

Mapping biological functions of NUDIX enzymes

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In a large multidisciplinary project, researchers at Karolinska Institutet have explored different properties of an enzyme family called NUDIX hydrolases. The study, published in *Nature Communications*, reveals novel insights into their biological functions in human cells.

The NUDIX enzymes are involved in several important cellular processes such as cellular metabolism, homeostasis and mRNA processing. Although highly conserved throughout all organisms, their individual structural, biochemical and biological properties remain largely unclear.

To address this, Professor Thomas Helleday and Assistant professor Jordi Carreras-Puigvert at Karolinska Institutet's Department of Medical Biochemistry and Biophysics and Science for Life Laboratory (SciLifeLab) initiated a collaborative study with researchers at Uppsala University, Stockholm University, the University of Ljubljana in Slovenia, and members of the Human Protein Atlas.

Comprehensive enzyme profile map

The collaboration has resulted in comprehensive data on individual properties and interrelationships of 18 human NUDIX enzymes, revealing four major structural classes. Using a novel algorithm, the researchers integrated all data creating a comprehensive NUDIX [enzyme](#) profile map.

"This map reveals novel insights into substrate selectivity and [biological functions](#) of NUDIX hydrolases and poses a platform for expanding their use as biomarkers and potential novel cancer drug targets", says Jordi Carreras-Puigvert.

The multidisciplinary project included analyses in biochemistry, structural biology, functional genomics, gene expression, protein expression and bioinformatics.

More information: Jordi Carreras-Puigvert et al. A comprehensive structural, biochemical and biological profiling of the human NUDIX hydrolase family, *Nature Communications* (2017). [DOI: 10.1038/s41467-017-01642-w](#)

Provided by Karolinska Institutet

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