

Companion diagnostics and proteomics-based biomarker analysis for improved and personalized medicine

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Abstract

Inflammation is a vital part of the immune system's response to injury and infection. Chronic inflammation and low grade inflammation has been linked to certain diseases such as heart disease, stroke and obesity, and may also lead to autoimmune disorders, such as rheumatoid arthritis (RA) and lupus (SLE). Researchers are still working to understand the implications of chronic inflammation on the body and the mechanisms involved in the process as well as monitoring outcome of drug treatment. Advances in high-throughput molecular technologies have increased investigations into the utility of transcriptomic, proteomic and metabolomic approaches as diagnostic tools for precision medicine [1,2]. Basic blood tests include readily detectable inflammatory markers and central autoantibodies, however, now deep analysis allow more clinical insight biofluids by proteomic profiling of plasma/ serum, extracellular vesicles and global autoantibody profiling. We present recent concepts and present studies investigating inflammatory diseases as well as low grade inflammatory diseases in different biofluids from plasma to synovial fluid and CSF accessing causalities leading to inflammation and pain in autoimmune diseases. High density protein array with more than 1600 antigen spots now allow subtyping of common autoimmune diseases including RA and SLE demonstrating new proteomic profiling of native autoantigens from patient biofluids [3,4]. Prediction of treatment outcome in low grade inflammatory diseases including obesity may be assessed by proteomic and multiplex analysis [5]. Label-free quantitative shotgun proteomics now enable individualized profiling of subjects providing biomarkers indicative of diagnosis and treatment efficacy. Translational biofluid profiling between systemic and local sites of inflammation e.g. plasma enables biomarker analysis and in-depth insight into disease pathology [6,7].

Biography

Allan Stensballe is currently working as an Associate Professor at the Faculty of Medicine at Department of Health Science and Technology at Aalborg University. He pursued his PhD in Biotechnology from University of Southern Denmark.

He has over 70 publications in reputed national and international journals. His international experience includes various programs, contributions and participation in different countries for diverse fields of study.