

## **Internship position in Chemistry - 6 months**

Group BAE (LBBM, University of Perpignan, France)

### **Development of a biosensor to detect cell heterogeneity during fermentation**

Bio-based production of chemicals and fuels is important to develop a more sustainable society. For that, industrial processes based on microbial activities, such as fermentation, are becoming more widespread every year. In this kind of processes, microorganisms are used to produce a variety of different chemicals such as amino acids, vitamins, antibiotics, biofuels, etc. However, the scale-up of many biotechnological processes is still a challenge, and one of the reasons for this is the appearance of low-producing or non-producing cells in the fermentation reactors, which can reduce product yield and quality.

In this project, we propose to develop an **electrochemical affinity biosensor for the specific detection of diverging cell phenotypes in fermentation reactors**. The biosensor will be based on the specific **association between two small proteins**. The idea is to immobilise one of these proteins at the surface of an electrode and conditionally express the other one on divergent cells. The association between the two proteins, and consequently the presence of divergent cells, will be detected by a change in the electrical signal of the sensor.

The project is a collaboration between the laboratory BAE-LBBM at the University of Perpignan and the Toulouse Biotechnology Institute (TBI, INSA of Toulouse). The student will be based in the BAE group (Biosensors, Analysis, Environment) in Perpignan and will work under the supervision of Prof. Thierry Noguer and Dr. Marta Meneghello. He/she will be involved in electrode modification, immobilisation and modification of a small protein and the electrochemical analyses.

**We are looking for a master student** in Chemistry, Biochemistry, Biotechnology or related disciplines, who is willing to learn more about **electrochemistry and biosensor development**. Note that **in France the internships (longer than 2 months) are financially rewarded**.

For further information, please contact:

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