**PROJECT TITLE / JOB POSITION TITLE:**

BACTERIAL CELLULOSE-BASED MATERIALS TO TREAT EPITHELIAL TISSUES

**RESEARCH PROJECT / RESEARCH GROUP DESCRIPTION:**

(2,000 characters – including spaces)

Epithelial tissues can be viewed as continuous cell sheets that delimitate both the external body surfaces and the internal cavities. Epithelial tissues are not vascularized and receive support from the underlying basement membrane formed by connective tissue. Examples of epithelial tissues are the external linings of the skin, cornea and mouth but also those from the hollow internal organs such as lungs, digestive system, urogenital conducts and spinal cord. Depending on its location in the body, epithelia can be found as single (e.g., intestines, lungs) or multiple cell layers (e.g., skin, cornea, esophagus). Because of their surface location, epithelia are constantly exposed to environmental stressors and despite their extraordinary regenerative capacity, they can be overwhelmed by large-area injuries, surgical scissions, burns or ulcers which might result in chronic lesions. Biomaterials represent a core element of regenerative therapies and are used in multiple ways to treat epithelial defects.

Bacterial nanocellulose is emerging as a new class of natural biomaterial with great potential to treat damaged tissues. The outstanding properties of BC, in conjunction with its natural origin and sustainable manufacturing call for many diverse applications in epithelial regeneration. The Ph.D. thesis will be dedicated to studying the opportunities of BC-based as alternatives to conventional treatments for some specific tissue treatments. For that, BC modifications (nanostructuration, nanoparticle functionalization, tailoring pore structure or hybridization with synthetic polymers) will be explored.

Recent group references on the subject.
- Bacterial nanocellulose as a corneal bandage material: a comparison with amniotic membrane, Irene Anton-Sales et al, *Biomaterials Science* (2020), DOI: 10.1039/D0BM00083C
- Opportunities of Bacterial Cellulose to Treat Epithelial Tissues, Irene Anton-Sales et al *Current Drug Targets* (2019) DOI: 10.2174/1389450120666181129092144
JOB POSITION DESCRIPTION:
(2.000 characters – including spaces)
Include all the relevant information about the position, role, responsibilities and skills required within the project/group

Requirements:
- BSc and/or MSc in Chemistry, Chemical Engineering, Biochemistry, Materials Science or Nanoscience.
- High motivation and interest in multidisciplinary projects.
- Working aptitudes in a collaborative group.
- Written/spoken English.

GROUP LEADER:

Title: Prof.
Full name: Anna Roig
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Research project / Research Group website

RELATED LINKS TO THE POSITION (optional)
URL: https://departments.icmab.es/nn/, @NNgroupICMAB
Tittle link: