

LS23-028 - mDIAMANT: machine learning decodes interaction archetypes of membrane proteins to predict the effect of genetic variants

Zusammenfassung

Living cells depend crucially on protein interaction to operate in a coordinated fashion. The underlying mechanisms can be understood as a series of locks and keys: to function properly, different entities must match in structure and be in contact at the right interface. Although many characteristics of individual proteins are well understood, we have to date only partial knowledge about which proteins cooperate and how they interact. This information is however crucial to understand biology and an invaluable prerequisite for developing cures for diseases which are caused by protein malfunction. To lessen this knowledge gap, mDIAMANT relies on new experimental data and artificial intelligence to establish an inventory of structure motifs of protein-protein interactions interfaces, or archetypes. Interaction archetypes will provide mechanistic understanding of how proteins interact and better explain how mutations can lead to disease by disrupting protein interactions.

Wissenschaftliche Disziplinen:

Molecular biology (40%) | Machine learning (40%) | Human genetics (20%)

Keywords:

Protein-protein interaction, Transmembrane proteins, Transporters, Human genetic variation, Variant effect prediction, Kernel methods, AlphaFold Manifold learning, Explainable artificial intelligence

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Status: Vertrag in Vorbereitung

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Weiterführende Links zu den beteiligten Personen und zum Projekt finden Sie unter

<https://www.wwtf.at/funding/programmes/ls/LS23-028/>