The Group of Molecular and Industrial Biotechnology (GBMI) at the Chemical Engineering Department of UPC is a multidisciplinary research group combining basic and applied research in the fields of bio-nanotechnology, molecular biology, polymer engineering and genetic engineering. GBMI has large experience in: enzymatic functional modification of polymers and biopolymers for industrial and biomedical applications, enzymatic synthesis and polymerization, chemical and enzymatic modification of proteins for industrial applications, molecular engineering of proteins, purification, structural, biochemical and functional characterization of biomolecules, combined sonochemical-biotechnical processes and hybrid biopolymer/inorganic nanoantimicrobials. The integration of expertise in biotechnology, molecular biology, polymer engineering and genetic engineering within the same group is a very unique characteristic of GBMI.

**PRACTICAL CASES**

**Antimicrobial coatings**

- **ONE-STEP SONOCHEMICAL COATING OF MEDICAL TEXTILES AND DEVICES**
  - Enzymatically crosslinked hydrogel in action
  - Hybrid coatings
  - Layer-by-layer coating of medical devices
  - In vivo NPs generation and coating on contact lenses

**Antimicrobial NPs**

- **NANOTRANSFORMATION OF ANTIMICROBIAL AGENTS**
  - Antimicrobial coatings of medical devices
  - Antibacterial and/or antifungal activities

**Chronic wounds dressings**

- **POLYURETHANE FOAMS WITH AgLig NPs**
  - Novel treatments for visual and neural disorders

**Infection detection**

- **NANO-ENABLED DIAGNOSTIC DEVICES**
  - Detection of bacterial virulence factors through nanochannels blocking

**Immunoassays**

- Identification of pharmacological target and development of new therapeutic strategies