



PhD Course in MOLECULAR MEDICINE

Track I - MOLECULAR ONCOLOGY

Track II - INFECTIOUS, GENETIC, AND DEGENERATIVE DISEASES

SCIENTIFIC AREAS	06 - MEDICAL SCIENCES; 05 - BIOLOGICAL SCIENCES
COORDINATOR	PROF. PIERLUIGI COCCO
HEAD OFFICE	DEPARTMENT OF BIOMEDICAL SCIENCES
DURATION	3 YEARS
EDUCATIONAL OBJECTIVES AND RESEARCH TOPICS	<p>The graduate program in Molecular Medicine at UNICA aims to provide students with a high level research experience by a wide range of stimulating academic and training activities (see the web site at http://people.unica.it/molecularmedicine/). The overall goal is to empower students with theoretical and methodological skills in biological and biomedical sciences to pursue a distinguished career in research institutions or in the biotech industry, both in Italy and abroad. Under the supervision of Faculty members of the PhD Course, the graduate students will carry out research in one of more than 20 Faculty research laboratories headed by well-established Italian and international scientists. Two main tracks are offered: Molecular Oncology and Infectious, Genetic, and Degenerative Diseases, each one encompassing a broad spectrum of interests and research objectives. Research activities are aimed at understanding the molecular mechanisms underlying the pathogenesis of cancer (Track I) and of infectious, genetic, and degenerative diseases (Track II), also with the aim of developing innovative diagnostic and therapeutic approaches transferable to the clinic. Lectures and seminars on basic topics of oncology, genetics, virology and microbiology, pharmacology, epidemiology, biostatistics and bioinformatics, biophysics, and computational omic sciences, are part of the program. The training course includes research internships of 3-18 months in universities or research centers abroad to allow also integration of the graduate students in different scientific contexts.</p> <p>Program outline:</p> <ul style="list-style-type: none"> ◆ First year <ol style="list-style-type: none"> 1. Formulation of the research project and assignment to a Supervisor 2. Research activities 3. Educational activities (seminars and courses) related to the topic of the thesis (research project) and to the general themes of the Ph.D. program, including seminars held by Faculty members and invited speakers; critical analysis of the scientific literature (Journal club) 4. Presentation to the PhD Board and to Departments' members of the carried out research activities and of the results obtained during the first year (Progress Report in the form of seminars) 5. Drafting of the annual report (in English) ◆ Second year <ol style="list-style-type: none"> 1. Research activities 2. Educational activities (seminars and courses) related to the topic of the thesis (research project) and to the general themes of the Ph.D. program, including seminars held by Faculty members and invited speakers; participation to scientific conferences; critical analysis of the scientific literature (Journal club) 3. Stage abroad (3-18 months) 4. Presentation to the PhD Board and to Departments' members of the carried out research activities and of the results obtained in the second year (Progress Report in the form of seminars) 5. Processing of the data obtained and preparation of drafts of scientific papers based on the results 6. Drafting of the annual report (in English) 7. Teaching-supporting activities directed to both undergraduate students collaborating with the research group (organizing and supervising lab training)

	<p>activities, assistance during the preparation of graduation theses) and Professors (assistance during exams)</p> <p>◆ Third year</p> <ol style="list-style-type: none"> 1. Research activities 2. Educational activities (seminars and courses) related to the topic of the thesis (research project) and to the general themes of the Ph.D. program, including seminars held by Faculty members and invited speakers; participation to scientific conferences; critical analysis of the scientific literature (Journal club) 3. Ending of stage abroad 4. Presentation to the PhD Board and to Departments' members of the carried out research activities and of the results obtained in the three year training (Final Report in the form of seminars) 5. Processing experimental data and preparation of drafts of scientific papers based on the results obtained 6. Teaching-supporting activities directed to both undergraduate students collaborating with the research group (organizing and supervising lab training activities, assistance during the preparation of graduation theses) and Professors (assistance during exams) 7. Drafting of the final thesis (in English) 8. Discussion of the thesis (in English if the Commission includes foreign members).
ADMISSION TESTS	<p>ASSESSMENT OF QUALIFICATIONS, CURRICULUM VITAE, WRITTEN TEST AND INTERVIEW.</p> <p>ALL ADMISSION TESTS CAN BE CONDUCTED IN ENGLISH</p>
ADMISSION TESTS FOR FOREIGN APPLICANTS	CURRICULUM VITAE, REFERENCE LETTERS AND INTERVIEW (ALSO VIA SKYPE IN THE AUDIO AND VIDEO MODALITY)
DATE AND PLACE OF ADMISSION TESTS	<p>WRITTEN EXAMINATION: DECEMBER 12, AT 9:30 A.M., MEETING ROOM SECTION, MICROBIOLOGY AND VIROLOGY (TOP FLOOR , ABOVE THE BAR) , CITTADELLA DI MONSERRATO, CAGLIARI</p> <p>INTERVIEW: DECEMBER 13, AT 15:00 P.M. MEETING ROOM SECTION, MICROBIOLOGY AND VIROLOGY (TOP FLOOR , ABOVE THE BAR) , CITTADELLA DI MONSERRATO, CAGLIARI</p>
TOPICS OF THE WRITTEN TEST/ THEME RESEARCH PROJECT	<p>TRACK I: MOLECULAR ONCOLOGY</p> <ol style="list-style-type: none"> 1 . Genetic / epigenetic alterations in cancer progression 2 . Molecular epidemiology of cancer 3 . Tissue microenvironment and tumoural microenvironment in the carcinogenic process 4 . Prognostic and diagnostic molecular markers correlated to cancer cell biology 5 . Cell cycle regulation and cancer <p>TRACK II: INFECTIOUS, GENETIC, AND DEGENERATIVE DISEASES</p> <ol style="list-style-type: none"> 1 . Markers for diagnosis and prognosis using a metabolomic approach 2 . Immunological, metabolic and/or redox state alterations/adaptations in the course of pathological processes 3 . Cellular and molecular mechanisms of neurotoxicity and neurodegeneration 4 . Genetic of the immune response 5 . Molecular and functional characterization of the genes involved in the pathogenesis of genetic diseases 6 . Development of non-invasive prenatal diagnostic technologies 7 . Pharmacologic and gene therapy of beta-thalassemia 8 . Cellular and molecular interactions of pathogens with their host 9 . Development of innovative therapies for genetic, neurodegenerative, and infectious diseases
POSITIONS	10
SCHOLARSHIPS	7, 1 OF WHICH RESERVED FOR FOREIGN CANDIDATES
POSITIONS WITHOUT SCHOLARSHIP	3
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