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New opportunities for pharmacology on Alba II

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Drug development relies on a thorough understanding of the structural parameters governing drug/target interactions and the structural effects resulting from drug binding in the target structure. The Unit for the Development of New Chemical, Biological, and Immunological Drugs aims (among other targets) to design and optimize compounds targeting microtubules, essential cellular polymers crucial for cell division, neuron axon stabilization, and chemical transport. Modulating microtubules is a recognized strategy for targeting cancer, neurodegeneration, and infections. To achieve these goals, we utilize XALOC to analyze drug-protein interactions at the atomic level, NCD-SWEET to examine the effects of drug binding on microtubule structure, and MISTRAL to study the cellular effects of the designed compounds in treated cells.
The advent of ALBA II presents exciting opportunities for pharmacology, providing advanced capabilities and cutting-edge tools for drug development and molecular studies. With enhanced synchrotron facilities, researchers will be able to look deeper into the structural intricacies of drug-target interactions and the intracellular localization of the drugs, enabling a more comprehensive understanding of pharmacological mechanisms improving their specificity and optimizing the doses used. The presentation will showcase the outcomes of this multidisciplinary research, highlighting the potential applications and discussing our wishlist for the construction of ALBA II.

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