OPEN POSITION: Post-doc

Research Unit: LAI (U1067 INSERM, U7333 CNRS)
Starting date: ASAP
Location: Luminy Campus, 13009 Marseille, France
Funding: 2-year postdoc

We offer in LAI (U1067 INSERM, U7333 CNRS) in collaboration with the team of Pierre Milpied in CIML a post-doc position, up to two years, the topic bridging immunology and biophysics. The selection of germinal center (GC) B cells during affinity maturation requires the uptake of membrane antibody-bound antigen from follicular dendritic cells. This antigen-BCR bond takes place between membrane-tethered molecules (in 2D), and its formation and rupture dynamics are governed by disruptive forces, and many other factors. Thus, more relevant biophysical methods are needed to measure this 2D interaction instead of classical three dimensional (3D) in-solution measurements. We investigate in Laboratoire Adhesion et Inflammation the physical selection mechanisms driving this maturation process by measuring the association and dissociation kinetics both in 3D and in 2D under force of a large collection of recombinant antibodies. These antibodies are produced from antigen-specific B cells that are undergoing affinity maturation and are sorted for single-cell RNA sequencing by our collaborators in CIML. Our measurements to date show that B cells might regulate their evolution in the GC through the exertion of pulling forces. Our results indicate that acquired mutations during affinity maturation might be driving B cell selection during the maturation process through modulating antibodies' ability to resist forces exerted by the B cell. The position offered propose to continue this work by using methods derived from the flow chamber allowing both free energy measurements and bond ageing, and by creating and measuring new lineages of antibodies from new immunization.

Please contact Philippe Robert (philippe.robert@inserm.fr) for more information.

Philippe Robert MD, PhD
Maître de conférences des universités - praticien hospitalier
Laboratoire Adhésion & Inflammation, deputy director
Aix-Marseille Université - INSERM UMR 1067 - CNRS UMR 7333