



Wolfson Department of Chemical Engineering Seminar
Lecture Hall 6, Wolfson Department of Chemical Engineering,
Wednesday, December 4th, 2019 at 13:30

Uncovering the basis of behavioral variation across developmental timescales

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Animals generate complex patterns of behavior across life that can be modified over days, months, or years. Across these long timescales, individuals within the same population may show stereotyped behaviors, but also unique behaviors that distinguish them from each other, a property called individuality. While individuality in behavior is widespread across species, including humans, the underlying mechanisms that generate individual-to-individual behavioral variation remain largely unknown. We examined the contributions of developmental programs and individual variation to behavior by developing a new multi-camera imaging system to monitor the behavior of multiple individual *C. elegans* animals across development, from egg hatching to adulthood, spanning a full generation time. By using this imaging system, we discovered that while *C. elegans* animals have reproducible patterns of long-term behaviors, individuals within isogenic populations show consistent behavioral biases that persist across development and distinguish them from one another. Furthermore, we identified specific signaling pathways that regulate stage-specific behaviors, and can either increase or decrease the degree of non-genetic individuality across the population. These studies open a new window for studying how inter-individual neuronal and behavioral diversity emerges across developmental timescales.

Refreshments will be served at 13:15