

LadHyX Seminar – October 2nd, 10:45

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Swimming of plant pathogens zoospores

Phytophthora species cause diseases in a large variety of plants and represent a serious agricultural threat, leading, every year, to multibillion dollar losses. Infection occurs when these biflagellated, unicellular, zoospores move across the soil at their characteristic high speed and reach the roots of a host plant.

Firstly, I present our study about the characteristics of two opposite beating flagella during translation and turning, and the roles of each flagellum on zoospore swimming. I show how these two flagella contribute to generate thrust when beating together, using mastigonemes for the anterior flagellum. I then explore the turning mechanism.

Secondly, I show the methodology developed to study the zoospores interaction with a real root growing in a microchannel and the results obtained, along with inputs obtained from biological techniques on the sensing mechanisms.

Finally, I present ongoing experiments of such microswimmers in artificial environments, either mechanical or chemical.

Our study is a fundamental step towards a better understanding of the spreading of plant pathogens' motile forms, enlightening an original motility pattern of such biflagellated cells.

