CHARACTERISATION OF THE AUTOIMMUNE ANTIBODY REPERTOIRE OF PARKINSON'S DISEASE PATIENTS BY SYSTEMATIC SCREENING OF PROTEIN ARRAYS

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The diagnosis of Parkinson disease (PD), a degenerative disorder of the central nervous system, relies on the recognition of clinical symptoms appearing in a late stage of pathogenesis. At this stage of PD only the treatment of the clinical symptoms is feasible, a therapy that is capable to stop the progression of the disease is not available. Therefore, the identification of molecular markers allowing an early diagnosis of PD is urgently needed.

Following the hypothesis that the progression in Parkinson's disease may be caused by a chronic autoimmune response, we have characterized the autoimmune antibody repertoire of PD patients by serum hybridization of protein arrays in order to determine the potential of selected autoimmune antibodies to act as molecular markers for PD.

We utilize the UNIarray® technology that combines the advantages of protein arrays with the large-scale expression of proteins from existing cDNA libraries to screen 20 serum samples of PD patients against 10 000 heterologously expressed human proteins arranged on a macroarray. This approach resulted in the identification of 150 autoantigens that represent putative disease markers. First results indicate that such a diagnostic protein array allows differentiating PD patients from non-affected ones.

To validate these molecular markers an iterative screening procedure was developed allowing a stepwise reduction of candidate proteins with concomitant increase of quality and purity. We are currently analysing a larger cohort of PD patients and non-PD patients in order to define a smaller subset of marker proteins that allows the set up of a blood-based *in vitro* diagnostic assay.