

Neurobiology

Brain Damage Markers

The project is built on the extensive experience of Jean-Charles Sanchez in the discovery, development and implementation of biomarkers for the diagnosis of human diseases. By combining clinicians, proteomic scientists, bioinformaticians, chemists, producers of immunological reagents and diagnostics platform companies, this project provides in an interacting effort the necessary focus and infrastructure to develop and validate new diagnostic, prognostic and therapeutic follow-up panel of biomarkers for brain damage disorders.

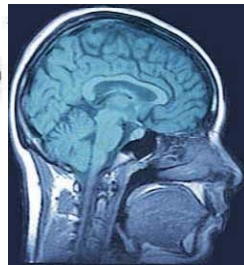
Using an already established list of over 150 brain damage-related biomarkers identified in a model of severe brain cell death we will select an initial panel of 30 to 40 candidate proteins for which immunoassays and synthetic peptides will be procured or produced. Initially we will develop individual prototype assays for the measurement of each biomarker in a limited number of serum samples. Using these results we will use bioinformatics to devise new statistical algorithms to correlate individual marker levels with clinical parameters such as aetiology, size of lesion and disease and treatment outcome to prioritise the individual biomarker assays to be combined into the final panels for diagnosis, prognostic and therapeutic monitoring of patients. We envisage that such a panel will include a range of both brain-specific and more general disease markers. The panels will be validated on at least three different cohorts of patients available (stroke, subarachnoid hemorrhage and TBI cohorts) encompassing more than 500 patients with full clinical follow-up and samples at different time points after onset of symptoms for a total of more 10'000 samples.

An important aspect of the project is the final implementation of the panel on a platform that allows the levels of each of the markers to be reported individually, as well as in an overall output. This will be achieved by testing multiplex assays by mass spectrometry and/or bead arrays capable of measuring up to 40 different markers. Such assay systems have already been successfully developed (AQUA, QConCAT, Luminex and Bioplex). Development of new brain multiplex assays and integration with laboratory-automated platforms will address the problems of rapid, robust and accurate diagnosis and prognosis of several brain damage disorders.



© Original Artist
Reproduction rights obtainable from
www.Cartoonists.com

WE WANT TO ASSURE VIEWERS THAT NO
BRAIN CELLS CAN BE DAMAGED DURING THE
TRANSMISSION OF THIS PROGRAMME.



Number of publications : 150
Total Impact Factor estimated: 598
Average Impact Factor: 3.99
H Index: 43
Total time cited: 6'109
Funding: Sfr 7'500'000.-



Jean-Charles Sanchez,
MER Proteomics

Group's publications

Carrette O, Demalte I, Scherl A, Yalkinoglu O, Corthals G, Burkhard P.R., Hochstrasser D., Sanchez J.C.
A panel of cerebrospinal fluid potential biomarkers for the diagnosis of Alzheimer's disease.
Proteomics, 2003, 3, p.1486-1494.

Guillaume E., Zimmermann C., Burkhard P, Hochstrasser D.F., Sanchez J.C.
A potential cerebrospinal fluid and plasmatic marker for the diagnosis of Creutzfeldt-Jakob disease.
Proteomics, 2003, 3, p. 1495-1499.

Zimmermann-Ivol C., Burkhard P., Le Floch-Rohr J., Guillaume E., Allard L., Hochstrasser D., Sanchez J.C.
Fatty acid binding protein : A serum marker for the early diagnosis of stroke
Mol. Cell. Proteomics, 2004 Jan;3(1):66-72.

L. Allard, P. Lescuyer, J. Burgess, K. Leung, M. Ward, N. Walter, P. Burkhard, G. Corthals, D. Hochstrasser, Sanchez J.-C.
ApoC1 and CIII as potential plasmatic markers to distinguish between ischemic and hemorrhagic stroke
Proteomics 2004, Aug;4(8):2242-51.

Sanchez, J.-C., Guillaume E., Lescuyer P., Allard L., Carrette O., Scherl A., Burgess J., Corthals G., Burkhard P., Hochstrasser D.
Cystatin C as a potential cerebrospinal fluid marker for the diagnosis of Creutzfeldt Jakob disease
Proteomics 2004, Aug;4(8):2229-33.

P. Lescuyer, L. Allard, C. Zimmermann-Ivol, J. Burgess, S. Hughes-Frutiger, P. Burkhard, D. Hochstrasser, Sanchez J.-C.
Identification of post-mortem cerebrospinal fluid changes as potential biomarkers of ischemia and neurodegeneration
Proteomics 2004, Aug;4(8):2234-41.

Allard L, Burkhard PR, Lescuyer P, Burgess J, Walter N, Hochstrasser DF, Sanchez JC
PARK7 and nucleoside diphosphate kinase A as plasma markers for the early diagnosis of stroke.
Clin. Chem. 2005, Nov;51(11):2043-51.

Lescuyer P, Gandini A, Burkhard PR, Hochstrasser DF, Sanchez JC.
Prostaglandin D2 synthase and its post-translational modifications in neurological disorders.
Electrophoresis. 2005 Dec;26(23):4563-70.

Carrette O, Burkhard PR, Hochstrasser DF, Sanchez JC
Age-related proteome analysis of the mouse brain: a 2-DE study.
Proteomics. 2006 Aug 15; (Epub ahead of print)

Burgess JA, Lescuyer P, Hainard A, Burkhard PR, Turck N, Michel P, Rossier JS, Reymond F, Hochstrasser DF, Sanchez JC.
Identification of brain cell death associated proteins in human post mortem cerebrospinal fluid
Journal of Proteome Research. 2006 Jul; 5(7):1674-81

Carrette O, Burkhard P.R., Hochstrasser D, Sanchez J.C.
State-of-the-art two-dimensional gel electrophoresis: a key tool of proteomics research
July 2006; Nature Protocols: Vol. 1 N° 2