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Proteomic profiling utilizing antibody, antigen and high-density peptide microarrays

Peter Nilsson
KTH Royal Institute of Technology, Sweden

Abstract

The Human Protein Atlas (www.proteinatlas.org) currently contains 17.298 validated antibodies targeting 14.079proteins corresponding to approximately 70% of the encoded human proteins. The publicly available portal contains several million high-resolution images generated by immunohistochemistry on tissue microarrays and confocal microscopy for sub cellular localization. The antibodies are antigen-purified and the long-term objective is to generate paired antibodies towards all human protein targets. A systematic biomarker discovery approach has been implemented, utilizing array-based platforms and the massive antigen and antibody production pipeline, as well as high-density peptide arrays.

Proteomic profiling of serum, plasma and CSF in multi-disease cohorts are performed with large number of peptides and antigens on planar microarrays for the analysis of autoimmunity repertoires. Broad screenings and verifications with antigen-based profiling is performed within neurodegenerative related diseases, such as multiple sclerosis, ALS, Alzheimer as well as psychiatric disorders utilizing thousands of targets. Furthermore, large set of samples from the same diseases are also profiled with massive numbers of antibodies on highly multi-parallel suspension bead arrays which utilizes magnetic color-coded beads functionalized with antibodies to generate protein profiles from labeled samples for biomarker discovery. The results from both autoimmunity and antibody-based proteomic profiling within neurodegenerative related diseases utilizing thousands of targets in both platforms will be presented.

Biography

PN is Professor in Proteomics at the *SciLifeLab Stockholm*, *KTH – Royal Institute of Technology*. He has since 2002 been heading the Protein Microarray Technology group within the Human Protein Atlas project.He is the platform director of Affinity Proteomics at SciLifeLab Stockholm and the site director of the Human Protein Atlas at SciLifeLab Stockholm

The main research focus is within development and utilization of various protein microarray technologies for antigen and antibody based proteomic profiling and biomarker discovery.