



# BIOLOGY COLLOQUIUM

Friday, 15 March 2019 | 4pm | DBS Conference Room 1

Hosted by A/P Low Boon Chuan

## In toto imaging to dissect skin development and wound closure in zebrafish



**By Chen-Hui Chen**

*Institute of Cellular and Organismic Biology,  
Academia Sinica, Taiwan*

Unlike mammals, adult teleost zebrafish and urodele amphibians are able to regenerate complex tissues. Understanding how and why natural regeneration occurs in these vertebrate animals has potential to transform medicine as we know it today. One of the key challenges in regenerative biology is to understand how individual cells collectively behave to restore complex tissues of perfect size, pattern, and function. My laboratory develops new cell tagging approaches, live imaging platforms, and systems-level analyses in the zebrafish system with the goal of imaging and tracking every single cell as regeneration occurs.

I will present two stories as examples of how we apply in toto imaging and multi-disciplinary approaches to dissect mechanisms behind collective cell behaviors in epithelial tissues during development, wound closure, and regeneration.

*Chen's academic training and research experience have provided him with a background in multiple biological disciplines including molecular biology, microbiology, biochemistry, imaging, and genetics. As a graduate student, he conducted research on the mechanisms of how fungi sense and adapt to different light intensities. As a postdoctoral fellow, he switched fields to study tissue regeneration in zebrafish. During his postdoctoral period, he developed a multicolor imaging platform termed "skinbow" that enables large-scale monitoring of individual cells in live adult zebrafish. This work was later highlighted in Nature, NIH director's blog, The Economist, and ~40 other news outlets. In July 2016, he joined the Institute of Cellular and Organismic Biology at Academia Sinica as an assistant research fellow.*