Grad student position

The Kelley and CompuMAINE labs are looking for a jointly mentored graduate student who will assist in computational modeling of the molecular mechanism of receptor-mediated gradient tracking. Gradient tracking is a fundamental biological process, used in humans for tissue formation, neutrophil clearance of pathogens, and by cancer cells undergoing metastasis. The classic model organism, baker’s yeast, uses gradient tracking to find potential mating partners. Yeast and humans use a conserved signaling pathway to detect the external signal and direct cell polarity towards the gradient.

The Kelley lab is interested in the role negative regulators play in promoting accurate gradient tracking. They accomplish this through a combination of yeast genetics, live cell microscopy in microfluidics devices, and computational image analysis.

The CompuMAINE Lab (Computational Modeling, Analysis of Imagery, and Numerical Experiments) is an image and signal processing, analysis, and modeling laboratory located at the University of Maine flagship campus.

The CompuMAINE lab is collaborating with the Kelley lab to develop an existing mathematical model of yeast polarity to test hypotheses about the molecular mechanism of yeast gradient tracking. The graduate student will be expected to lead the modeling under the mentoring of CompuMAINE founder and director, Dr. Andre Khalil. The graduate student’s degree of participation in the experimental biology aspects of the project are dependent upon the student’s interests.

Please contact Dr. Josh Kelley or Dr. Andre Khalil.