COLLEGE OF ENGINEERING
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# Mechanical Engineering Seminar Series

## Epithelial Cell Variability is Governed by Physics Principles and has Mechanobiology Impacts

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**TBA**
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ME Seminar Zoom link

**Passcode 692510**

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**Abstract**
Biological systems inherently exhibit variability, seen in diverse cell shapes, sizes, and mechanical properties. Despite its prevalence, our understanding of the role of phenotypic heterogeneity in cell biology is incomplete. This talk explores how basic physics governs cell-to-cell variability in epithelial monolayers and its impact on biological processes. The first part covers how cell shape heterogeneity influences chromatin organization during crowding. The second part demonstrates that in deformed epithelial layers, nucleo-cytoskeleton coupling regulates intracellular strain distribution, influencing cellular mechanoresponse and gene expression. Overall, cell-cell variability significantly shapes tissue development and remodeling.

**Bio**
Dr. Neil Lin is an Assistant Professor of Mechanical Engineering and Bioengineering at University of California, Los Angeles (UCLA). He obtained his Ph.D. in physics at Cornell University, studying the microscopic mechanisms that underlie the non-Newtonian suspension flow property. From there, he went on to do a postdoctoral fellowship at Harvard University, studying approaches to recreate microenvironment cues for recapitulating kidney functions in vitro. He joined UCLA in 2019, and his research is to utilize mechanobiology principles to engineer epithelial tissues. His honors include an NIH MIRA, Prostate Cancer Foundation Young Investigator Award, and BMES CMBE Rising Star Award.

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