

THE HUMAN PROTEIN ATLAS

metabolic
ATLAS 

A new Metabolic Atlas launched to explore human metabolism

[September 5, 2019] - A new Metabolic Atlas has been launched as part of the open access Human Protein Atlas program (www.proteinatlas.org/metabolic), allowing researchers to explore the expression of biochemical pathways across human tissues. The new resource leverages the most extensive mapping of human metabolism to date, with biochemical information and connectivity for more than 13,000 reactions, 4,000 unique compounds, and 3,500 genes.

Metabolism is the collection of chemical reactions providing the building blocks and energy necessary to sustain life. Studying the individual components of human metabolism and how they function as part of a connected system is therefore critical to improving health and treating disease. A Metabolic Atlas has been developed at Chalmers University, (www.metabolicatlas.org) in collaboration with the Human Protein Atlas and selected information of this atlas is incorporated as part of the Tissue Atlas in the new version 19 of the Human Protein Atlas. Human metabolism is presented with over 100 manually curated 2D maps and this provides a valuable tool to advance our understanding of the complex human metabolic system.

The Metabolic Atlas is a knowledgebase of metabolism containing carefully curated information on individual metabolic components such as reactions, metabolites, and genes. Interactive maps allow users to visually navigate human metabolism at the level of entire cellular compartments or individual metabolic pathways. Furthermore, gene expression data for 37 different tissue types from the Tissue Atlas can be overlaid on the maps to visualize tissue-specific differences in metabolic gene expression.

The Metabolic Atlas project is headed by Prof. Jens Nielsen, in collaboration with the Human Protein Atlas. "I am excited about the launch of the Metabolic Atlas as it will be an important platform for future analysis of how human metabolism is changing during disease development, and hereby it can enable identification of novel biomarkers and drug targets", explains Prof. Nielsen. The work was funded by the Knut and Alice Wallenberg Foundation.

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About

Human Protein Atlas

The Human Protein Atlas (HPA) is a program based at SciLifeLab (Science for Life Laboratory), Stockholm, that started in 2003 with the aim to map of all the human proteins in cells, tissues and organs using integration of various omics technologies, including antibody-based imaging, mass spectrometry-based proteomics, transcriptomics and systems biology. All the data in the knowledge resource is open access to allow scientists both in academia and industry to freely access the data for exploration of the human proteome. Version 19 (launched September 5, 2019) consists of six separate parts, each focusing on a particular aspect of analysis of the human proteins; including the Tissue Atlas showing the distribution of the proteins across all major tissues and organs in the human body, the Cell Atlas showing the subcellular localization of proteins in single cells, and the Pathology Atlas showing the impact of protein levels for survival of patients with cancer. Version 19 adds three new parts to the resource: the Blood Atlas showing the profiles of blood cells and proteins in the blood; the Brain Atlas showing the distribution of proteins in human, mouse and pig brain; and the Metabolic Atlas showing the presence of metabolic pathways across human tissues. The latter is a collaboration with Chalmers University. The Human Protein Atlas program has already contributed to several thousands of publications in the field of human biology and disease and it has been selected by the organization ELIXIR (www.elixir-europe.org) as a European core resource due to its fundamental importance for the wider life science community. The HPA consortium is funded by the Knut and Alice Wallenberg Foundation.

For more information, see: www.proteinatlas.org

Knut and Alice Wallenberg Foundation

The Knut and Alice Wallenberg Foundation is the largest private financier of research in Sweden and also one of Europe's largest. The Foundation's aim is to benefit Sweden by supporting basic research and education, mainly in medicine, technology, and the natural sciences. The Foundation can also initiate grants to strategic projects and scholarship programs.

For more information, see: <https://kaw.wallenberg.org/en>

SciLifeLab (Science for Life Laboratory)

SciLifeLab is an institution for the advancement of molecular biosciences in Sweden. SciLifeLab started out in 2010 as a joint effort between four universities: Karolinska Institutet, KTH Royal Institute of Technology, Stockholm University and Uppsala University. The center provides access for advanced infrastructure in life science for thousands of researchers creating a unique environment for health and environmental research at the highest level.

For more information, see: www.scilifelab.se