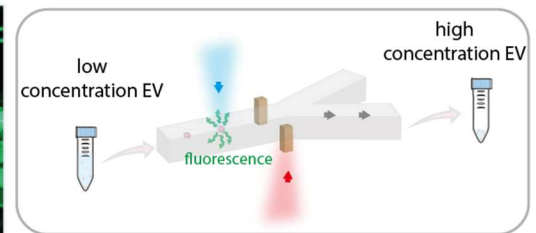
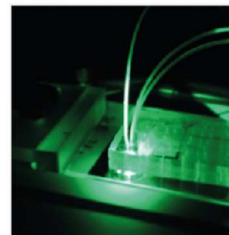
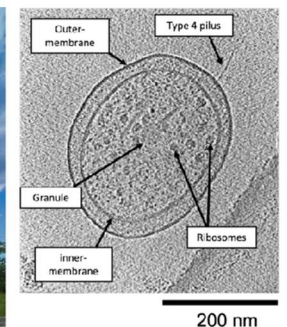


Postdoc offer

Sorting bacterial extracellular vesicles with micro- and opto-fluidics

Laboratoire Photonique Numérique et Nanosciences (LP2N), Bordeaux.
Centre de Recherche Paul Pascal (CRPP), Pessac.
Institut Européen de Chimie et Biologie (IECB), Pessac.

Context - Extracellular vesicles are nanosized lipid membrane vesicles naturally produced by mammalian cells and bacteria. In this project, we will focus on bacterial extracellular vesicles (bEVs) which play an important role in bacterial physiology and virulence. While they were discovered 60 years ago, they are currently being extensively studied. Many recent developments aim to exploit their potential as vaccines, drug delivery, cancer immunotherapy, antibacterial agents or diagnostic biomarkers. These vesicles also have great potential in structural biology, especially for the study of bacterial membrane complexes in a native context by cryoelectron microscopy. Unfortunately, bEVs populations are very heterogeneous in size and composition. This heterogeneity is the main obstacle to the use of these bEVs for biomedical applications and fundamental research.



Objective - The objective of this project is to design and validate a bEVs sorter that could help remove this barrier. To do this, we will use a microfluidic approach to minimize volumes. The detection of the bEVs of interest is based on an optofluidic module for measuring the fluorescence signal. Two sorting strategies, one electrical and one optical will be explored. The performance of the integrated device will be evaluated and improved through the preparation of vesicular model systems and bEVs recovered from genetically modified bacteria.

Environment - This collaborative project will be carried out jointly across 3 teams, each with its own areas of expertise (optical microscopy for LP2N, microfluidics applied to biological systems for CRPP and structural biology of bacterial nanomachines for IECB). The geographical proximity of the different laboratories within the Bordeaux campus is a major advantage for such an interdisciplinary project.

Candidate – This highly interdisciplinary project involves instrumental development in **optical microscopy, microfabrication and bacterial extracellular vesicles manipulation**. We are looking for a highly motivated candidate with a strong background in one of these fields or with expertise in a broader range of fields.

To apply, please send a CV, and at least a reference letter to Amaury Badon (amaury.badon@cnrs.fr), Jean-Christophe Baret (jean-christophe.baret@u-bordeaux.fr) or Rémi Fronzes (r.fronzes@iecb.u-bordeaux.fr).