



## Physics Colloquium

Thursday, 19 March 2020 | 17:00 – 18:00, Seminar Room, 3rd floor

# Cellular noise and metabolism, as a matter of fat

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### ABSTRACT

*No two individual cells “look” the same, even if they share the same genes and grow under identical conditions. This unexpected phenomenon, frequently termed as ‘cellular noise’, emerges, in part, due to the stochastic nature of molecular-level interactions within individual cells.*

*In this talk, I will discuss the statistical physics nature of cellular noise and present our recent findings of how cellular noise affects metabolism, with a focus on lipid (or ‘fat’) accumulation. To this end, I will first present the bioimaging and microfluidic methods that we employ to dynamically track more than  $10^3$  single-cells on a chip [1]. I will then describe our findings of how cellular noise affects lipid biogenesis [2], how we can use noise to decipher cellular dynamics [3], and conclude with noise propagation along networks of coupled reactions [4].*

[1] *Metabolic Engineering* **27**, 115 (2015).

[2] *Scientific Reports* **5**, 17689 (2015).

[3] *PLOS ONE* **12**, e0168889 (2017).

[4] *Nature Communications* **10**, 848 (2019).