BME Seminar Series

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Date: Tuesday, March 6, 2019
Time: 10:00 am
Location: Traylor 709, Medicine Campus Video-teleconferenced to Clark Hall 110, Homewood Campus

Faculty Host: Kathy Cullen

Bioengineering and Applications of Sensors and Reporters for Molecular fMRI

Abstract: The complexity of a living mammalian brain defies reduction, but to study whole brain function as a dynamical molecular system presents an extreme challenge for Bioengineering. MRI offers a field of view that can cover the whole mammalian brain and mechanisms that can be engineered to provide molecular specificity to imaging. Using synthetic chemical and biological methods, I have established a versatile toolkit for functional studies of neurobiology with MRI. In this talk, I will share the process of developing biosensors for calcium imaging, their applications in living rodents, and an outlook on more diverse targets for whole brain, Molecular fMRI.

Bio: Benjamin Bartelle received his BS in Biochemistry and Molecular Biology from UC Santa Cruz. While at the biotech startup, Sentigen, he realized future molecular tools needed to scale from the culture dish to living animals. He left industry and earned his PhD in Molecular Biophysics with Prof. Dan Turnbull, designing novel MRI reporters and pioneering their applications to Neurobiology. He is currently a research scientist in the lab of Prof. Alan Jasanoff at the MIT Center for Neurobiological Engineering where he has invented the first in vivo capable MRI calcium sensors and helped define the new field of Molecular fMRI with support from the NIH BRAIN initiative.