SOCIÉTÉ CHIMIQUE DE GENÈVE

Short peptides as next-generation chelating agents for treating metal-related diseases

Dr Michal Shoshan

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Metals play a critical role in human health and biology, but when misregulated, they can become profoundly toxic. Toxic metals fall into two broad categories. The first includes intrinsically toxic, non-essential metals such as mercury, lead, and arsenic. The second group consists of essential metals like iron, calcium, and copper, which can become dangerous when their homeostasis is disrupted. Such imbalances lead to systemic toxicity and damage to multiple organs.

The only approved treatment for many of these conditions is chelation therapy, which relies on small-molecule drugs designed to bind the metal ions and facilitate their excretion via urine or feces. However, current chelators often fall short of the ideal; they lack selectivity, cause side effects, and are ineffective in treating some forms of metal toxicity.

Over the past six years, Michal and her team have been working to change that. Starting at the Department of Chemistry at the University of Zurich, they identified short peptides as a promising and underexplored chemical space for selective and efficient metal chelation. This research laid the foundation for metaLead Therapeutics AG, a UZH spin-off dedicated to developing novel peptide-based treatments for metal-related diseases.

In this talk, Michal will highlight the team's work in two key disease areas: lead poisoning and Wilson disease, a rare genetic disorder caused by toxic copper accumulation in the liver and brain. The presentation will also reflect on the journey from academic research to translational development, and the unique challenges and opportunities that come with bridging these two worlds.

Conférence présentée :

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