Università di Genova | DIMES DIPARTIMENTO DI MEDICINA SPERIMENTALE

Ph.D. Program in Clinical and Experimental Immunology

About the program

Welcome
The Doctoral Program in Clinical and Experimental Immunology trains young graduates in the field of Immunology and related disciplines, providing them with an interdisciplinary approach to face and solve basic or applied research problems in an experimental way.

The Ph.D. Committee counts world-renowned members, many of whom are among the most cited researchers on the national and international landscape. The Committee is made up of faculty members and researchers from national and international research centers, with different specific skills, the integration of which makes it possible to guarantee Ph.D. students a complete and cutting-edge scientific program. The Clinical and Experimental Immunology Program features a flexible choice of courses and seminars combined with extensive research training in the laboratories of a proven team of researchers.

The goal of the Program is to train young researchers and provide the tools necessary to conduct research independently and complete the assigned research project. In carrying out the project, students are supported by national and international scientific partners who collaborate with the Committee. The Program includes stays at foreign research institutions in order to strengthen training of Ph.D. students.

Learning outcomes
The Doctoral Program in Clinical and Experimental Immunology aims to train qualified researchers, capable of planning and conducting research activities independently, mainly aimed at analyzing the phenotypic and functional characteristics of immunocompetent cells and analyzing the molecular and cellular pathophysiology of the immune responses, in the context of basic research and research applied to the clinic.

At the same time, the objective of the Program is to train young researchers in planning and conducting biomedical trials in the field of cancer immunology, infectious disease immunology and autoimmunity, in order to propose the development of innovative diagnostic and therapeutic approaches. The coursework will allow students to acquire skills in disseminating the results obtained through the

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presentation of their data in seminars or scientific events and the drafting of scientific papers.

A further aim of the program is to develop the ability to interact with industries and acquire knowledge on the procedures for the intellectual protection of research results, with the aim also of supporting entrepreneurial initiatives.

Graduate destinations
The Ph.D. title in Clinical and Experimental Immunology allows access to the labour market both in public and private organizations and institutions, in Italy and abroad. It represents a qualification that allows, at the end of the three-year program, to access competitions for post-doctoral positions. The Ph.D. title counts towards the evaluation for University Researcher positions and for the national scientific qualification admission to university teaching.

The Ph.D. in Clinical and Experimental Immunology is also an added value for admission in Research Institutions and research-led biopharmaceutical industries and hospitals combining clinical activities with research in Italy or abroad.

The training obtained allows the young researcher to be included in a professional context aimed at designing and conducting clinical studies as well as clinical experimentation of innovative diagnostic and therapeutic approaches.

Info a.y. 2020/21

Typology
PhD Program

Duration and credits
3 years
180 credits

Admission
Evaluation by titles and interview

Useful docs
Admission call and annex

Coordinator
Simona Sivori

Contact
To learn more, please visit the dedicated section.

Teaching committee

Find a list of the members of the dedicated page.

International collaborations

- Deutsches rheuma forschungszentrum, Berlin, Germany
- Centre d'Immunologie de Marseille-Luminy (CIML) Scholar, Institut Universitaire de France cimlcnrs-inserm-universit de la Mediterranée Campus de Luminy, Marseille, France
- Department of Surgery, Massachusetts General Hospital, Harvard Medical School, Boston, MA, USA
- Department of Medicine, University of California San Diego, La Jolla, CA, USA
- Department of Radiation Oncology, University of Pennsylvania, Perelman School of Medicine, Philadelphia, USA

Research fields

The Doctorate in Clinical and Experimental Immunology offers the opportunity to conduct scientific research on multiple issues in the field of Immunology and related disciplines.

Here the main research interests:

- Differentiation and characterization of "Innate Lymphoid Cells" (ILCs)
- Analysis of cellular and molecular interactions between NK cells, tumor cells and components of the tumor microenvironment
- Tumor markers and tumor 'escape' mechanisms at NK-mediated immunosurveillance
- NK cells as effectors in anticancer therapy against hematopoietic and solid tumors
- Immune checkpoints in human NK cells and other ILC subpopulations and their role in anti-tumor immunotherapies
- miRNA-mediated regulation of NK receptor expression, miRNA expression profiles and proteomics in subpopulations of NK cells
- Role of cytomegalic infection in the differentiation of NK cells and in the induction of adaptive properties
- Small molecules derived from marine organisms to modulate immune responses
- Analysis of mechanisms underlying immune dysregulation in diseases
- Identification and molecular/functional analysis of immunomodulating agents
- Functional characterization of new subtypes of regulatory cells and analysis of their pathogenetic role in autoimmune, neoplastic and infectious diseases
- Mechanisms of NK cell dysregulation during acute and chronic viral infection and immunotherapy

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- Characterization of inflammatory common lymphocyte precursors, and of their lymphoid progenies during infectious, autoimmune and neoplastic diseases
- Analysis of specific immune responses for tumor-associated antigens in subjects with neoplasms
- Evaluation of the roles of the ImmuneEndocrine networks in autoimmune rheumatic pathologies
- Modulation and analysis of the macrophage polarization (M1/M2) inside the tissues of autoimmune connective tissue diseases
- Mechanisms of epigenetic immune-modulation during pregnancy in autoimmune rheumatic patients
- Generation of therapeutic vaccines and biological agents for the treatment of neoplastic or autoimmune diseases
- Analysis of gene polymorphisms potentially involved in the genesis of autoimmune or neoplastic diseases

Training program

The training program includes 180 credits of graduate coursework and research, 60 credits per year:

1. **Year 1**: includes 10 credits of lectures (lessons, seminars, elective courses) and 50 credits of research activities
2. **Year 2**: includes 5 credits of frontal activity (lessons, seminars, elective courses) and 55 credits of research activities
3. **Year 3**: includes 60 credits of research activities and thesis preparation

Please, read the first and second year courses in detail.

The course ends with discussion of the thesis in front of an Examining Board made up of internal and external members selected by the Committee.

Didactic activities
Please, read the didactic activities chart.

Training activities
Please, read the training activities chart.

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Admission

The Ph.D. Programs of the University of Genoa are governed by the rules available on the University website.

Admission to the Ph.D. Program is subject to passing a competition that is normally announced in the spring and published on the UniGe website. The Admission Notice contains the list of courses, places and scholarships available as well as the dates, location, type and content of the examination tests.

Candidates who pass the selection are included in a constantly updated merit ranking that reports the assignment of places. Competitors who are admitted to Ph.D. Programs must submit an application for enrollment according to the established deadlines to the UniGe Higher Education Office.

The Ph.D is regulated by the norms described in the dedicated page.

Ph.D. Students

On this page, you will find the Ph.D Students list of the various cycles and you can follow our alumni throughout their career.

Useful links

- Biomedical Research Seminars 2021

Public and private structures of relevance in the field of immunology offering educational opportunities and organizing conferences and congresses of interest:

- Network Italiano per la Bioterapia e l'Immunoterapia dei Tumori (NIBIT)
- Società Italiana di Immunologia - Immunologia Clinica e Allergologia (SIICA)
- SIICA – Ph.D. students retreat
- European Federation of Immunological Societies (EFIS) Young Immunologists Task Force
- Società Italiana di Citometria (GIC)
- European Society for Clinical Cell Analysis (ESCCA)

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To learn more

To learn more, please read carefully the:

- Internal regulation of the Ph.D. Program in Clinical and Experimental Immunology
- Ph.D. courses regulations

Calls, information, forms, regulations, contacts:
https://unige.it/en/usg/en/phd-programmes
Settore dottorato di ricerca
Via Vivaldi 5 - 16126 Genova (Ge)
Tel. (+39) 010 2095795
dottorato@segreterie.unige.it

First and second year courses

Cycle XXXVI

Year 1 (a.y. 2020-2021)

1) Animal testing: Prevention and risk management in animal housing (1 credit)
Teacher(s): Prof. Paolo Durando, MD; Dr. Vincenzo Trovato, VD
Location: online video-course provided by UniGe, with release of participation certificate after verification of acquired knowledge.

The course aims to train workers on legislation relating to animal testing (Legislative Decree 26/2014), on animal welfare and on the health and safety risks of statuary operators exposed to biological, chemical, physical and other risks, as reported in Legislative Decree 81/2008 and subsequent amendments.

2) An Introduction to Open Science and Research Data Management (1 credit)
Teacher(s): Anna Maria Pastorini, SBA UniGe, annamp@unige.it; Valentina Pasquale, IIT, valentina.pasquale@iit.it
Location: Online lectures, links will be communicated. Please enroll using your UniGePASS credentials
Schedule: February 1st, 3rd, 8th, 12nd – 10-11.30 AM

Training Course for Ph.D. Students, composed of four modules. It aims to introduce early-career researchers to scholarly communication and to the principles of Open Science (Open Access to Publications, Open Data, Open Licenses) and Research Data Management. At the end of the course students will have a better understanding of the available research e-infrastructures, tools, and services for Open Access Publication, Research Data Management and FAIR Data. Students will also learn the importance of open science in research, especially to improve science reproducibility and increase research integrity. They will learn how to make research data FAIR, as required by many funders, including the European Commission. Finally, they will have the chance to practice on common tools for Research Data Management, like DMPOnline and Zenodo.

3) Intellectual property and patents (2 credits)
Courses made available by the "European IP Helpdesk", service provided by the Agency of the European Commission "EASME" to support research activities to manage, disseminate and enhance technologies and other intellectual property rights and other IP resources at European level.

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- Webinar: Introduction to IP - 21.01.2021 (1 CFU)
- Webinar: IP Assessment - 29.01.2021 (1 CFU)

Each training module lasts 1.5-2 hours and there is always a short introductory session relating to the services made available by the IP Help Desk
Participation is free upon registration.

4) Preparation of a research project in response to a Call (1 credit)
Location: Online lectures, links will be communicated.
Schedule: to be defined

5) Presentation of the results of the experimental work (1 credit)
Location: Online lectures, links will be communicated.
Schedule: to be defined

6) Report your data. Disseminate and present your study to the scientific community (1 credit) Location: Online lectures, links will be communicated.
Schedule: to be defined

Year 2 (a.y. 2021-2022)

1) Knowledge of the basic principles of flow cytometry (1 credit)
Teacher: Prof. Daniela Fenoglio
Location: Online lecture, link will be communicated
Schedule: to be defined
Language: English

2) Approaches in Immunotherapy:

- *NK cells, KIR receptors and haploidentical hematopoietic stem cell transplantation* (0.5 credits)
  Teacher: Dr. Daniela Pende
  Location: Online lecture, link will be communicated
  Schedule: to be defined
  Language: English
- *Immune checkpoint molecules in T cells as targets for cancer immunotherapy* (0.5 credits)
  Teacher: Prof. Raffaele De Palma
  Location: Online lecture, link will be communicated
  Schedule: to be defined
  Language: English

- *Immune checkpoint molecules in natural killer cells as potential targets for cancer immunotherapy* (0.5 credits)
  Teacher: Prof. Emanuela Marcenaro
  Location: Online lecture, link will be communicated
  Schedule: to be defined
  Language: English

3) Innovative Technologies in Biomedicine:

- *Anti-tumor telomerase vaccine* (0.5 credits)
  Teacher(s): Prof. Daniela Fenoglio/Prof. Gilberto Filaci
  Location: Online lecture, link will be communicated
  Schedule: to be defined
  Language: English
- *Practical notions on transcriptomic analysis for the prediction of biological trajectories of experimental and clinical conditions* (0.5 credits)
  Teacher: Prof. Andrea De Maria
  Location: Online lecture, link will be communicated
  Schedule: to be defined
  Language: English
- *mRNA vaccine technology: the example of SARS-CoV-2 vaccine* (0.5 credits)
  Teacher: Prof.ssa Claudia Cantoni
  Location: Online lecture, link will be communicated
  Schedule: to be defined
  Language: English

Seminars

0.5 credits/each seminar

- *Imaging Flow Cytometry: a different approach to flow cytometric* (0.5 credits)
  Dr. Genny Del Zotto
  Location: Online seminar, link will be communicated
  Schedule: April 29th, 2021 – 2 PM
  Language: English
- *Basophil Activation Test: when and why* (0.5 credits)
  Dr. Genny Del Zotto
  Location: Online seminar, link will be communicated
  Schedule: May 13th, 2021 – 2 PM
  Language: English
- *T cell plasticity and dynamics in human diseases* (0.5 credits)
  Prof. Raffaele De Palma
  Location: Online seminar, link will be communicated

Schedule: the precise date will be defined, approximatively May 2021
Language: English

- *NK cell trafficking and function in the prediction of SARS-CoV-2 clinical course* (0.5 credits)
  Prof. Andrea De Maria
  Location: Online seminar, link will be communicated
  Schedule: the precise date will be defined, approximatively September 2021
  Language: English
- *Mass spectrometry in personalized medicine* (0.5 credits)
  Dr. Andrea Petretto
  Location: Online seminar, link will be communicated
  Schedule: the precise date will be defined, approximatively October 2021
  Language: English
- *SARS-CoV-2 variants and clinical response to different vaccination* platforms (0.5 credits)
  Prof. Andrea De Maria
  Location: Online seminar, link will be communicated
  Schedule: the precise date will be defined, approximatively April 2022
  Language: English

Cycle XXXVII

Year 1 (a.y. 2021-2022)

- Preparation of a Research project in response to a Call (1 credit) (date to be defined)
- Presentation of the results of an experimental work (1 credit) (date to be defined)
- How to write a scientific paper (1 credit) (date to be defined)
- Animal testing (1 credit) (date to be defined)
- Intellectual property and patents (2 credits) (date to be defined)
- Seminars (0.5 credits/each) (to be defined)

Year 2 (a.y. 2022-2023)

- Knowledge of the fundamental principles of flow cytometry (1 credit) (date to be defined)
- Immunotherapy approaches (1.5 credits) (date to be defined)
- Innovative Technologies in Biomedicine (1.5 credits) (date to be defined)
- Seminars (0.5 credits/each) (to be defined)