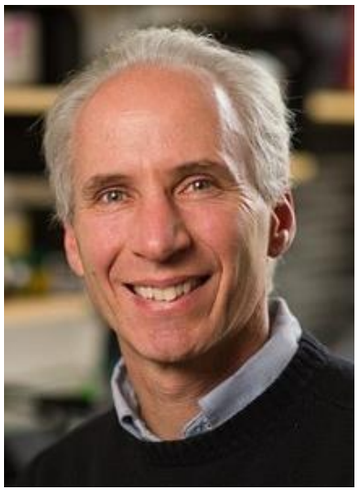
BIOENGINEERING AND BIOMEDICAL ENGINEERING
RESEARCH SEMINAR



THE ROLES OF TAU AND KINESIN-2 IN NAVIGATING THE COMPLEX MICROTUBULE LANDASCAPE DURING AXONAL TRANSPORT

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Our laboratory is interested in the molecular mechanisms that mediate axonal transport in nerve cells, focusing on the role of different molecular motor proteins in transporting cargo, as well as microtubule-associated proteins (MAPs), such as Tau that mediate interactions between the motor proteins and their microtubule tracks. Tau is of particular interest as it has been shown to inhibit the motility of one of the major anterograde molecular motors, kinesin-1, at physiological concentrations. Our lab has discovered that Tau exists in a dynamic equilibrium between diffusive and static states on the microtubule surface that depends on both the structure of the underlying microtubule lattice structure and the specific isoform of Tau. Furthermore, Tau's ability to inhibit kinesin-1 transport correlates with its ability to form static complexes on the microtubule surface. Current research projects are focused the elucidating the structural states that determine Tau's dynamic behavior on the microtubule surface, and how these are modulated by post-translational modifications such as phosphorylation. Additionally, we have shown that kinesin-2, unlike kinesin-1, is not inhibited by Tau. We are currently working on defining the mechanisms by which kinesin-2 can navigate past obstacles on the microtubule surface (such as Tau).

DECEMBER 4
1:00-2:00 PM
MACDONALD 267
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