

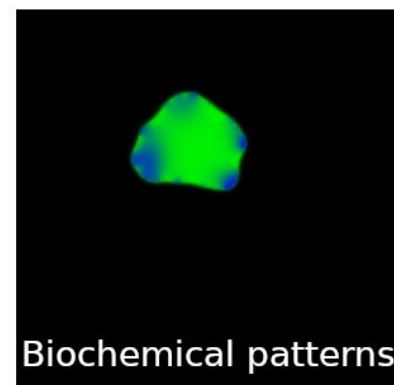
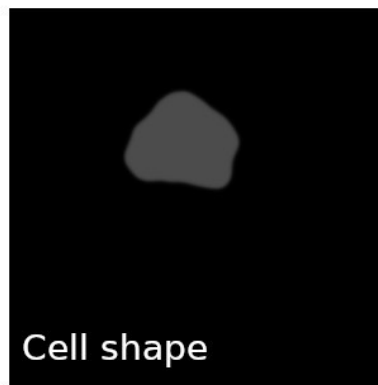
Programa formatiu en *Computational Biophysics*

Oferta de TFG

Modelling of cell locomotion: Generation of a model for the motion of neutrophils

Cell migration is an example of robust phenomenon that is present both in prokaryotic and eukaryotic cells. Living cells migrate to perform different tasks such as food targeting, wound healing and immune response. Independently of the presence of an external signal, before moving, cells need to define the direction to follow. To do so, they first define the front and the back of the cell. The process of formation of a polar

direction inside a single cell is commonly known as cell polarization and it is a typical example of pattern formation at the cellular level. The process of polarization determines the head and tail of single cells. A mechanism of this kind frequently precedes the subsequent cell locomotion and it determines the direction of motion. The process of polarization has frequently been described as a reaction-diffusion mechanism combined with a source of stochastic perturbations. **The goal of this project is to reproduce the dynamics of neutrophil cells by the use of biochemical model coupled with a phase field model for the shape of the cell.**



Proposta de TFG

The proposal for 2022/2023 consists on (1) Understand the polarization and posterior locomotion of living crawling cells; (2) Learn the basic structure of a mathematical model to couple biochemical polarization and physical motion; (3) Generation of the necessary modifications to adapt previous models on amoeba motion to neutrophil motion

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Aplicació: Enviar el CV (incloent l'expedient acadèmic) i una carta de motivació a la responsable del programa **abans del 3 d' octubre** (Clara Prats, clara.prats@upc.edu)

Finançament: El grup de recerca BIOCOM-SC atorgarà una beca INIREC a tres dels candidats que es presentin a la convocatòria del Programa formatiu en *Computational Biophysics* en la seva edició de 2022-2023, per a la realització del TFG.