«*High dimensional analysis of Cerebrospinal fluid: towards finding inflammatory signatures in neurological disorders for diagnosis and prognosis*»

Project Summary

Cerebrospinal fluid (CSF) analysis offers a window into brain pathologies and is requested in various conditions despite neuroradiological advances. Then, CSF represents an invaluable source of biomarkers to understand and diagnose neurological disorders. However, this resource is still poorly used with analysis on a limited number of markers. We then aim to develop a tool to help diagnose and predict the course of neurological disorders based on multiparametric analyses of glial, neuronal, and inflammatory markers on the CSF. To this end, CSF from various neurological disorders (from multiple sclerosis to Alzheimer's disease including headache, lymphoma, …) will be tested for up to 65 glial, neuronal, and inflammatory markers, and data generated will be integrated using bioinformatic tools. We will use a machine learning algorithm to classify inflammatory signatures according to diagnosis. Then, we will assess if this tool may help in the diagnosis and prognosis of neurological disorders.

Personal Details:

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Positions and Appointments:

11.2022-	Chief Resident, Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, Switzerland, Neurology, Clinical Neurosciences Department
11.2019 - 10.2022	Resident, Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, Switzerland, Neurology, Clinical Neurosciences Department
11.2018 - 11.2019	Resident, Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, Switzerland, Internal medicine, Medicine Department
09.2015 - 09-2018	Post-doctoral fellow, Center for pathophysiology Toulouse Purpan, France, Investigation of autoimmune processes in narcolepsy with cataplexy, (Part time: 30%)
09.2015 - 06.2018	Medical student, Toulouse University Hospital (CHU de Toulouse), France, Rotations in Pneumology, Rheumatology, Orthopaedic surgery, Cardiology, Urology, Diabetology, Abdominal surgery, Neuropathology, Neurology, Paediatrics, Gerontology, Emergency room
06.2016 - 09.2016	Visiting research Fellow, McGill University, Canada, Montréal neurological institute, Supervisor: Dr. Bar-Or

11.2012 - 09.2015	PhD student, Center for pathophysiology Toulouse Purpan, France, Investigation of autoimmune processes in narcolepsy with cataplexy, PhD supervisor: Prof. Roland Liblau
01.2012 - 06.2012	Intern, Lyon Cancer research center, France, Deletion of TGF-β signaling pathways deletion in T cells triggers development of both gut inflammation and colorectal cancer, Supervisor: Julien Marie
09.2010 - 12.2010	Intern, Lyon Neurosciences research center, France, Improvement of the Cell Based Assay for the detection of anti-aquaporin 4 antibodies in neuromyelitis optica, Supervisors: Prof. Honnorat, Prof. Marignier

Fellowships, Prizes and award:

2023	Faculté de Biologie et Médecine, Université de Lausanne, Thesis award, Livio-Glauser Foundation
2023	Ellermann Foundation, Prize for young researchers
2017	Académie Nationale de Médecine, Laureate, Maurice Louis Girard prize
2014	Journées de Neurologie de Langue Française, Fellowship for research in neurology
2010	Ecole de l'INSERM – Liliane Bettencourt, Laureate, MD-PhD program