



UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

PhD in Biomorphological and Surgical Sciences

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PRESENTATION

The PhD in Biomorphological and Surgical Sciences is focused on topics with a strong scientific-technological vocation which develop in the various scientific-disciplinary sectors characterizing the course and are integrated at various levels in both experimental and clinical activity:

- a) study of the correlation between the morphological characteristics of the individual tumor and its genetic, molecular and immunophenotypic status;
- b) development of innovative imaging methodologies aimed at the early identification of the biochemical, molecular, structural and functional alterations underlying neoplastic, cardiological and neurological pathologies;
- c) development of Bio-Nano-Photonics systems and applications of Photonics to bio and nanosciences;
- d) development of surgical techniques for the treatment of endocrine-metabolic pathologies.

The PhD course in Biomorphological and Surgical Sciences also promotes internationalization thanks to the participation of seven professors from foreign universities on the board and in consideration of the several projects carried out in collaboration with European, United Kingdom and United States Academic Institutions.

Finally, it provides for the implementation of study and research periods abroad and ensures that the doctoral student takes advantage of qualified and specific operational and scientific structures for study and research activities and promotes the valorisation of research results and guarantees the protection of intellectual property.

The PhD Course in Biomorphological and Surgical Sciences is a three-year program activated by the Department of Advanced Biomedical Sciences.

The training activities are divided into the multi-disciplinary integration of the following objectives:

1. use and implementation of different types of "molecular imaging" techniques (such as metabolic imaging, functional imaging and receptor imaging) with the aim of developing specific skills for the design and synthesis of radio-compounds, for the applications of metabolic-functional and receptor imaging techniques and (such as SPECT, PET-CT and spectro-MRI) with particular reference to neoplastic diseases, of the nervous system and of the cardiovascular system.
2. use of current techniques used in pathological anatomy for the identification and validation of new biomarkers of prognosis and/or therapeutic response in human neoplastic, degenerative and/or inflammatory pathologies.
3. implementation of bariatric and metabolic surgery, both in the evaluation of the interest it may arise from a scientific point of view, such as in the treatment of type 2 diabetes mellitus, and in the evaluation of the advantages it offers from in terms of socio-economic impact resulting in significant savings in health costs due to all the comorbidities linked to morbidity linked to obesity such as hypertension, diabetes, cardiovascular diseases and weight-bearing arthropathies.



The research activity is carried out by each doctoral student under the supervision of a tutor assigned by the Doctoral Course Teaching Committee.

The teaching activity is concentrated over the entire course, and is divided into lessons and cycles of mandatory seminars, held both by the teachers of the internal academic board and upon invitation by teachers external to the academic board itself. As part of the teaching activity, the doctoral student will be able to carry out supplementary teaching and tutoring activities.

In order to promote the internationalization of the course, doctoral students are encouraged to carry out at least one quarter of research and training activities abroad at foreign universities and research institutions.

Training activities referred to in art. 4, paragraph 1, letter. f) of the Ministerial Decree 45/2013

Type	Brief description
Linguistics	Implementation of knowledge of foreign languages through dedicated seminar activities and English language courses organized every year by the University Language Centre.
Informatics	<i>Implementation of knowledge of the procedures and IT systems necessary for carrying out the activities relating to the doctoral experiments through dedicated seminar activities.</i>
Management of research, knowledge of research systems and funding systems	Implementation of knowledge relating to the methods of research activities in terms of planning, carrying out and analysis of experiments through dedicated seminar activities, with also reference to the systems and criteria for financing research projects.
Valorization of research results and intellectual property	Implementation of the meaning of the scientific methodologies used in terms of intellectual evolution and the potential clinical impact of the results achieved in the trials through dedicated seminar activities.