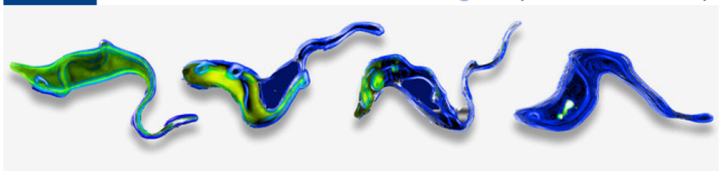

Contribution ID: **16** Type: **Poster**

Chemotaxis quantification methods with a three channel microfluidic chip

Bacteria and plants communicate via chemical signals to establish symbiotic interaction. The chemosensory system of the bacteria receives chemical inputs that biases the random motility of the bacteria.
Microfluidic technologies now make it possible to produce chips in which the chemical environment can be controlled. The model I use is a chip with three parallel channels on an agarose layer. Fluids containing known concentrations of the chemical species are placed in the outer channels. This generates a gradient of the chemical species across the agar layer. After a few minutes, we inject a suspension of bacteria into the central channel.
The cell is placed under a microscope, allowing us to film the bacterial population regularly. The first series of studies we carried out aimed to characterize the method's limitations for determining the chemotactic response of bacteria. In particular, we looked at the influence of channel surfaces on the measurement. To this end, we used fluorescent *E. coli* bacteria and placed them in Casaminoacid gradients.
By taking measurements at different heights over the 80-micron height of the channel, we have shown that the chemotactic response is not the same on the surfaces and in the middle of the channel. We will propose a model including this effect. We also want to characterize the influence of viscosity on chemotaxis by adding PVP to our suspension. We will conclude by applying this method to Sinorhizobia meliloti.

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