Postdoctoral Position Studying the Electrophysiology of Stretch-Activated Channels

A long-standing question is how plants sense and perceive mechanical force and electrical signals (see Darwin & Darwin, 1880; Bose, 1926). Gravity, touch, osmotic pressure, and membrane potential are key regulators of plant growth, development, and health. Uncovering the molecular mechanisms of plant mechanotransduction and bioelectricity is critical for understanding—and for engineering—our main source of food and air.

A fully-funded postdoctoral position is available in the Haswell Lab in the Biology Department at Washington University in St. Louis. We are a team-oriented, rigorous, and social group of individuals working collaboratively on research programs at the interface of cell biology and physics. We are funded by several agencies including NSF, NIH, and HHMI. Our current research is focused on elucidating the structure, function, and regulation of several classes of mechanosensitive ion channels in E. coli and in the plant Arabidopsis thaliana. We use live-imaging, single-channel patch clamp electrophysiology, milifluidics, and complementary biochemical and molecular genetic approaches. As described in recent publications (Veley et al., Plant Cell 26:3115-31 (2014); Hamilton et al., Science 350:438-441 (2015); Wilson et al., Development 143: 3382-3393 (2016)), we have discovered that plant mechanosensitive channels can (1) sense and respond to sources of membrane tension other than environmental osmotic shock; (2) be regulated by mechanisms in addition to membrane tension; and (3) signal in ways that are separable from ion flux.

The successful candidate will employ a combination of electrophysiological, genetic, and cell biological techniques to study novel mechanosensitive ion channels and bioelectric signaling pathways in bacteria and plants. A PhD in a relevant discipline and at least one first-author publication are required. Previous experience in electrophysiology is strongly preferred, but suitably motivated individuals without this experience are encouraged to apply. Salary will be determined according to the current NIH scale.

To apply, please submit to ehaswell@wustl.edu:

1. A cover letter that explains why you are interested in joining the group, your career goals, and includes a short (1 paragraph) proposal for a possible project in the lab. This need not be detailed, but should indicate that you have read enough of the literature to be sincerely interested in some aspect of our research, and that you can think independently and creatively about your work.

2. A CV with three or more references and their contact information.