

THE HUMAN PROTEIN ATLAS

New version of the Human Protein Atlas launched with a focus on validation of antibodies

Stockholm, December 1, 2017

A new version of the Human Protein Atlas is launched today implementing the strategy for enhanced validation of antibodies suggested by the International Working Group for Antibody Validation (IWGAV). More than 10,540 antibodies directed to a total of 6,787 human protein targets have passed the criteria of enhanced validation.

Antibodies are among the most frequently used tools in basic research and in clinical assays. At present, clinically used antibodies are under strict control, but antibodies used in research lack generally accepted scientific guidelines for quality control, and several editorials have lately been published stating the need for guide-lines for validation of research antibodies.

In this context, an International Working Group on Antibody Validation (IWGAV), published last year a proposal for antibody validation in the journal *Nature Methods*¹. The working group consisted of researchers from institutions, such as Stanford University, Yale University, MIT, UCSD, University of Toronto, National Institutes of Health (NIH), European Molecular Biology Laboratory (EMBL), Niigata University in Japan and Science for Life Laboratory in Sweden. The working group suggested the use of five “pillars” for validation of antibodies with the aim to establish standards for evaluation and quality control of antibodies, for both users and producers of antibodies.

Today, the Human Protein Atlas (www.proteinatlas.org) consortium, funded by the non-profit Knut and Alice Wallenberg Foundation, launched a new version of the open access database for life science and medical research. Enhanced validation of the antibodies used in the program has been the focus in this new version and a large portion of the antibodies used for protein profiling of cells, tissues and organs has been analysed using the principles suggested by IWGAV.

The five validation strategies used in the new version of the Human Protein Atlas are:

Validation strategy	Description
1. Genetic	Decreased levels of target protein by genetic methods
2. Recombinant expression	Increased levels of target protein by recombinant expression
3. Independent antibodies	Matched staining of two antibodies binding to the target protein
4. Orthogonal	Matched target expression pattern obtained with antibody-independent method
5. Capture MS	Matched protein size determined using mass spectrometry based size analysis

The new version also contains more information for specialized tissues, such as thymus and eye. Altogether, the new version 18 of the Human Protein Atlas contains tissue specific information based on antibody-based protein profiling for 16,996 target proteins (87% of all human protein-coding genes).

Reference

¹ Uhlen et al 2016, "A proposal for validation of antibodies" Nature Methods 13, 823-827, accessed on-line at: doi:10.1038/nmeth.3995

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About

Human Protein Atlas

The Human Protein Atlas (HPA) is a Swedish - based program 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. The version 18 (launched December 1, 2017) consists of three separate parts, each focusing on a particular aspect of the genome - wide

analysis of the human proteins; 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. The Human Protein Atlas program has already contributed to several thousands of publications in the field of human biology and disease and it was recently (July, 2017) selected by the organization ELIXIR (www.elixir-europe.org) as a European core resource due to its fundamental importance for a 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> .