



BIFI-Talks 2021

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De novo protein design for tailoring structure and function

The recent revolution of de novo protein design is transforming the protein engineering field. Instead of searching and modifying natural proteins, de novo protein design crafts new proteins from physical principles with sequences and geometries not restricted to those seen in nature. From scratch, protein backbones are computationally generated according to geometrical restrictions defined by the designer, followed by the calculation of low-energy amino acid sequences stabilizing these backbones. In this way, protein structures are tailored for stability and function; potentially overcoming frequent limitations of repurposed natural proteins in terms of stability, geometry, size, recombinant expression or protein interactions, among others. We have identified key principles for the de novo design of a variety of protein folds containing beta-sheets, which are attractive structural motifs for building ligand-binding sites, and used these principles for computationally designing proteins in excellent agreement with their experimental structures. This has opened the door to custom-design proteins for binding small-molecules and protein targets of therapeutic relevance. De novo proteins allow us to explore a vast sequence and structural space to develop novel biotechnological solutions, and ultimately advance our understanding on how proteins work.

DIA Y HORA: 19 DE MARZO A LAS 12:30

ONLINE: ZOOM Seminar

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