QUANTITATIVE STUDY OF THE CONTACT BETWEEN B CELLS AND ANTIBODIES-FUNCTIONNALIZED OIL DROPLETS USING MICROFLUIC TRAPS

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In the immune system, B cells have the function to produce antibodies after the binding of B cell receptors with antigens presented at the surface of other cells, like dendritic cells for example [1]. This specific recognition leads to B cell spreading and antigen accumulation at the contact of the two cells [2]. In previous works, the kinetic of the antigen accumulation has not be fully studied [3]. Moreover, the B cell mechanical forces implied in the recognition processes are not known.
In our work, we used antibodies-functionnalized oil droplets as antigen presenting cells. As liquid objects, they have the advantage of allowing antibody accumulation at their surface and potentially deformation, permiting force measurement. We put them into contact with B cells using a dedicated microdevice with adapted microfluidic traps to see the « time zero » of contact and also to increase the statistics of contact. Results from the kinetic studies and persperctive on future developments will be presented.

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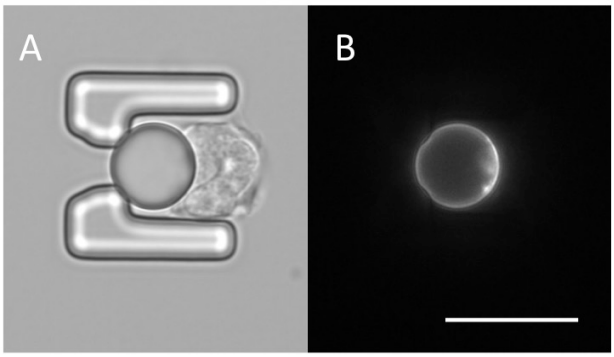

Image showing a B cell in contact with an antibodies functionnalized oil droplet in a microfluific trap. The trap has been first loaded with the functionalized oil droplet and the B cell has been loaded in secund. The time of the image is 7 minutes after contact. (A) Microscope image in bright field. (B) Microscope image in fluorescence of the droplet showing an accumulation of streptavidin at the contact between the droplet and the cell. (Bar=20µm)