

PhD Handbook



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PHD IN MOLECULAR MEDICINE

◆ GENERAL INFORMATION

Duration: 4 years

Awarding bodies: University of Milan, University of Naples

School sites: Campus IFOM-IEO Milan, CEINGE and TIGEM Naples

Coordinator of the PhD program: Pier Giuseppe Pelicci

Scientific coordinators: *Milan*: Elisabetta Dejana - *Naples*: Francesco Salvatore

Description: The Ph.D. course is open to anyone having a degree in the sciences and to M.D.s who wish to embark upon a career in the field of experimental medicine. The aim of the course is to train researchers in Molecular Medicine and in Post-Genomics, focusing particularly on Molecular Oncology and Genetic Diseases.

Curricula: Molecular Oncology, Human Genetics

Research topics: Animal Models; Bioinformatics; Cell Biology; Epigenetics; Genomics; Human Genetics; Immunology; Molecular Genetics; Proteomics; Structural Biology

◆ STUDY PLAN

The fig. 1 below summarizes the main activities that the students will carry out during the PhD course.

During the four years, the students' research activity will go under revision twice:

- ✓ During the 2nd year after the probationary period;
- ✓ During the 3rd year.

The probationary period lasts one year and a half. At the end of this period students will be asked to write the probationary period report, and their attitude to research and their motivation and determination to succeed in a demanding program will be evaluated.

If a negative evaluation is reported, the student will be asked to resign.

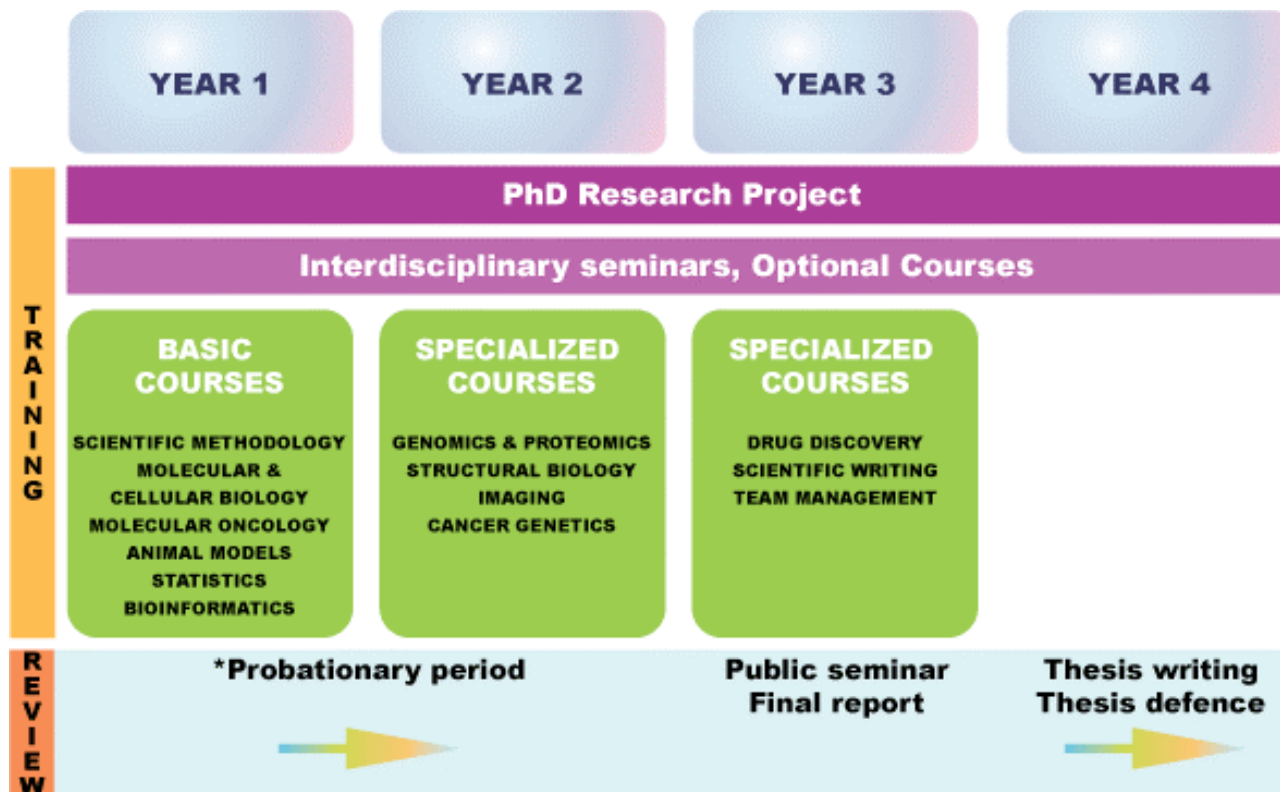


Fig. 1 - Study plan scheme

◆ **SUPERVISION**

Three tutorial profiles are foreseen for each PhD student:

Supervisor

The Supervisor is a faculty member and is the scientific head of the research unit to which the PhD student is assigned. The supervisor offers the PhD student an effective guidance in the various aspects of the scientific methodology.

Internal Co-supervisor

The Internal Co-supervisor is a faculty member of the chosen centre who is different from the Supervisor. The Internal Co-supervisor can become a reference point for the PhD student as he/she contributes to the PhD student's training and guides his/her choices.

External Co-supervisor

The External Co-supervisor belongs to a foreign scientific institution. He/she is chosen according to the recognized scientific experience, his/her scientific affinity with the project, and his/her availability.

PHD IN MEDICAL NANOTECHNOLOGY

◆ GENERAL INFORMATION

Duration: 4 years

Awarding body: University of Milan

School sites: Campus IFOM-IEO Milan, CIMAINA Milan

Coordinator of the PhD program: Paolo Milani

Collaboration: Italian Institute of Technology (IIT)

Description: This course is open to students having a degree in the sciences, especially to chemists, physicists, biologists and biotechnologists. It aims to train its students in the use, development and integration of a nanotechnology approach in the medical sciences.

Research topics: Cell Arrays; Micro and Nanopatterning; Drug delivery; Hybrid Bio/Artificial Interfaces; Single molecule interactions; Nanosensors; Imaging technologies; Microarrays and Biochips

◆ STUDY PLAN

The fig. 2 below summarizes the main activities that the students will carry out during the PhD course.

During the four years, the students' research activity will go under revision twice:

- ✓ During the 2nd year after the probationary period;
- ✓ During the 3rd year.

The probationary period lasts one year and a half. At the end of this period students will be asked to write the probationary period report, and their attitude to research and their motivation and determination to succeed in a demanding program will be evaluated.

If a negative evaluation is reported, the student will be asked to resign.

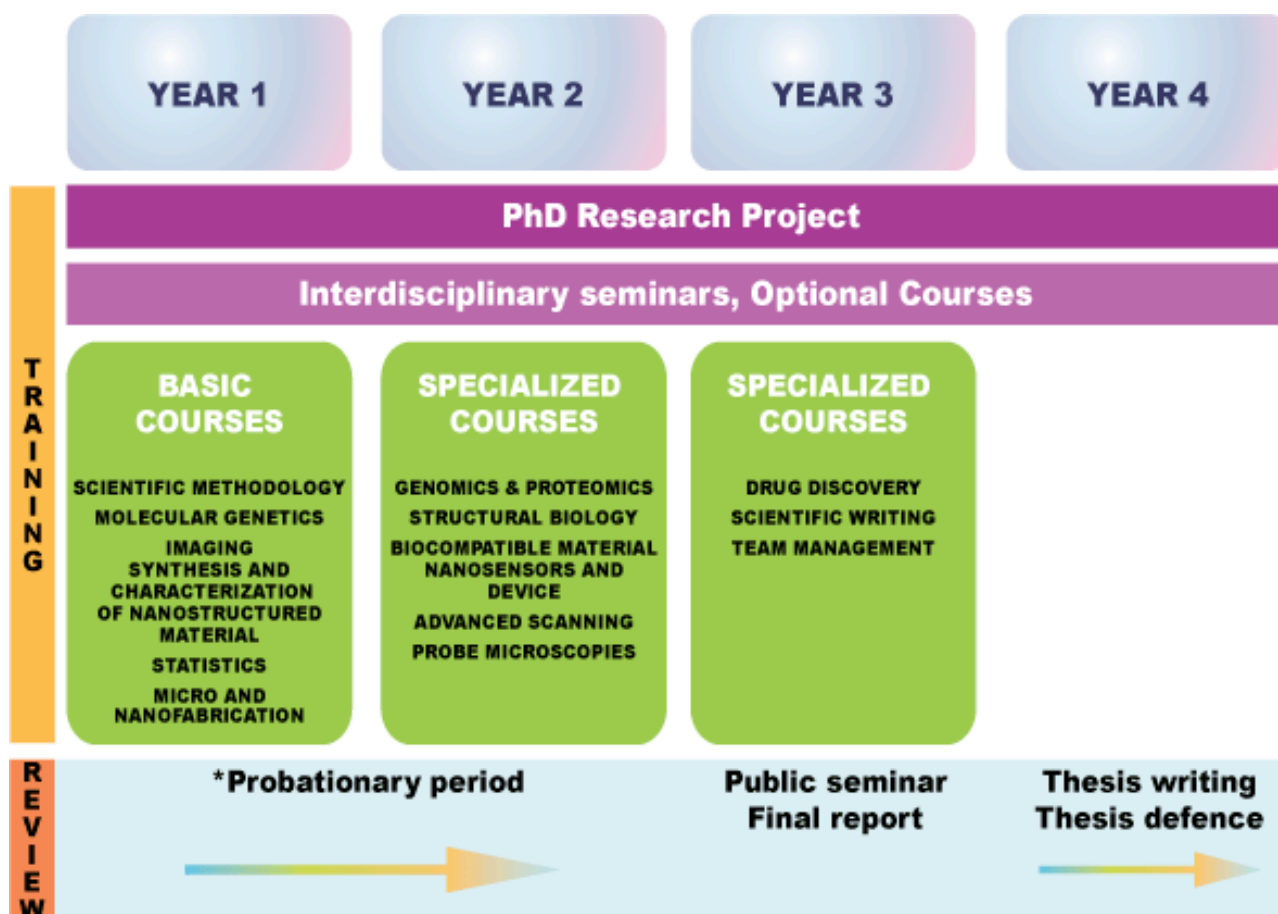


Fig. 2 - Study plan scheme

◆ SUPERVISION

Three tutorial profiles are foreseen for each PhD student:

Supervisor

The Supervisor is a faculty member and is the scientific head of the research unit to which the PhD student is assigned. The supervisor offers the PhD student an effective guidance in the various aspects of the scientific methodology.

Internal Co-supervisor

The Internal Co-supervisor is a faculty member of the chosen centre who is different from the Supervisor. The Internal Co-supervisor can become a reference point for the PhD student as he/she contributes to the PhD student's training and guides his/her choices.

External Co-supervisor

The External Co-supervisor belongs to a foreign scientific institution. He/she is chosen according to the recognized scientific experience, his/her scientific affinity with the project, and his/her availability.

PHD IN FOUNDATIONS OF THE LIFE SCIENCES AND THEIR ETHICAL CONSEQUENCES (FOLSATEC)

◆ GENERAL INFORMATION

Duration: 4 years

Awarding body: University of Milan

School site: Campus IFOM-IEO Milan

Coordinator of the PhD program: Pier Paolo Di Fiore

Scientific coordinator: Giovanni Boniolo

Description: This Ph.D. program is open to students having either a scientific or a philosophical degree as well as to medical doctors. The course aims to create internationally recognized scholars in the fields of the foundations of the Life Sciences, ethical analysis and the relationships between biomedicine and society.

Research topics: Philosophical foundations of biology and medicine; Ethical analyses of the consequences of the biomedical results; Biomedicine and society.

◆ STUDY PLAN

The fig. 3 below summarizes the main activities that the students will carry out during the PhD course.

During the four years, the students' research activity will go under revision twice:

- ✓ During the 2nd year after the probationary period;
- ✓ During the 3rd year.

The probationary period lasts one year and a half. At the end of this period students will be asked to write the probationary period report, and their attitude to research and their motivation and determination to succeed in a demanding program will be evaluated.

If a negative evaluation is reported, the student will be asked to resign.

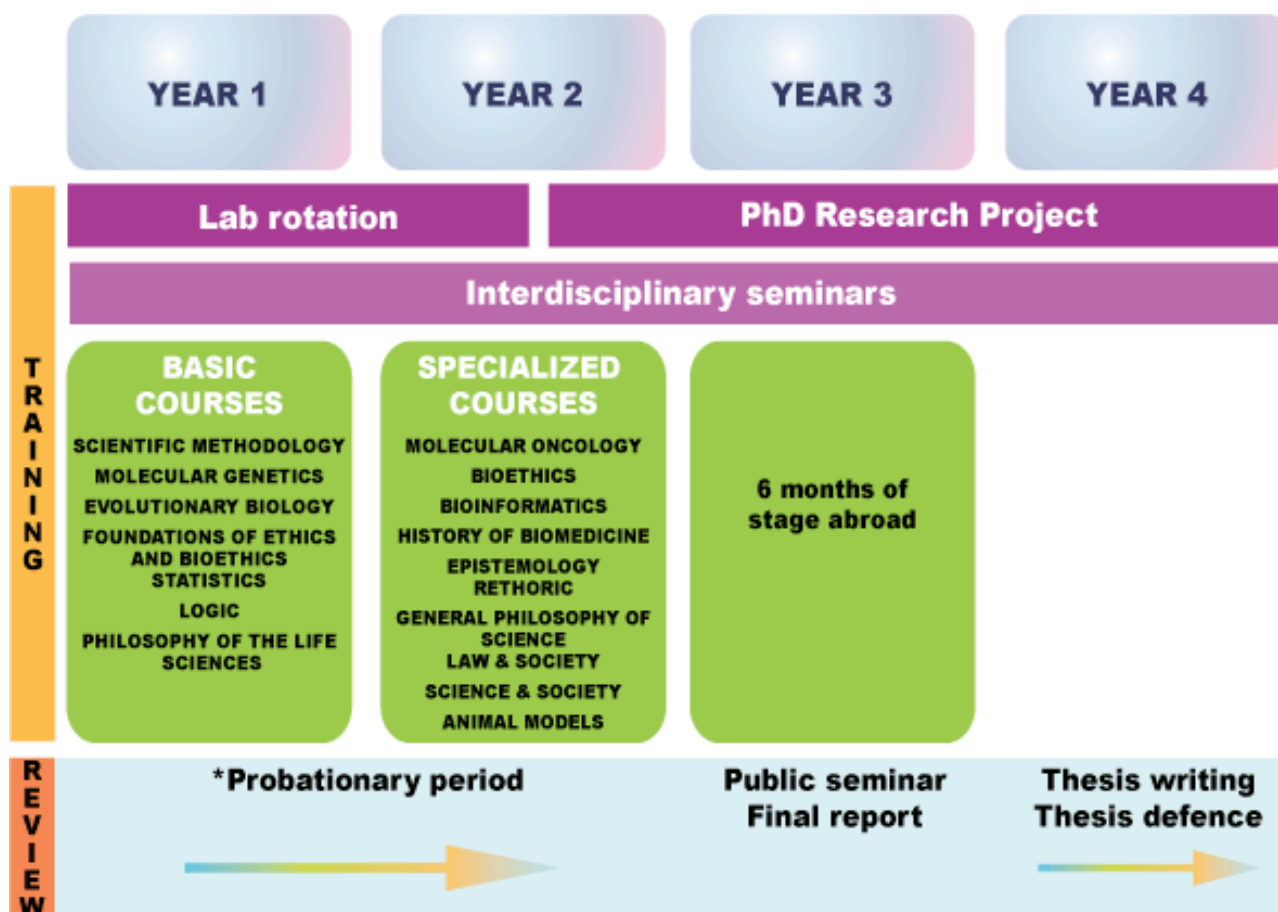


Fig. 3 - Study plan scheme

◆ SUPERVISION

Three tutorial profiles are foreseen for each PhD student:

Supervisor

The Supervisor is a member of the teaching staff of the campus or of the University of Milan and is the person in charge of the scientific research program of the student. The supervisor offers the PhD student an effective guidance in the various aspects of scientific methodology.

Internal Co-supervisor

The Internal Co-supervisor is the head of the laboratory where the student will spend part of the PhD course. The Internal Co-supervisor can represent the contact point between the laboratory work and the thesis project of the student.

External Co-supervisor

The External Co-supervisor belongs to a foreign scientific institution. He/she is chosen according to the recognized scientific experience, his/her scientific affinity with the project, and his/her availability.

RESEARCH ACTIVITIES

This is the fundamental basis of the training plan and provides the PhD student with direct experience in the research process, through the use of different experimental approaches and laboratory technologies.

After having identified the supervisor and the subject of the research activity, the student will write a research plan that must be approved by the SEMM faculty. The student will undertake the programmed research activity in the following three years.

When all the data or part of the data obtained by the student are published in an international scientific journal, he/she will submit a request for the evaluation of the PhD thesis and ask for the PhD examination.

Also in the FOLSATEC program the research activity is part of the training.

After an initial period of didactic laboratory activity, in order to let students acquire the basic laboratory techniques, a lab rotation is foreseen.

During the second year, the students will identify the laboratory where undertaking the programmed research activity for the following two years.

When the student has an essay already accepted on an international peer-reviewed philosophical journal, he/she can submit a request for the evaluation of the PhD thesis and ask for the PhD examination.

EDUCATIONAL ACTIVITIES

◆ COURSES

They are organized by the SEMM faculty. Each course extends generally over 1 week, and is held by a combination of SEMM teachers and external *ad hoc* teachers. The theoretical part of the course may be flanked by practical activities.

Courses are subdivided in Basic and Specialized Courses, and are listed in the study plan scheme, as divided per year (see Figs. 1, 2, 3).

◆ PRESENTATION ACTIVITIES

They include the "Data Club" and the "Journal Club" of the laboratory where the PhD student works. These activities will allow the PhD student to actively participate in collective debates on scientific data, within the framework of his/her research group.

◆ ORDINARY SEMINAR ACTIVITIES OF THE HOSTING CENTRES

Among their own scientific activities, the institutions hosting the PhD courses organize seminars about various scientific topics, held by invited external speakers. PhD students are requested to attend these seminars that are held every week.

APPLICATION

◆ REQUIREMENTS

There are no restrictions on nationalities to be admitted to the SEMM PhD programs.

Applicants should hold a second level academic degree: the Italian *Laurea Specialistica*, Master of Science, or equivalent. Candidates expecting to receive their degree can also take part in the competition, provided that they receive their title within the selection date.

◆ PROCEDURE

Application is made up of:

- ✓ The application form

It can only be submitted through the on line system available at the time of the call.

The information to provide is:

- Key personal data;
- The key elements of education;
- The exams passed;
- The final mark of the degree;
- Possible publications and work experience;
- A brief summary of the degree thesis;
- A description of the reasons why one wishes to be enrolled in the PhD program;
- Level of proficiency in English;
- Names of the two referees who will write a reference letter.

- ✓ Two Reference letters

Applicants have to download the template from the website and provide the two referees of their choice with it.

Referees (who should hold an academic or project leader position) are then requested to send their compiled letter directly to phd@semm.it within the deadline for the application.

SELECTION

Admission to the program is granted on a competitive basis and is achieved through the procedures described below.

◆ PRESELECTION

Right after the deadline a preselection will take place.

The Examination Board will short list candidates based on the information provided in the application form and in the reference letters.

Only short listed candidates will then be invited to the research centre for the selection process.

◆ EXAMINATION

The examination consists of:

- ✓ A multiple-choice test on the general aspects of biochemistry, molecular and cellular biology, and genetics (for Molecular Medicine only)
- ✓ An oral exam aimed to evaluate the scientific background of the candidate, as well as their motivation to succeed in a demanding program.

Moreover, interviews with group leaders are foreseen if needed for matching purposes.

ENROLLMENT....

◆ ADMISSION

Successful candidates are requested to enroll within 5 days after publication of the ranking list on the website.

◆ ENROLLMENT HOLDING AN ITALIAN DEGREE

If holding an Italian degree, the student has to present only the provided enrollment form.

◆ ENROLLMENT HOLDING A FOREIGN DEGREE

If holding a foreign degree, the student needs it to be recognized as equivalent to the Italian degree by the Scientific Committee of the School.

For this purpose, the following documents are required to be presented at the time of the enrollment:

- ✓ Educational qualifications translated by an official translator and authenticated by the Italian Representative (Embassy or Consulate) in the country where the qualification was obtained;
- ✓ Declaration of the value of the qualification in the country of origin, to be requested to the same Representative.

◆ FOREIGN STUDENTS

Before coming to Italy, foreign students need to obtain some important documents like visa, health insurance etc.

For details, it is recommended to refer to the "International Students Handbook" available on the website.

... & FELLOWSHIPS

For the entire duration of the PhD course, the students will be supported either by SEMM fellowships or outside grants (gross salary: circa 18.500,00 € per year).

Any tuition fee is covered by SEMM.

SCHOOL SITES

◆ THE CAMPUS IFOM-IEO, MILAN



The Campus IFOM-IEO is an important centre for cancer research in Europe. The campus covers an area of 24,000 square metres, hosts 33 research groups and a total of 450 researchers.

Research activity is supported by a technological core that offers advanced technologies, including nanotechnologies, genomics, bioinformatics, robotics, proteomics and structural biology.

◆ CIMAINA, MILAN

(INTERDISCIPLINARY CENTRE FOR NANOSTRUCTURED MATERIALS AND INTERFACES)

The logo for CIMAINA is the word "CIMAINA" in a blue, outlined, sans-serif font. The letters are spaced out and have a modern, clean appearance.

This centre was opened in 2004 by the University of Milan, with the support of the MIUR (Ministry of University and Research).

CIMAINA hosts researchers who work in the fields of physics, chemistry and biology, from both Italian and foreign institutions.

The laboratories are equipped with the most advanced technologies for the synthesis and characterization of nanostructured materials and interfaces.

◆ TELETHON INSTITUTE OF GENETICS AND MEDICINE (TIGEM), NAPLES

The Telethon Institute of Genetics was created in 1994, with the generous support of the Telethon Foundation.

Its mission is to understand the molecular mechanisms of genetic diseases, in order to develop new preventive and therapeutic strategies.

TIGEM currently hosts 17 research groups, including a total of 120 students, researchers, technicians and administrative personnel.

Research activity is supported by a technological core that provides scientists with advanced technological services.

◆ CENTRE FOR GENETIC ENGINEERING (CEINGE), NAPLES

The Centre for Genetic Engineering is a non-profit consortium, of which the University of Naples Federico II was a founding member in 1984. The centre focuses on research in the field of advanced biotechnologies and on its applications in the fields of health and production.

Research at CEINGE ranges from viral vectors to gene therapy and proteomics.

The new CEINGE site covers an area of 8,500 square metres, and includes 16 research laboratories as well as laboratories for various supporting technological platforms.

THE FACULTY

◆ CAMPUS IFOM-IEO MILAN

Myriam Alcalay	Functional Genomics
Bruno Amati	Oncogenes, Chromatin and Cell Cycle Control
Francesco Blasi	Transcriptional Mechanisms in Development and Tumor Formation
Tiziana Bonaldi	Proteomics and functional genomics for the analysis of the different level of gene expression regulation
Dana Branzei	DNA Repair
Stefano Casola	Molecular Mechanisms of B cell Development and Transformation in Conditional Mutant Mice
Giuseppe Cassata	Compartment Boundary Formation using <i>C. elegans</i> as a Model System
Ugo Cavallaro	Cell adhesion and signalling in tumor progression and angiogenesis
Susanna Chiocca	Viral control of cellular pathways and biology of tumorigenesis
Francesca Ciccarelli	Bioinformatics and Evolutionary Genomics of Cancer
Andrea Ciliberto	Computational Cell Biology
Fabrizio d'Adda di Fagagna	Telomeres and cellular senescence
Elisabetta Dejana	New strategies to inhibit tumor angiogenesis
Peter De Wulf	Molecular analysis of the eukaryotic kinetochore
Pierpaolo Di Fiore	Effector and attenuator signaling in physiology and cancer
Marco Foiani	Genome integrity
Kristian Helin	Molecular Oncology
Luisa Lanfrancone	Cellular and molecular pathways regulating melanoma genesis and progression
Marina Mapelli	Structural bases of asymmetric cell division
Saverio Minucci	Chromatin alterations in tumorigenesis
Marina Mione	Genetic Control of Cell Migration in Zebrafish
Heiko Muller	Applied bioinformatics
Andrea Musacchio	Structural and functional bases of mitosis
Gioacchino Natoli	NF- κ B Regulated Gene Expression in Inflammation and Cancer
Giuliana Pelicci	Biology and signal transduction of normal and cancer neural stem cells
Piergiuseppe Pelicci	Mechanisms of cell transformation, death and senescence
Simona Polo	Regulation of protein function by monoubiquitination

Maria Rescigno	Immunobiology of Dendritic Cells and Immunotherapy
Giorgio Scita	Signaling regulating actin dynamics in cell motility
Nicolai Sidenius	Cell matrix signaling
Giuseppe Testa	Histone Methylation in Stem Cell Renewal and Lineage Commitment
Rosella Visintin	Mechanisms that Control the Protein Phosphatase Cdc14, an Essential Cell Cycle Regulator

◆ TIGEM NAPLES

Alberto Auricchio	Adeno-associated virus (AAV)-mediated gene transfer to the eye
Antonio Baldini	Genetics of Cardiovascular Development
Andrea Ballabio	Molecular basis of human genetic diseases
Sandro Banfi	Public Sequence Databasedata Mining / Genetics of Inherited Eye Disorders
Maria Pia Cosma	Inborn errors of metabolism: molecular mechanisms and therapy
Diego Di Bernardo	Inferring gene regulatory networks and compound mode of action
Brunella Franco	Molecular basis of X-linked disorders
Germana Meroni	The Tripartite Motif gene family in human diseases
Vincenzo Nigro	Limb Girdle Muscular Dystrophy
Michèle Studer	Genetics of the mammalian cortex
Enrico Surace	Gene therapy for inherited and neovascular retinal diseases

◆ CEINGE NAPLES

Giuseppe Castaldo	Clinical Molecular Biology
Riccardo Cortese	Genomics and Proteomics in drug discovery
Luciano D'Adamio	Biological function of APP processing
Alfredo Fusco	Identification of Novel Genetic and Epigenetic Alterations Responsible for Tumor Onset and Progression and Functional Validation
Achille Iolascon	Paediatric Haematology and Oncology
Fabrizio Pane	Genetic alterations of hemopoietic tumors
Giovanni Paoletta	Identification of functional sequences by computational approach
Lucio Pastore	Adenoviral vectors for gene therapy of inherited disorders
Piero Pucci	Investigation of molecular mechanisms in eukaryotic cells by functional proteomics approaches
Francesco Ramirez	Animal models and gene therapy of skeletal pathologies
Margherita Ruoppolo	Differential and functional proteomics in molecular medicine
Tommaso Russo	Gene regulation by APP-Fe65 complex and its involvement in the pathogenesis of Alzheimer's disease
Francesco Salvatore	Molecular Medicine in hereditary and acquired gene-based diseases
Antonio Simeone	Understanding the molecular basis of brain development and neuronal differentiation
Arturo Verrotti	Translational regulation during germ-line development and Parkinson disease

CONTACTS

SCHOOL LOCATIONS

Milan

Campus IFOM-IEO

Via Adamello 16
20139 Milan, Italy

CIMAINA

c/o Physics Department
Via Celoria 16
20133 Milan, Italy

Naples

CEINGE (Centre of genetics engineering)

Via Comunale Margherita 482
80145 Naples, Italy

TIGEM (TELETHON Institute of Genetics and Medicine)

Via Pietro Castellino 111
80131 Naples, Italy

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