynamical systems and neuroscience**, contributing to the development of learning models inspired by biological mechanisms.

Supervisor Profile: Professor Duccio Fanelli

The selected fellow will be mentored by **Duccio Fanelli**, Full Professor at the Department of Physics and Astronomy.

His research focuses on the **physics of complex systems**, with applications ranging from neuroscience to biology. His expertise includes stochastic modelling, the role of noise in complex systems, the theory of complex networks, and novel approaches to explainable machine learning based on the tools of dynamical systems and statistical mechanics.

His current research interests are particularly aligned with the development of theoretical and computational approaches that connect artificial intelligence, biological inspiration and the physics of complex dynamical systems.

Research Group and Research Environment

The fellow will be based at the **Department of Physics and Astronomy**, at the Sesto Fiorentino Science Campus.

The research group works on interdisciplinary applications of physics across fields ranging from biology to neuroscience. A recent research direction focuses on bridging artificial neural networks and

neuroscience, with the aim of developing **bio-inspired and computationally efficient approaches to optimisation and learning**.

The Department of Physics and Astronomy is connected with several research institutes in the Florence area, including **LENS, CNR-INO, CNR-IFAC, CNR-ISC, INFN-Florence, INAF-Arcetri Astrophysical Observatory and INRIM**. It also hosts or is connected to research infrastructures and centres such as the **Chianti Multi-functional Observatory** and the **Interdepartmental Center for the Study of Complex Dynamics (CSDC)**.

This environment will allow the fellow to work within an interdisciplinary setting where physics, complex systems, machine learning and neuroscience can interact, with opportunities for theoretical development, computational work and scientific exchange.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter
- Research Proposal (draft outline)

Internal Expression of Interest Deadline: 31 May 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Duccio Fanelli at: duccio.fanelli@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Cooper quartets in hybrid superconducting devices

Project Overview and Research Vision

Hybrid superconducting devices provide a promising platform to investigate many-body quantum states that emerge beyond conventional superconducting pairing.

This hosting offer focuses on the theoretical study of **Cooper quartets** in hybrid superconducting devices. While conventional superconductivity is based on the pairing of electrons, Cooper quartets involve correlated aggregates of four electrons and are connected to the possibility of charge-4e superconducting behaviour.

The project will investigate systems composed of **quantum dots coupled to normal and superconducting leads**, brought out of equilibrium. This platform has been proposed as a setting where quartet correlations may emerge and where their signatures can be theoretically analysed.

A central objective will be to develop and assess **measurement protocols** capable of identifying quartet correlations in a clear and controlled way. Particular attention will be given to phenomena associated with microwave radiation, including **Shapiro steps** and photon-assisted quartet correlations.

The fellowship offers the opportunity to work in **theoretical condensed matter physics, hybrid superconducting systems, solid-state quantum devices and quantum many-body physics**, contributing to the study of correlations that may also have connections with quantum simulation and cold atom systems.

Supervisor Profile: Professor Luca Chirulli

The selected fellow will be mentored by **Luca Chirulli**, researcher at the Department of Physics and Astronomy.

He is a quantum physics theorist working at the interface of **condensed matter physics, nanoscience and quantum technologies**. His research focuses on solid-state quantum devices, superconducting hybrid systems, quantum simulations, novel states of matter and quantum many-body systems.

His work includes superconducting qubits and qutrits, semiconductor–superconductor hybrid devices, quantum material-based devices, topological states of matter and many-body correlations, with both fundamental and applied perspectives related to quantum simulation and quantum computing.

Research Group and Research Environment

The fellow will join the theoretical research group led by **Luca Chirulli** at the Department of Physics and Astronomy, Polo Scientifico di Sesto Fiorentino.

The group is currently working on **Cooper quartets in hybrid superconducting devices** and includes three postdoctoral researchers, together with PhD and Master's students supervised or co-supervised by the PI. The research activity is theoretical and focuses on quantum physics of solid-state devices, condensed matter and nanoscience.

The broader research environment offers connections with the Department of Physics and Astronomy and with the Florence area's strong quantum physics and cold atom research community. The candidate will also benefit from access to the supervisor's academic network and from administrative support for EU-funded research.

This setting is suitable for candidates with a background in **theoretical condensed matter physics**, interested in many-body correlations, hybrid superconducting platforms and out-of-equilibrium quantum phenomena.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the "2.3.2. Recruited researchers" section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Motivation Letter

Internal Expression of Interest Deadline: 31 May 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Luca Chirulli at: luca.chirulli@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Quantum Computing Enhanced Learning and Sensing of Physical Data

Project Overview and Research Vision

Quantum technologies are opening new ways to process, learn from and sense physical data.

This hosting offer focuses on the use of **quantum computers coupled to physical systems** to explore whether quantum-enhanced methods can extract relevant features from real-world physical data more efficiently or more effectively than classical approaches.

The project may investigate physical sensing platforms connected to quantum information processing devices, such as **optical sensors coupled to photonic quantum computers** or **microwave sensors coupled to transmon-based quantum computers**. The broader aim is to study possible forms of quantum advantage in learning and sensing tasks, with applications that may include Radar/Lidar systems, dark matter detection, health screening, and the identification of quantum phases of matter.

The research will draw on methods from **quantum computing, quantum machine learning, quantum sensing, quantum communication and quantum many-body physics**. Depending on the candidate's profile, the project may focus on theoretical modelling, quantum programming, tensor network methods, statistical learning, or the analysis of quantum-enhanced sensing protocols.

The fellowship offers the opportunity to work in a research area connecting **quantum information science, physical data analysis and quantum sensing**, contributing to the development of methods for extracting information from complex physical systems.

Supervisor Profile: Professor Leonardo Banchi

The selected fellow will be mentored by **Leonardo Banchi**, Associate Professor at the Department of Physics and Astronomy.

His expertise includes **quantum computing, quantum simulation, quantum machine learning, quantum many-body physics, quantum communication, quantum key distribution, tensor network methods and statistical learning**.

His research is particularly aligned with projects that combine theoretical quantum information, learning methods and the characterisation of quantum systems, including the exploration of potential quantum advantage.

Research Group and Environment

The fellow will be based at the **Sesto Fiorentino Science Campus**, within the Department of Physics and Astronomy.

The research group works on **quantum computing and sensing**, with attention to superconducting and photonic platforms, quantum communication networks and quantum machine learning methods. The group is connected with European and Italian research networks and has experience in PRIN and EU-Horizon projects.

The environment will allow the fellow to engage with quantum machine learning approaches used both for the characterisation of quantum systems and for investigating possible quantum advantage. Training may include quantum programming, theoretical modelling, tensor network methods, project development, scientific communication and interaction with academic and industrial collaborators.

This setting is suitable for candidates interested in working at the interface of **quantum technologies, machine learning and sensing of physical data**, within an international and collaborative research context.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Short Research Proposal (optional)
- Motivation Letter

Internal Expression of Interest Deadline: 30 June 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Leonardo Banchi at: leonardo.banchi@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Quantum Simulation and Computing with Two-Electron Ultracold Atoms

Project Overview and Research Vision

Two-electron ultracold atoms offer a versatile platform for exploring quantum simulation, quantum many-body physics and atom-based quantum computing.

This hosting offer focuses on experimental atomic physics and quantum technologies, using **strontium and ytterbium atoms** to investigate quantum simulation and computing in optical lattices and optical-tweezer arrays.

The research may be developed along three main experimental directions. In the **Yb laboratory**, the fellow may work on quantum simulation with ultracold Fermi gases in optical lattices, including multicomponent Fermi-Hubbard models with SU(N) interactions, synthetic magnetic fields and the Hall effect in synthetic dimensions. In the **Sr Tweezer laboratory**, the project may address Ising and Heisenberg-type spin models, transport physics in 1D, 2D and 3D topologies, controlled dephasing and long-range Rydberg interactions. In the **Yb Tweezer laboratory**, the research may focus on atom-based quantum computation using nuclear-spin qubits, single- and multi-qubit gates, Rydberg interactions for fast gate switching and quantum error correction schemes.

The fellowship offers the opportunity to work in **experimental quantum science**, combining ultracold atoms, optical lattices, programmable optical tweezers and Rydberg physics. Depending on the candidate's profile, the project may focus on quantum simulation, many-body physics, quantum-enhanced metrology or quantum computation.

The final MSCA project can be jointly developed with the candidate, matching their original research ideas with the group's current experimental platforms and research plans.

Supervisor Profile: Professor Leonardo Fallani

The selected fellow will be mentored by **Leonardo Fallani**, Professor of Physics at the University of Florence and Research Associate at the **European Laboratory for Nonlinear Spectroscopy (LENS)** and the **National Institute of Optics (CNR-INO)**.

His expertise lies in **experimental atomic physics, high-precision spectroscopy, ultracold quantum gases, quantum simulation with atoms in optical lattices and optical tweezers, and disordered atomic systems**. He leads an experimental group investigating ultracold quantum gases of two-electron atoms for many-body quantum physics.

His work includes new approaches to interacting SU(N) fermions and the first realisation of a **synthetic dimension** to study the Hall effect in interacting Fermi gases. Since 2020, he has led two laboratories focused on optical-tweezer arrays of single strontium and ytterbium Rydberg atoms for analog quantum simulation of spin models and atom-based quantum computing.

Research Group and Environment

The fellow will join the **Ultracold Quantum Gases Group** at the Department of Physics and Astronomy, in collaboration with **LENS** and **CNR-INO**, at the Sesto Fiorentino Science Campus.

The group operates three experimental laboratories dedicated to complementary approaches in quantum simulation and computing. The **Yb lab** traps ultracold Fermi gases in optical lattices to realise quantum simulators of multicomponent Hubbard models and of the Hall effect, using synthetic dimensions and high-resolution optical control. The **Sr Tweezer lab** explores spin models with long-range interactions and multipartite entanglement in a programmable array of Rydberg strontium atoms in optical tweezers. The **Yb Tweezer lab** develops quantum computation with programmable optical tweezers, arbitrary gate sequences and Rydberg interactions for fast gate switching.

The PI is supported by four senior researchers — **Dr. Jacopo Catani, Dr. Vladislav Gavryusev, Dr. Luca Tanzi and Dr. Jacopo Parravicini** — who contribute to the leadership of the experimental teams. The group has experience in project writing, including successful ERC and MSCA-PF applications, and will support candidates in the development of their proposals.

This environment is suitable for candidates with a background in **ultracold atoms, experimental physics and precision measurements**, interested in developing research at the interface of quantum simulation, Rydberg physics and quantum computing.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV) with a list of publications
- Research Proposal idea
- Motivation Letter

Internal Expression of Interest Deadline: 11 August 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Leonardo Fallani at: leonardo.fallani@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]

Testing gravitational physics with atomic quantum sensors

Project Overview and Research Vision

Atomic quantum sensors provide highly precise tools to investigate fundamental questions in gravitational physics and quantum physics.

This hosting offer focuses on the use of **cold atoms and atom interferometry** for precision measurements and tests of gravitational physics. The project may address several research directions, including the measurement of the Newtonian gravitational constant with cold atoms, the development of advanced atom interferometers based on entangled strontium atoms, atom interferometry using optical clock transitions, and precision measurements on anti-hydrogen within the ALPHA experiment at CERN.

The research is positioned at the interface of **atomic physics, quantum sensing, precision measurement and fundamental physics**. By exploiting rubidium and strontium atom interferometers, as well as techniques involving squeezing and entanglement, the project aims to contribute to experimental tests of gravity and to the development of next-generation quantum sensors.

A further line of research concerns **antimatter**, with particular attention to anti-hydrogen measurements carried out in the framework of the ALPHA experiment at CERN. This provides a complementary route to investigate fundamental physics through precision experiments.

The fellowship offers the opportunity to work in **cold atom physics, atom interferometry, optical atomic clocks and gravitational quantum physics**, within a research environment connected to major experimental facilities and international collaborations.

Supervisor Profile: Professor Guglielmo M. Tino

The selected fellow will be mentored by **Guglielmo M. Tino**, Full Professor at the Department of Physics and Astronomy.

His expertise includes **cold atoms, atom interferometry, optical atomic clocks, precision measurements, gravitational physics, general relativity, gravitational quantum physics, antimatter and anti-hydrogen**. His research also addresses rubidium and strontium-based systems, as well as techniques involving squeezing and entanglement.

His work is centred on the use of atomic quantum systems to perform precision measurements and to test fundamental aspects of gravitational physics and quantum physics.

Research Group and Environment

The fellow will be based at the **Science Campus** in **Sesto Fiorentino**, within the Department of Physics and Astronomy, in connection with the **European Laboratory for Nonlinear Spectroscopy (LENS)** and **INFN**.

The research environment provides access to experimental platforms for atom interferometry, including **two rubidium fountain atom interferometers and two strontium interferometers**. The group also participates in the **ALPHA experiment on anti-hydrogen at CERN**, offering the possibility to connect laboratory-based atomic sensing with international antimatter research.

This setting is suitable for candidates interested in **precision measurement, quantum sensing and fundamental physics**, with opportunities to work on experimental systems involving cold atoms, optical clock transitions, entanglement-enhanced interferometry and anti-hydrogen measurements.

MSCA Eligibility Requirements

Please note that applicants must comply with the eligibility criteria of the [MSCA PF 2026 call](#) (must have a PhD degree at the time of the deadline for applications; must have a maximum of 8 years full-time equivalent experience in research, measured from the date they obtained their doctoral degree and should comply with MSCA PF Mobility Rule, available in the “2.3.2. Recruited researchers” section, p.130 of the [Work Programme MSCA 2026-2027](#)).

Application Instructions and Deadlines

To initiate the "Expression of Interest" phase, prospective candidates must submit the following documentation:

- Curriculum Vitae (CV)
- Short Research Proposal (optional)
- Motivation Letter

Internal Expression of Interest Deadline: 1 July 2026 *Please note: This is a hard internal deadline to allow for the selection of the strongest candidate and the subsequent joint development of the full MSCA proposal.*

Applicants must submit information or documentation directly to the scientific supervisor email.

Professor Guglielmo M. Tino at: guglielmo.tino@unifi.it

Recommended Subject Line: EOI MSCA-PF 2026 - [Candidate Name]