Multiple sclerosis (MS) is an autoimmune disease characterized, in part, by expanded clones of antigen-experienced B cells that reside in several compartments of the central nervous system (CNS), including the brain and cerebrospinal fluid (CSF). While it is known that B cells in the CSF can exchange with those in peripheral blood, it is not understood whether this immune infiltrate initiates its development in the CNS or in peripheral tissues. We addressed this question through deep sequencing of B cell immunoglobulin repertoires from paired tissue samples from MS patients. Our results demonstrate that the CNS of patients with MS is populated by B cells that gain antigen experience and mature peripherally, in the draining cervical lymph nodes, prior to trafficking across the blood-brain barrier [1]. Analysis of these large-scale data was made possible through the development of several computational tools and methods that we currently make available to the wider scientific community through the Immcantation tool suite (http://immcantation.readthedocs.io) [2].

Full abstract: http://laufercenter.stonybrook.edu/seminar