DOCTORAL PROGRAM
IN
TRANSLATIONAL RESEARCH IN THE SCIENCES FOR HEALTH PROTECTION

Director prof. Romina Nassini

XLI cycle – academic year 2024/2025

BIOMEDICAL AREA	
ADMINISTRATIVE OFFICE	Department of Health Sciences
WEB	www.dss.unifi.it
CURRICULA	**1.** Development of Innovative Products, Preclinical Testing, and Pharmacotherapy **2.** Clinical Research and Quality of Clinical Care **3.** Promotion and Protection of the Right to Health **4.** Psychological Well-Being, Mental Health, and Psychopathology
	AVAILABLE POSITIONS: 6 Positions with Scholarship: 6 Position without Scholarship: *not available*
RANKING LIST FOR STANDARD POSITIONS SCHOLARSHIP AVAILABLE: 1	University of Florence
RANKING LISTS FOR POSITION WITH SPECIFIC RESEARCH TOPIC SCHOLARSHIPS AVAILABLE:5	**3 - Department of Health Sciences** **Thematic**: "Study of transcriptomic modulation and genetic differences in chronic pain conditions" Funded by project WOMAN-PAIN – Cod. No. FIS-2023-0332 – CUP B53C24009440001 **Thematic**: "Investigation of the role of mechanoreceptors in non-neuronal cells in the regulation of chronic pain in women's pain disorders" Funded by project WOMAN-PAIN – Cod. No. FIS-2023-0332 – CUP B53C24009440001 **Thematic**: "Forensic psychopathology of addictions and juvenile delinquency" **1 - Chiesi Farmaceutici Spa** **Thematic**: "Identification of new biomarkers for assessing the onset and progression of asthma and the effectiveness of pharmacological therapies" **1 - Becton Dickinson Sarl (BD Switzerland Sarl)** **Thematic**: "Real-World Practice in the Use Vascular Access Devices"

<table>
<tr><td>STUDY/RESEARCH PERIODS ABROAD</td><td>3 months</td></tr>
<tr><td>DOCUMENTS REQUIRED FOR THE ADMISSION
(under penalty of exclusion)</td><td>

Copy of the Identification Document
Self-certification for qualifications obtained in Italy (laurea triennale, specialistica o magistrale o ciclo unico) with list of exams taken, credits and related grade, title of the thesis and graduation mark
(using this template or similar forms containing the required information)
Qualifications obtained abroad (Bachelor’s and Master Degrees or combined cycle Degree) with a list of all exams taken, credits and related grade, rating scale, title of the thesis and graduation mark

The same documentation except for the final mark must be submitted by those who will graduate within the 31/10/2025
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<tr><td>DOCUMENTS REQUIRED FOR THE EVALUATION</td><td>
MANDATORY

Curriculum Vitae et Studiorum (European Format) including all qualifications and publications of the candidate
Research Project

OPTIONAL

Publications submitted by the candidate for evaluation
Any additional qualification

</td></tr>
<tr><td>RESEARCH PROJECT</td><td>The research project, with a maximum length of 5 pages, must be written in English and must include an abstract, introduction, methodology, expected results, and bibliography.
The project must be related to and make specific reference to one or more of the research topics listed in the “Topics” section.
The candidate may submit the same research project for both the standard position and the thematic scholarships, or may submit separate projects, indicating for each one which ranking it is intended for.</td></tr>
<tr><td>INTERVIEW MODE</td><td>In person
(In the application form candidates may ask to conduct the interview remotely)

The interview can be conducted in the English language.</td></tr>
<tr><td>INFORMATION ABOUT THE INTERVIEW</td><td>The interview consists of a discussion of the research project for the purpose of evaluating the candidate's research aptitude.</td></tr>
<tr><td>EVALUATION MARKS</td><td>
<table>
<tr><th>parameter</th><th>minimum score</th><th>maximum score</th></tr>
<tr><td>Curriculum vitae, research project, publications and other qualification documents (if any)

During the evaluation phase for admission to the oral interview, the consistency of the research project with the thematics of the PhD program, as well as with the specific topics for which candidates have applied, will also be assessed</td><td>40/120</td><td>60/120</td></tr>
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	Applicants who obtain a mark of at least 40/120 in the evaluation of the above parameters will be admitted to the interview Interview: discussion of the research project to assess applicant's aptitude for research — 40/120 — 60/120 **Eligibility is achieved with a minimum score of 80/120**
THEMATICS	**Curriculum #1: Development of Innovative Products, Preclinical Testing, and Pharmacotherapy** This curriculum is structured into thematic modules including the development of the following areas: ● Advanced molecular biology techniques, including gene editing, next-generation sequencing (NGS), and gene expression analysis. ● State-of-the-art imaging, with a focus on confocal microscopy, molecular imaging, and 3D visualization systems for studying pathophysiology and therapeutic efficacy. ● Bioinformatic analysis and data science approaches for interpreting omics data (genomic, transcriptomic, and proteomic) and applying predictive models in the development of new drugs and medical devices. ● Pathological-molecular investigation techniques aimed at characterizing biomarkers and personalizing therapeutic strategies based on molecular and cellular evidence. ● Integrated and comprehensive management of clinical trials, including regulatory, ethical, and organizational aspects for the proper conduct of clinical studies. ● Development of new biomedical and therapeutic technologies, with potential applications in personalized medicine and innovative pharmacotherapy. ● Technology transfer and patenting, promoting the practical application of research through the creation of patents with tangible impact in the biomedical field. **Curriculum #2: Clinical Research and Quality of Clinical Care** This curriculum is structured into thematic modules including the development of the following areas: ● Epidemiological analyses, pathophysiological insights, and clinical trials in perioperative medicine, with a focus on multimodal prehabilitation in frail patients, intraoperative monitoring and precision medicine in anesthesia, metabolic stress response control, analgesic techniques and opioid-sparing strategies, prevention of postoperative complications, and enhanced recovery after surgery. ● Epidemiological analyses, pathophysiological insights, and PK/PD evaluations in critical care medicine, focusing on extracorporeal organ support, infections and antibiotic therapy in critically ill patients, communication and end-of-life care in intensive care. ● Epidemiological analyses, pathophysiological insights, qualitative analyses, and phenomenological explorations in palliative medicine, with focus on acute and chronic pain management, vascular access in oncology

	and non-oncology patients, basic and specialized palliative care, including simultaneous and end-of-life care. ● Epidemiological and pathophysiological characterization of major acute and chronic diseases in pediatric age. Cross-cutting studies in pediatric specialties such as immunoallergological diseases, congenital immune defects, autoimmune and autoinflammatory manifestations, allergological disorders, infectious diseases (community-acquired, mother-to-child transmission, nosocomial, immigrant/refugee/adopted/traveling children), and auxoendocrine diseases including immune-mediated, metabolic, genetic, and bone metabolism disorders. ● Development of preventive and diagnostic models and clinical trials in immunoallergology, infectious diseases, and auxoendocrinology. Special focus on advanced technologies for pediatric vaccinology, molecular surveillance for infectious diseases and antibiotic resistance, secondary prevention practices such as neonatal screening, scoring systems, early diagnostics for rare congenital diseases and socially impactful disorders like childhood obesity, developmental defects, and immune dysregulation. ● Optimization and innovation in pediatric care, focusing on equity, shared and personalized care, evaluation of new target therapies, implementation of non-invasive treatments to improve the quality of life of pediatric patients and their families. ● Epidemiological analysis of skin diseases and the development of innovative diagnostic-therapeutic approaches, including artificial intelligence models for chronic inflammatory skin diseases, autoinflammatory conditions, pigmented lesions, and skin carcinomas. AI developments will include: a) Diagnostic algorithms using generative techniques to enhance classification of pigmented lesions and skin cancers. b) Diagnostic algorithms based on severity scores, for testing, validating, and implementing personalized therapeutic plans in clinical practice for chronic inflammatory skin diseases. **Curriculum #3: Promotion and Protection of the Right to Health** This curriculum is structured into thematic modules including the development of the following areas: ● Health Literacy: improving access to, understanding and use of health-related information at both individual and community levels. ● Promotion of healthy lifestyles, health education, and prevention of communicable and non-communicable diseases, with a special focus on vaccine prevention. Emphasis on vaccines and vaccination strategies, epidemiological impact of immunization policies, and preventive communication and training, including digital tools for citizens and health professionals. ● Health Technology Assessment: analysis and development of clinical, epidemiological, and economic models supporting decision-making in healthcare, aiming for equitable access to care and personalized health protection. ● Research on ethical, regulatory, and governance aspects related to patient safety, care relationships, communication and informed consent, professional and institutional responsibility, and risk management, including the use of AI-based systems.

	● Development and practical implementation of innovative models for the identification, care, and protection of vulnerable individuals, persons with disabilities, abuse victims, and victims of gender and hate crimes. ● Innovative approaches in forensic disciplines (pathology, odontology, toxicology, psychopathology, and criminology) and in assessments related to the identification of living persons and human remains to safeguard human dignity and human rights. **Curriculum #4: Psychological Well-being, Mental Health, and Psychopathology** This curriculum is structured into thematic modules including the development of the following areas: ● The conditions of psychological vulnerability and their determinants, both internalizing (e.g., anxiety, depression, trauma) and externalizing (e.g., antisocial behavior). ● The psychological and neurobiological processes involved in the pathogenesis of mental suffering and in the maintenance of mental well-being. ● The role of personality studies, clinical phenomenology, and psychopathology in the development of various mental health conditions. ● In-depth analysis of mental disorders, with a particular focus on: eating disorders and their neuropsychological correlates; the intersection of gender and psychopathology; psychopathology of grief and trauma-related events, psychological adaptation processes; personality disorders and their impact on psychosocial functioning; behavioral addictions, substance use, and technology-related dependencies. ● Psychological and psychiatric interventions, with a focus on the phenomenological foundations of care and on the most innovative psychotherapeutic approaches, as well as their potential translational and pharmacological developments.

EXAMINATION SCHEDULE			
	DATE	**TIME**	**PLACE**
INTERVIEW	July, 16 2025	10.00 a.m.	Centro polivalente il Cubo Viale Pieraccini 6 - Firenze First Floor - Aula ex biblioteca
The list of the candidates admitted to the interview and the final ranking will be published at the page **PhD courses**			