

Optimisation of PHBV production through bacterial fermentation into bioreactor

Context :

As part of European project NENU2PHAR (www.nenu2phar.eu), we aim at optimizing and controlling the fermentation of PHBV Poly(HydroxyButyrate-co-HydroxyValerate) biopolymer with carbon feedstock from micro-algal biomass.

You will be part of Prof. Bruzaud's team. See <https://www.irdl.fr/annuaire/stephane-bruzaud/>

A few relevant bacterial strains for construction of functional PHAs, especially marine bacterial strains have been identified. The task is now to achieve high productivity compatible with up-scaling and industrial exploitation. For each couple strain/substrates selected, the influence of parameters of culture will be studied. Among the studied parameters the main ones will be temperature, pH, dissolved oxygen, nutrient limitation, process (batch or fed-batch) and time of cultivation. Particular attention will be given to the fed-batch strategy defining the adequate substrate feeding profile taking into account the culture dynamics and keeping conditions of carbon excess to ensure the PHA accumulation. Monitoring the PHA accumulation (using a fluorescent marker for example) during the fermentation process will help to determine the best set of parameters needed for the highest yield of production. These optimizations will be initially conducted in flask cultivation and then in bench-scale fully controlled 3 liters bioreactors available at IRDL.

Candidate profile and requirements:

- We look for students in their master studies in a biotechnology related field.
 - autonomy in laboratory work to be able to run the bioreactor alone after training
 - critical evaluation of measurement results
 - strong organization skills : project building
 - good presentation skills: data processing, report writing, literature searches, oral presentations
- Good knowledge of spoken and written English and/or French
- Experience in microbiology (sanitizing work-space, working in sterile conditions, using autoclave...) can be an advantage
- Driving license and personal car are strongly recommended as the **internship is based at the I.U.T of Pontivy** (56300 PONTIVY) where public transports are limited
- The internship period is 4 to 6 months with fully flexible start date (suggested September/October 2021)
- A contribution to the intern's living cost will be paid according to French law
- Send CV + motivation letter to Dr. Carole Lainé : carole.laine@univ-ubs.fr