

Postdoctoral Research Position - Structural Pharmacology - NMR/smFRET

We have a new **postdoctoral position** available at the University of Toronto, focusing on functional dynamics and Structure-Activity Relationships of GPCRs in GPCR - G protein complexes. The G Protein-Coupled Receptor (GPCR) superfamily consists of over 800 distinct 7-transmembrane proteins, governing sensory and neuronal signalling, cell homeostasis, and immune response; 1/3 of all approved pharmaceuticals target GPCRs. By combining NMR with single molecule FRET, computational approaches, and live cell studies, we seek to understand the structural pharmacology of GPCRs and ultimately advance drug discovery, nanobody discovery, activation mechanisms, and specific questions of allostery by cations, natural adjuvants and drugs. NMR of GPCRs has been stymied by *signal to noise* issues and labeling challenges, partly because the expression system is often insect cells or yeast. We have designed ultrasensitive fluorinated tags that can be site-specifically introduced to a protein of interest. We have also developed a new biosynthetic labeling scheme that improves sensitivity issues by over an order of magnitude (unpublished). As a postdoctoral fellow, you will pioneer projects that employ these new labeling approaches for studies of GPCRs and drug targets, while also gaining access to orthogonal biophysical techniques. Our hope is to revolutionize SAR by NMR.



You will be affiliated with the Departments of Chemistry and Biochemistry at the University and located in a newly minted science building (May 1st, 2024) on the UTM campus with extensive lab space, hoods, biosafety cabinets, bioreactor space, and equipment for protein expression and purification. We also have daily access to two 600 MHz NMR spectrometers and several other high field instruments across the UofT campus. Competitive stipends and benefits packages are available.

QUALIFICATIONS

Experience: 0-3 years of postdoctoral experience in Biochemistry/Structural Biology/Structural Pharmacology. PhD students and postdoctoral fellows in other fields such as Biology, Chemistry, Physics, Pharmacology or Genetics are also encouraged to apply.

Education/Licensing: Ph.D. or M.D./Ph.D. in Chemistry, Physics, Biochemistry, or Biology.

DESIRED SKILLS

Experience with structural biology (NMR, cryo-EM, or x-ray crystallography) and/or biophysical techniques (smFRET, BRET)

Experience with expression (E. coli, yeast, and mammalian cells) and purification of proteins (especially membrane proteins)

Experience with mammalian cell culture and imaging

Competent in molecular biology (cloning, and site-directed mutagenesis)

Basic/advanced computer programming (Python, MATLAB, or R)

Proficient in scientific writing

APPLICANT INSTRUCTIONS

Interested candidates should send a cover/motivation letter and a CV with the names and contact information of 2-3 references to Scott Prosser (scott.prosser@utoronto.ca). The position will be available as early as May 15th, 2024. The University of Toronto is committed to Equal Opportunity and Diversity. Women, and members of underrepresented minority groups, and individuals with disabilities are highly encouraged to apply.