

The Multidisciplinary Research Doctorate on “Tissue Engineering and Remodeling Biotechnologies for Body Function” aims to extend the knowledge both at the molecular and clinical levels on acquired and/or hereditary diseases, concerning (i) the motility apparatus, (ii) the maxillo-facial district, (iii) the vision system, (iv) the otorhinolaryngology system.

The Doctorate is subdivided in four pathways, closely interrelated, namely of (i) molecular pathophysiology, (ii) tissue engineering and remodeling, (iii) clinical research, (iv) therapeutic and rehabilitation application.

Thanks to the multidisciplinary of expertises, ranging between Biochemistry, Molecular Biology and Pathology, Cell Pathology, Tissue and Genetic Engineering, Biomechanics and Clinics, the Doctorate aims to accomplish:

- a) the optimization of biotechnological resources in the molecular and cellular field;
- b) the design and experimentation of innovative systems, pathways and diagnostic protocols.

From the organisational standpoint, the Doctorate will be subdivided in four pathways, closely interrelated (through the collaboration of multidisciplinary tutors), namely of (i) molecular pathophysiology, (ii) tissue engineering and remodelling of the Extracellular matrix, (iii) clinical research for the optimization of the body functioning, (iv) therapeutic and rehabilitation application. In particular, the first pathway will be devoted to the analysis and identification of molecular mechanisms underlying different pathologies, mostly addressed toward the head-neck region and the motility apparatus. The second pathway will mainly deal with the features of biomaterials for the development of innovative tissue engineering and Extracellular Matrix remodelling approaches for the exploitation of stem cells in the orthopedic, oculistic and otorhinolaryngoiatric fields. The third pathway will be mostly dedicated to the deepening of clinical aspects, also employing the knowledge derived from the previous pathways, in the field of orthopedy and the head-neck district for an optimization of body functioning also in the field of Sports Medicine. Finally, the fourth pathway will mostly concern the research on innovative systems for the cure and rehabilitation of these pathologies.

At present time, the Doctorate, which is at its second cycle (having started at the XXXIV Cycle), has 11 Ph.D. students, 5 of Italian nationality, 2 of Russian nationality, 2 of Iraq nationality, 1 of Pakistan nationality and 1 of Cameroun nationality. They are distributed over the four main pathways, namely 1 in pathway (i), 3 in pathway (ii), 4 in pathway (iii) and 3 in pathway (iv). Since 2019 there is a joined Ph.D. Course with Sechenov University of Moscow (Russia) on pathway (ii).

During the XXXV Cycle there have been several:

- Interdepartmental seminars with national and international guests on various topics concerning the different scientific aspects of the Ph.D. Course
- Lab meetings and/or national meetings, where the Ph.D. students have presented his/her updated data on the projects run in the tutor lab.
- Finally, there has been a detailed presentation event where each Ph.D. student has discussed with the Board of Teachers data obtained during the scientific activity of the year.