When the first near-complete human genome sequence was published in 2003, everyone was excited about the potential for both basic and applied research. The human proteome, which contains around 20,000 genes, is complex and dynamic. It is caused by the disease phenotype. When it comes to cancer, a tumor will have its own unique proteome and may even be different to that of the brain. At the same time, the proteome of a neuron will differ from the proteome of a glial cell. A combination of many methods is needed to probe the proteome.

In the poster on the reverse of this page, we have summarized and provided examples of some of the rich data housed in our genetic material, we are built out of proteins. They give us form and function—the house that is built from a DNA transcription into proteins. Each protein can be used to improve human health and disease treatment.

The Human Protein Atlas

Improved in the human proteome! Today we provide over 17,000 antibodies, which target more than 75% of the human protein coding genes to researchers worldwide. Help! A Polyclonals offer advanced levels of specificity, reliability and versatility.

Want to test them in your research? Learn more today at antibodypedia.com
The Power of Proteins. The human genome consists of approximately 20,000 protein-coding genes. If DNA can be equated with the blueprint for a house, then proteins can be thought of as the bricks and mortar, plumbing, and paint—essentially everything that makes up the house. This poster summarizes the multiple ongoing antibody- and transcriptomics-based proteome projects and where in the human body this research is focused. For more detailed information, visit: www.proteinatlas.org
THE USE OF ANTIBODIES TO STUDY THE HUMAN PROTEOME

ANTIBODEMY
Antibodypedia is a web-based knowledge resource with annotated and scored antibodies from commercial and academic providers. All information is free and accessible in the database. With the knowledge in Antibodypedia you have the power to select the right antibody for the right application.

THE POWER OF ANTIBODIES
Antibodies, also known as immunoglobulins, are Y-shaped proteins, which are used by the immune system to identify and destroy foreign objects such as bacteria and viruses. The antibody recognizes a unique part of the foreign target, the antigen. The unique properties of antibodies are used in a wide range of therapeutic and research applications. This poster describes some of the most common techniques.

FLOCYTOMETRY
Flow cytometry is a laser-based, biophysical technology used to count, measure size, and detect properties of particles in suspension. A sample of suspended particles is separated through a narrow nozzle, and a laser enables detection of properties of individual particles in the sample.

IMMUNOHISTOCHEMISTRY
Immunohistochemistry is a microscopy based technique for visualizing cellular macromolecules, such as proteins, in complex tissues. By using specific antibodies to generate a colored precipitate in the tissue, a visual output of the existence and localization of the target molecule is generated.

IMMUNOCYTOCHEMISTRY
Immunocytochemistry (ICC) is a technique for the visualization of proteins and peptides in cells. In ICC the extracellular matrix around the cells is removed and, by using an antibody linked to a reporter (e.g., a fluorophore), the sub-cellular localization may be seen through a microscope.

IMMUNOPRECIPITATION
Immunoprecipitation uses antibodies to isolate and concentrate a protein out of a solution containing thousands of proteins. A solid support is used to allow precipitation of the antibody-protein complex. An advantage is that the natural functionality of the native protein is preserved.

PROXIMITY LIGATION ASSAY
A proximity ligation assay uses a pair of oligonucleotide labeled antibodies binding to different epitopes on a protein, or to epitopes in close proximity on two proteins in a complex. Used for detection, visualization and quantification of single proteins or protein-protein interactions.

ELISA AND ARRAY FORMATS
Immunosorbent methods use antibodies and reporters to detect a substance. A common technique is the “enzyme-linked immunosorbent assay” (ELISA) that uses an enzymatic reaction as reporter. The immunoassay format may be miniaturized on microarrays to allow multiplexing for multi-parameter analysis.

IMMUNOPROTEOMICS
Immunoproteomics combines the use of antibodies and mass spectrometry to study large sets of proteins. Immuno-affinity enrichment may be used to reduce the large dynamic range in biological samples before MS-analysis. Immunoproteomics is a useful tool within quantitative proteomics.

IMMUNOELECTRON MICROSCOPY
Immunoelectron microscopy combines the ability of an antibody to specifically bind a protein with the high spatial resolution of an electron microscope. Detection of the antibody’s sub-cellular localization in the sample is made by conjugating the antibody with colloidal gold particles.

IMMUNOASSAYS
Antibodies are used for the detection and quantification of a wide range of substances. They can be used as reporters in immunoassays, which are widely used in diagnostics, drug discovery, and research.

WESTERN BLOT
Western blot is an analytical technique used to detect specific proteins in a sample. Proteins are separated on a gel and the result visualized on a membrane using labeled antibodies. It is a common method and almost all available commercial antibodies are validated using this method.

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