

Research Intern - Pattern Formation in Alga Suspensions

Science Division/Physics Department

NYU Abu Dhabi

The Science Division in New York University Abu Dhabi, seeks to recruit an intern to work on “Pattern formation in alga suspensions”

The successful applicant will work on the following project: “Suspensions of swimming microorganisms can spontaneously generate large-scale currents, resulting in intricate and dynamic flow patterns. These flows are characterized by dense, cell-rich downwelling plumes interspersed with broad, low-concentration upwelling regions. Such large-scale hydrodynamic instabilities, termed bioconvection, arise from the microscopic behaviors of cells. This phenomenon was first observed in bottom-heavy microalgae like *Chlamydomonas reinhardtii* (CR), where the center of mass is located behind the hydrodynamic center of resistance. This configuration induces a gravitational torque that biases cell movement upwards, a behavior known as gravitaxis, causing bottom-heavy cells to accumulate near the surface. Due to the CR cells being approximately 5% denser than the surrounding fluid, this accumulation leads to gravitationally unstable stratification, resulting in the development of plumes and convective rolls”. The candidate will work in Gholami Lab in the Physics Department, which is a multidisciplinary environment consisting of PhD-level scientists, graduate students and undergraduate students.

Applicants must have experience in working with cell culture and should master aseptic techniques to prevent contamination, along with skills in maintaining cell cultures, including media preparation and passaging. Familiarity with cell counting methods, viability assays, and troubleshooting issues such as contamination is essential. While experience with microscopy techniques, including light, fluorescence, or confocal microscopy, and image processing using software like ImageJ or FIJI is an advantage, it is not strictly necessary. Attention to detail, accurate record-keeping, and adherence to laboratory safety protocols remain crucial for ensuring reliable results and a safe working environment. Senior or junior Biology major students are preferred for this project.

For consideration, applicants need to submit a cover letter, curriculum vitae, statement of research interest, 1 letter of reference, all in PDF format. If you have any questions, please email Prof. Azam Gholami at: azam.gholami@nyu.edu.

The internship opportunity is competitive. Applications will be accepted during a short timeframe during Spring and Fall terms. Shortlisted candidates will be notified within a month of the application deadline.

About NYUAD:

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EOE/AA/Minorities/Females/Vet/Disabled/Sexual Orientation/Gender Identity Employer

UAE Nationals are encouraged to apply