

# THE HUMAN PROTEIN ATLAS

## The Human Blood Atlas launched – a resource for exploration of blood cells and proteins

**[September 5, 2019]** - A new Blood Atlas has been launched, as part of the open access Human Protein Atlas, in which the proteins in human blood cell types are described together with a comprehensive analysis of all proteins predicted to be secreted from human cells (“the secretome”). The new atlas provides a unique resource for the study of human biology and diseases, in particular for immune-based research and efforts to develop new, effective treatments in oncology and autoimmune diseases.

The new Blood Atlas provides data for life science researchers, in particular those interested in immune cells and applied research based on biological drugs. Genes with elevated expression in blood cells, such as T and B-cells, monocytes, granulocytes and dendritic cells, have been identified, including many genes previously not described as enriched in human blood cells. The analysis has confirmed known blood cell type specific markers, but more importantly many new potentially interesting blood markers have been identified. The blood cell data is combined with data covering all major tissues in the human body to provide a new classification of all human genes with regards to their tissue distribution across all major human tissues and organs.

We also present information about all actively secreted proteins and their final location in the human body, including proteins secreted to peripheral blood. The proteins detected in human blood by mass spectrometry-based proteomics and antibody-based immune-assays are presented to provide an open access resource to facilitate exploration of individual proteins actively secreted by human cells. Our analysis suggests that there are only approximately 700 proteins actively secreted to blood, which is a much lower number than previously expected.

All the data is integrated in an interactive, open access Blood Atlas as part of the Human Protein Atlas ([www.proteinatlas.org/blood](http://www.proteinatlas.org/blood)) that allows for genome-wide exploration of the protein-coding genes expressed across human immune cell populations and all major tissues and organs. “We are excited that researchers from more than 180 countries around the world now use the Human Protein Atlas and we hope that the new Blood Atlas will be a valuable resource for future efforts to improve patient care, in particular in fields such as immune-based therapies and blood-based assays”, says Mathias Uhlén, Director of the Human Protein Atlas Program. The work was funded by the Knut and Alice Wallenberg Foundation.

### For more information, contact:

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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](http://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](http://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 advance 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](http://www.scilifelab.se)