POST-DOC NMR methods/Enzymes FRUEH LAB

The Frueh lab in the Johns Hopkins School of Medicine, Department of Biophysics and Biophysical Chemistry is offering a post-doctoral position to investigate enzymatic assembly lines with nuclear magnetic resonance (NMR) with a flexible starting date in early 2020.

We are looking for motivated, independent candidates with demonstrated expertise in *biomolecular NMR*, with understanding of *product operator formalism*, and preferably versed in protein production and purification. The post-doctorant will benefit from our strong expertise in both NMR (applied and theoretical) and biochemistry/biophysics.

The laboratory operates its own 600 MHz Bruker spectrometer, equipped with a QCI cryoprobe and nitrogen liquefier unit, and we are a major user of the Hopkins NMR facility: 800 MHz, two 600 MHz, two 500 MHz. In addition, we have access to extensive departmental equipment (CryoEM, X-ray, ITC, MALS, DLS, SAXS, etc.) and facilities (MS, synthetic chemistry, etc.). The candidate should be a team player who will embrace the collegial and dynamic framework of the Johns Hopkins Medical Institute.

Our laboratory has a dual purpose: we **design NMR methods** and determine ***dynamic*** molecular mechanisms in **nonribosomal peptide synthetase** domain communication (Frueh, Nature 2008). NRPSs employ a dynamic multi-domain organization to produce pharmaceutically active metabolites (penicillin, bacitracin, etc.). This organization resembles an assembly-line where simple substrates are covalently tethered and condensed to form complex natural products. Our focus is to understand the interplay between synthetic steps and domain communication. We use *in situ* biochemistry NMR to characterize fleeting molecular events (Goodrich et al. Biochemistry 2015, Goodrich et al. J Am Chem Soc 2015). The dynamic nature of NRPSs and their large molecular weight stimulates method developments to overcome spectroscopic challenges (Harden et al. Met Mol Bio 2018, Kancherla Concepts MR 2017/2018). Within this environment, the post-doctoral fellow will study the structures, dynamics, kinetics, and binding affinities of partner NRPS domains and test novel NMR methods.

See also http://frueh.med.jhmi.edu/ , POSTER 053 (PI), POSTER 058 (STUDENT)

Interested candidates should submit a CV and a **personalized** cover letter, as well as either the name and contact information of two references, or two letters of references, to:

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