



Please join

THE DEPARTMENT OF APPLIED AND COMPUTATIONAL MATHEMATICS AND STATISTICS

for the following colloquium:

Collective Cell Migration in Development and Cancer



Nov. 17, 2014

4:15 PM

127 Hayes-Healy

Paul M. Kulesa

Director of Imaging/Kulesa Lab, Stowers Institute for Medical Research

Dr. Kulesa is a Professor and Director of Imaging/Kulesa lab at the Stowers Institute for Medical Research, where he conducts research in cell migration mechanisms in development and cancer, using embryology, dynamic in vivo imaging, and computational modeling. Dr. Kulesa received a bachelor's degree in aerospace engineering from the University of Notre Dame in 1984 and a master's in applied mathematics from the University of Southern California in 1990. He completed his PhD in applied mathematics at the University of Washington in 1995, working with Prof JD Murray, FRS, an expert in modeling biological pattern formation. He trained at the interface of experiment and theory as a Sloan Foundation and Burroughs Wellcome Fund postdoctoral fellow in the laboratory of Prof. Scott E. Fraser at the California Institute of Technology before joining the Stowers Institute in 2003.

Collective cell migration is crucial to embryo organogenesis and has been observed in aggressive cancers. Yet, our understanding of how cells persist in direction and travel in groups remains unclear.

Here, we study these questions within the neural crest, a multipotent and highly invasive cell population that contribute to the face, heart and peripheral nervous systems. Using computational modeling, embryology and state-of-the art in vivo dynamic imaging we will present results that suggest lead neural crest cells respond to multiple guidance signals and communicate direction information throughout a trailing, cohesive population. Single cell gene profiling shows a unique molecular signature to lead cells narrowly confined to the invasive front. Together, this suggests potential molecular targets for prevention of neural crest-related birth defects and invasive cancers such as melanoma and neuroblastoma.

Refreshments will be served in 154 Hurley Hall from 3:45 pm to 4:15 pm

For a complete list of colloquia: acms.nd.edu



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