

THE GIS SPEAKER SERIES

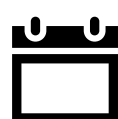


Dissecting the clonal dynamics of chemotherapy resistance: Resistance, sensitivity, and drug persisters

Professor Edison T. Liu, M.D.

President Emeritus
Honorary Fellow
The Jackson Laboratory

Host: Wan Yue



Friday 28 November 2025
4.45pm – 5.30pm



GIS L2 – Breakout Area
60 Biopolis Street, Genome, Singapore 138672

About The Speaker

Dr Edison Liu was the previous president and CEO of The Jackson Laboratory, and Director of its NCI designated Basic Cancer Center. Before that, he was the founding executive director of the Genome Institute of Singapore, and chairman of the board of Singapore's Health Sciences Authority (Singapore's FDA equivalent), the president of the Human Genome Organization (HUGO), the scientific director of the National Cancer Institute's Division of Clinical Sciences in Bethesda, Md., and professor at the University of North Carolina, Chapel Hill, where he was the director of the university's Specialized Program of Research Excellence in Breast Cancer. A trailblazer in cancer biology, molecular epidemiology, and genomics, he has authored over 355 scientific papers, reviews and books, and is involved in many advisory boards for the biotech industry.

About The Seminar

Drug resistance after effective treatment is the major cause of relapse and subsequent death for cancer patients. With a few exceptions, the many mechanisms of resistance identified from cell line experimentation have not been found useful in the clinical setting. We explored this problem with patient derived xenografts to generate acquired resistance to chemotherapy. Uniquely, we used an N-of-1 approach with deep multi-omic analyses to uncover the mechanisms of resistance at the level of individual clonal families. We found that tumor clonal heterogeneity can explain the bulk tumor behavior, and that each clone has different mechanisms of sensitivity and resistance. We uncovered how a resistant clone was reverted to sensitive, how fusion of two clonal families generate a new clonal species, and how different forms of resistance, including the drug persister phenotype, plays into the clonal evolution towards resistance.