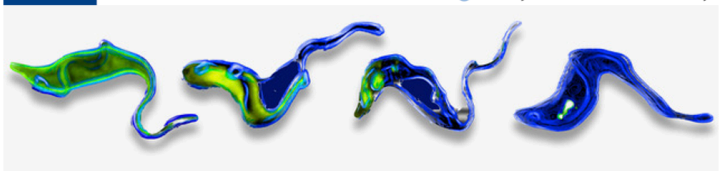

Contribution ID: **21** Type: **Contributed talk (20 min)**

Droplet and waving instabilities of an active fluid jet

Micro-algae in relatively dense suspensions modify their environment by absorbing light, consuming and releasing chemical compounds or generating flows. Instabilities that appear in those systems can in turn give biological insight regarding the way this critically important class of micro-organisms navigate their environment.

Here we harness phototaxis to precisely control millions of swimming Chlamydomonas reinhardtii cells and experimentally test theoretical predictions regarding the behavior of dense suspensions, in which they interact via their self-generated flows [1,2,3,4,5]. Starting from a straight cell jet, we show for the first time the two kind of instabilities that were predicted : its breaking into drops and its buckling into waves, depending on the cells preferential orientation. The instabilities wavelength and growth rate can be controlled notably by light intensity.

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