

中央研究院統計科學研究所

學術演講

講題：Geometric packing and underneath physics in epithelial tissues

演講人：Dr. Keng-hui Lin (林耿慧 研究員)

Institute of Physics, Academia Sinica

時間：2025-06-03 (Tue.) 14:00-15:30

地點：Auditorium, B1F, Institute of Statistical Science; The tea reception will be held at 13:40.

備註：Online live streaming through Google Meet will be available.

Abstract

Epithelial cell sheets shape the embryo and line the surfaces of many organs in adults. They act as barriers that compartmentalize biological spaces; the three sides of the plasma membranes of epithelial cells (apical, basal, and lateral surfaces) face different compartments (lumen, extracellular matrix, and neighboring cells, respectively). In this talk, I will cover two research projects in my lab. The first part is the novel mechanism proposed by my lab on the existence of medio-apical tension in the most commonly studied Madin-Darby Canine Kidney (MDCK) epithelial cells. I will show how change the tension will change cell packings and dynamics. We found the new geometric shape, scutoid, on a 2D epithelial cells, while the theoretical model predicts its existence on the curved surface if the tension is purely line tension. The second part is on the waves observed in the collective cell migration of zebrafish tailfin. We uncover the mechanism of wave propagations is through mechanical coupling and explained the century-old mystery why Highly regenerative animals can regrow lost appendages and the rate of regrowth is proportional to the amount of appendage loss.



中央研究院

統計科學研究所