

## CONTRATOS PREDOCTORALES 2021 SEVERO OCHOA

### PROJECT TITLE / JOB POSITION TITLE:

**Polymeric drug delivery carriers with multimodal imaging moieties to address acute lung conditions**

### RESEARCH PROJECT / RESEARCH GROUP DESCRIPTION:

(2.000 characters – including spaces)

A major problem in severe Covid-19 patients is the inflammatory cytokine storm triggered in the lung. A key mechanism involved in this process appears to be the hyperactivation of pulmonary macrophages in response to the SARS-CoV-2 spike protein. Consequently, modulating inflammatory cells will be essential to control the lung damage linked to this hyperinflammatory state. Mesenchymal stem cells (MSC) are known to exhibit anti-inflammatory and regenerative effects that are largely mediated through secreted exosomes. Unfortunately, MSCs or MSC-exosomes treatments are difficult to implement in clinical practice. In particular, it is extremely complex to accurately control MSC-exosomes effectiveness as they show large heterogeneities depending on the state of activation or the concentration of MSCs that generate them.

To overcome these drawbacks, we aim at devising pharmacological polymeric nanoparticles to encapsulate a high concentration of selected relevant proteins and miRNAs. It is expected that this therapeutic nanocarrier will down-regulate inflammation, assist the restoration of immune homeostasis and regenerate lung tissue injury. This is an exciting possibility of a cell-free/cell-based therapy to control lung inflammation. The candidate will join an interdisciplinary and multicentric team with expertise in medicine, cell biology and nanotechnology.

### 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*

We are seeking for an enthusiastic PhD candidate **graduated in chemistry, nanoscience, materials science or biochemistry and an MSc on similar fields.**

Other requirements:

- A high level of English.
- Highly motivated toward experimental research in a chemistry lab
- Working aptitudes in a collaborative group.
- Good communicator

### GROUP LEADER:

**Prof. Anna Roig**

Email: [roig@icmab.cat](mailto:roig@icmab.cat)

Research project / Research Group website: <https://nn.icmab.es/>  
<https://www.icmab.es/roig-serra-anna-permanent-researchers>

Twitter: @AnnaRoig8 @NNgroupICMAB @icmabCSIC

