



Training and Collaborative Opportunities with the Structural Genomics Consortium - Toronto

The Structural Genomics Consortium (SGC) is a not-for-profit organization that aims to determine the three dimensional structures of proteins of medical relevance, and place them in the public domain without restriction. The SGC operates out of the Universities of Oxford and Toronto and Karolinska Institutet, Stockholm. The SGC works on structures of proteins from its Target List of ~3,000 proteins, which comprises human proteins associated with diseases such as cancer, diabetes, inflammation, and genetic diseases, as well as proteins from human parasites such as those that cause malaria. Since its inception the SGC has generated thousands of purified human and malaria-related proteins and determined over 340 high resolution protein structures. For example: *J Biol Chem.* 2006, 281(49):38061-70; *Nature*, 2006, 440(7085): 833-7; *PNAS* 2006, 103(20):7637-42.

As part of its mandate the SGC has developed multiple strategies for the recombinant expression, purification, crystallization and biophysical and biochemical characterization of human and protozoan proteins. The SGC routinely performs small molecule binding screens on its target proteins in order to identify compounds that promote protein purification or crystallization. About 20% of the SGC protein structures were determined in the presence of a compound derived from the SGC screening initiatives. Many additional complexes of SGC targets with natural and synthetic ligands were determined to gain insight into the mechanism of protein/ligand protein/peptide and protein-protein interactions [*PNAS* 2006, 103 (43):15835-40; *EMBO J.* 25(18):4245-52 2006; *PNAS* 2006, 103(20):7829-34]

The SGC-Toronto welcomes collaborations with the biomedical research community on proteins of mutual interest. The SGC organizes its research around protein families of related biochemical function, for example, human enzyme families of therapeutic interest, proteins involved in signal transduction and the ubiquitylation system, and related protozoan proteins. Collaborative opportunities exist for visiting scientists, graduate students and postdoctoral fellows to work for 6-12 month terms at an SGC site on SGC targets of mutual interest. Guest scientists are expected to cover their own salary and local accommodations, and the SGC will pay for laboratory supplies and equipment. Guest Scientists would be expected to work on SGC target proteins with the goal of obtaining a 3D structure. Examples of potential projects include

- Expression and purification of active, recombinant proteins or complexes
- Crystallization and structure determination of proteins
- Functional (biochemical) characterization of proteins including enzyme assays, protein-protein or protein-small molecule interactions combined with structure determination of proteins and/or complexes.
- Structure determination and biophysical characterization of proteins including stability and activities of SNP variants

This is an excellent training opportunity for young scientists in high throughput protein expression, structural biology, and biophysical characterization techniques.

For further information see www.TheSGC.com, <http://sgc.utoronto.ca/sgc-webpages/sgc-toronto.php>, or contact Dr. Linda McBroom-Cerajewski (L.McBroom.Cerajewski@utoronto.ca)

