SEMINAR

CIC biomaGUNE
MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

Edurne Rujas
UPV/EHU & Instituto Biofisika

Enhancing monoclonal antibody properties through the use of human scaffold proteins

Wednesday, 20th March
12.00 p.m.

CIC biomaGUNE - Seminar Room

Monoclonal antibodies stand out as the fastest-growing class of biologics for the treatment of infectious, autoimmune, and cancer diseases. Despite their prominence, these molecules encounter several limitations, such as suboptimal potency and the emergence of resistance mechanisms. To overcome these challenges and enhance the therapeutic potential of monoclonal antibodies, we have developed two distinct protein engineering strategies focused on elevating their potency. Specifically, I will demonstrate how we used the human apoferritin protomer as a modular subunit to drive the multimerization of antibody fragments, creating highly avid, multi-specific molecules. We applied this platform against two devastating pandemic viruses, SARS-CoV-2 and HIV-1, demonstrating that the resulting molecules efficiently overcome sequence diversity with extraordinary potency. Additionally, I will illustrate how we harnessed another human scaffold protein to generate a novel antibody modality with enhanced drug-loading capacity to address challenges associated with antibody-drug conjugates in cancer treatment. These strategies pave the way for a new era in biologics, offering promising solutions for the treatment of human diseases.