

## DOCTORAL PROGRAM

IN

## CLINICAL SCIENCES

Director prof. Gian Maria Rossolini

XL cycle – academic year 2024/2025

<b>BIOMEDICAL AREA</b>	
<b>ADMINISTRATIVE OFFICE</b>	Department of Experimental and Clinical Medicine
<b>CURRICULA</b>	<ol style="list-style-type: none"> <li>1. Clinical Pathophysiology and Pathophysiology of Aging, Emergency Medicine, and Nursing Sciences</li> <li>2. Clinical and Experimental Medicine and Radiology</li> <li>3. Clinical Pathology, in Musculoskeletal Diseases and Calcified Tissues</li> <li>4. Anesthesiology, Pain Therapy and Surgical Sciences</li> <li>5. Psychology</li> <li>6. Infectious Diseases and International Cooperation, Global Health and Occupational Medicine</li> </ol>
<b>THEMATICS</b>	<p style="text-align: center;"><b>Curriculum in Clinical Pathophysiology and Pathophysiology of Aging, Emergency Medicine, and Nursing Sciences</b></p> <p><b><u>Nursing area</u></b></p> <ol style="list-style-type: none"> <li>1. Organ donation in nursing sciences.</li> <li>2. Clinical risk in nursing sciences.</li> <li>3. Nursing Management of signs and symptoms.</li> </ol> <p><b><u>Medical Area</u></b></p> <ol style="list-style-type: none"> <li>1. Study of the pathogenetic, clinical and therapeutic mechanisms and of the microbiota and its modulation in rare immunovascular, autoinflammatory and metabolic diseases of adults</li> <li>2. Pathophysiology, risk factors and antithrombotic therapies of atherothrombosis</li> <li>3. Pathophysiology, risk factors and antithrombotic therapies of venous thromboembolic disease.</li> <li>4. Geriatric pathophysiology and epidemiology</li> <li>5. Pathophysiology and clinical epidemiology fragility and geriatric syndromes</li> <li>6. Aging of the vascular system and age-related diseases (cardiological, neurological, vascular): pathophysiology, clinic and rehabilitation.</li> <li>7. Neurodegenerative diseases of the elderly: pathophysiology, clinic and rehabilitation</li> <li>8. Innovative socio-health approaches for the treatment of the elderly and of</li> </ol>

geriatric syndromes

9. Innovative organizational models in Emergency Medicine
10. Development of new methodologies of advanced simulation to improve efficiency/efficacy of trauma team

#### **Curriculum in Clinical and Experimental Medicine and Radiology**

1. Biological basis (cellular, molecular, genetic, metabolic, microbiologic, hormonal) of immune dysregulation and of related diseases (chronic inflammatory diseases, immunodeficiencies, autoimmunity, cancer).
2. Biomarkers, phenotyping, sex and precision therapies in immune dysregulatory diseases.
3. The role of the new MRI (Diffusion, Perfusion) and CT parameters (Perfusion with techniques of reduction of the dose in MultiSlice-CT and ConeBeam-CT) in the pre and post therapy evaluation of the different anatomic areas (neuro and head, heart and chest, abdomen and pelvis).
4. New Imaging techniques in the evaluation of microcirculation of fibrosing autoimmune diseases (skin, lung, musculoskeletal system).
5. Radiomics.
6. Genetic basis and clinical/laboratory stratification of common variable of immunodeficiency as prototype of immune dysregulation diseases: infections, autoimmunity, and tumors.
7. Predisposing factors, physiopathology, organ involvement and innovative therapeutic approaches to autoimmunity.
8. Predisposing factors, physiopathology, and innovative therapeutic approaches in allergic diseases.
9. Predisposing factors, physiopathology, and innovative therapeutic approaches in systemic fibrosing autoimmune diseases.
10. Study of the relationships between the immune system and the microbiota in the genesis of chronic inflammatory diseases and neoplasia.
11. Study of the intratumor and peripheral immune response in solid tumors.
12. Translational aspects of chronic hepatopathies and primitive tumors of liver.
13. Cancer immunotherapy: strategies of treatment implementation and personalization.
14. Oncogenesis and biomarkers of neoplastic evolution secondary to hepatic viruses.
15. Crioglobulinemic syndromes and lymphoproliferative disorders in the infections hepatitis virus-related.
16. Immunotherapy in autoimmunity and rare immune mediated diseases.
17. New classification and organ involvement in rheumatic diseases.

#### **Curriculum in Clinical Pathology of Musculoskeletal diseases and calcified tissues**

1. Innovative methods of assisted orthopaedic surgery
2. New biomaterials for orthopaedic and trauma surgery
3. Analysis and evaluation of the interaction between biomaterials and bone in prosthetics and traumatology
4. Tumor and pseudotumor pathologies of the musculoskeletal system
5. New technologies in osteoarticular reconstructions in orthopaedic surgery
6. Mineral and bone metabolism in clinical models of calcified tissue diseases.
7. Clinic of mineral and bone metabolism pathologies such as primary and secondary osteoporosis, osteomalacia and rare diseases of mineral and skeletal metabolism
8. Translational studies in mineral and bone metabolism disorders
9. Studies of analysis and intervention (nutritional, physiatriac and pharmacological) for primary and secondary prevention of mineral and bone metabolism pathologies

10. Technological innovation in the assessment and rehabilitation treatment of people with disabilities associated with musculoskeletal pathology
11. Artificial intelligence applied to patient stratification and prediction of rehabilitation recovery in the field of musculoskeletal pathology

**Curriculum in Anesthesiology, Pain Therapy and Surgical Sciences**

1. New techniques and technologies in the field of general, urological, thoracic, cardiac, pediatric, and vascular surgery
2. Molecular precision medicine in the field of oncological pathology of surgical interest
3. Optimization of the surgical procedure in the pre-, intra- and post-operative phases
4. Simulation in learning new surgical techniques
5. Development of transplantation: from immunotherapy to surgery
6. Molecular basis of inflammatory, neuropathic, and oncological pain

**Curriculum in Psychology**

1. Psychological and/or psychosocial mechanisms implicated in the onset or maintenance of psychological distress, mental disorders and physical illnesses
2. Research methods in clinical and health psychology.
3. Psychological interventions in psychological distress, mental disorders and physical illness.

**Curriculum in Infectious Diseases and International Cooperation, Global Health and Occupational Medicine**

1. Epidemiology, clinics and diagnostics of emerging and re-emerging infections as a global health issue.
2. Parasitic diseases and host response in endemic and non-endemic areas..
3. Vector-borne diseases and other emerging infections: one-health approach.
4. Antimicrobial resistance as a global problem: one-health approach.
5. Allergic diseases and bronchial asthma in moving populations
6. Emerging risk factors in Occupational Medicine: one-health approach.







