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Can we make Biocatalysis more sustainable and efficient? and How?



Wednesday, 4th September
12.00 p.m.

CIC biomaGUNE - Seminar Room

Enzymes are biological catalysts that are becoming increasingly popular as more selective alternatives to traditional chemical catalysts. However, enzymes are not naturally suited to the harsh conditions they often encounter in biotechnological or biomedical applications, such as extreme pH, high temperatures, or dehydration. These conditions can lead to reduced stability, which affects their efficiency and sustainability. To address these challenges, my research has focused on enzyme immobilization techniques and the intensification of the immobilized biocatalysts in continuous-flow reactors for the synthesis of antivirals, anticancer drugs, and fragrance molecules. To this end, a multidisciplinary approach incorporating bioinformatic tools, new renewable biomaterials, and enzyme discovery has been applied. Despite these advances, enzyme stability remains a significant challenge in the field of Biocatalysis. To further improve stability, we are currently investigating innovative protein-protein interaction strategies with the ultimate goal of creating a universal tool for protein stabilization.