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HPC Seminar:

Engineering biomedical breakthroughs

Monday, July 8nd 2019, 2pm

Helmholtz Zentrum München, Campus Neuherberg
HDC building 3620, conference room ground floor

Talk

Prof. Ellen M. Sletten

Department of Chemistry and Biochemistry, University of California, Los Angeles

Beyond the near-infrared: in vivo imaging with molecules and materials that emit above 1000 nm'

Fluorescence imaging is a central tool for visualizing complex biological systems, yet the contrast and resolution attainable is currently limited by diffuse light originating from background and scattering at visible and near-infrared (NIR) wavelengths. Recently, the shortwave infrared (SWIR, 1000 – 2000 nm) has emerged as an optimal region for in vivo fluorescence imaging due to its minimal light scattering and low tissue autofluorescence compared to the NIR. While the SWIR demonstrates great promise, suitable materials are needed with emission at these low energies for the development of optical contrast agents. This talk will highlight two approaches toward the creation of biocompatible, SWIR-emissive materials: 1) synthesis of flavylum polymethine fluorophores and 2) assembly of NIR fluorophores into red-shifted J-aggregates stabilized in nanomaterial scaffolds. Applications of these molecules and materials to *in vivo* imaging, performed in collaboration with the Bruns Group, will be highlighted.