



## The Structural Genomics Consortium

A global public-private partnership that supports the discovery of new medicines through open access research.

## About SGC

Founded in 2003, the Structural Genomics Consortium (SGC) is a UK-registered charity with its head office in Toronto, Canada. As a global public-private partnership committed to open science principles, the SGC fast-tracks new medicine discoveries by sharing human gene and protein information in the public domain. By fostering collaboration among a vast network of scientists from academia and industry, all research outputs are freely accessible to the scientific community. The SGC proudly supports roughly 250 scientists in six major research laboratories across Canada, the United States, and Europe. Notably, our funding partners comprise several top-tier global pharmaceutical companies, governmental institutions, and foundations.

Driven by a global open science framework, the SGC pioneers open science drug discovery. While initially emphasizing structure-guided drug discovery, the organization's focus has transitioned to creating chemical probes for understudied protein families in the human genome. This further extends to data generation and benchmarking for enhancing computational drug discovery methods. Embracing an open science, 'no-patent' paradigm, SGC generates unencumbered knowledge, data and reagents, such as chemical probes, for all scientists to use. Our chemical probes are now indispensable for researchers globally, revealing previously uncharted facets of disease biology and propelling drug discovery. Crucially, the high-calibre screening data from the SGC serves as foundational datasets that bolster computational methods, accelerating both chemical probe creation and drug discovery. This innovative approach facilitates the identification of new proteins with the promise of leading to breakthrough treatments for diseases, including cancer, Alzheimer's, Parkinson's, infectious diseases, and even rare diseases.

## Science and Roadmap to 2035

**SGC aims to accelerate the understanding of all human proteins.**

### Our Strategy:

- Develop and provide pharmacological reagents to scientists for discovering protein functions.
- Successfully solved thousands of protein structures and created over 200 chemical probes to further research into potential new medicines.

### Vision for 2025 and Beyond:

- Prioritize data generation and benchmarking.
- Produce high-quality, machine learning (ML)-readable datasets for thousands of human proteins, enabling computational drug discovery.

**'Target 2035' Initiative:** These efforts will support the vision of Target 2035, which aims to develop and openly distribute chemical probes for every protein in the human proteome by 2035. Collaborating under the auspices of Target 2035, SGC aims to develop new medicines by investigating regions of the human genome that have not yet been researched extensively.

### What is a Chemical Probe?

A chemical probe is a drug-like small molecule that selectively binds to a specific protein or biological target, allowing for the investigation of its function and role in cells. They serve as fundamental tools for basic research, target validation, and are the first step in a drug discovery program.

## Open Science Model

- Pre-competitive, protein-based open science to enhance and accelerate early-stage drug discovery.
- All research output is made public without any restrictions of use or patent protection.
- Open results help prioritize drug discovery targets by defining chemical tractability, and supporting or nullifying therapeutic hypotheses, saving significant resources for all partners in the consortium.
- Enables efficient, multi-sector collaborations among a large network of scientists in academia and industry with complementary expertise and capabilities, by reducing transactional barriers and facilitating rapid knowledge and information exchange.

**By providing chemical probes for all known human proteins, we support researchers in unravelling scientific puzzles, leading to treatments for a wide array of conditions.**

# The Core Pillars of SGC

SGC is fully committed to the Target 2035 goal by ensuring that all its work is guided by three core principles



## Laboratories and Partners

### An international consortium

SGC's current research sites are in Canada, Germany, Sweden, the United Kingdom, and the United States.

### Operates from six academic institutions

The University of Toronto, University of North Carolina and Chapel Hill, Karolinska Institute, Goethe University Frankfurt, McGill University and University College London.

### Affiliated laboratories actively engaged in

Employing, developing, and exchanging high-throughput structural biology, medicinal chemistry, and assay development expertise. The experimental hubs generate high-quality data and test computational predictions.

### Laboratory Protocols

Unified through a common informatics platform, ensuring a seamless information flow and integration.

### Current Funding Partners

Bayer AG, Boehringer Ingelheim, Bristol Myers Squibb, Janssen, Merck KGaA (aka EMD in Canada and US), Pfizer, Takeda Genentech, Genome Canada through Ontario Genomics Institute, EU/EFPIA/OICR/McGill/KTH/Diamond Innovative Medicines Initiative 2 Joint Undertaking [EubOPEN grant 875510].

## Our Impact

SGC's chemical probes help scientists and drug discoverers interrogate new disease target hypotheses while providing chemical starting points for further drug development. To date, building off more than 4,000 three-dimensional human protein structures, generated by SGC (10% of the global coverage), the SGC and collaborators have developed almost two hundred chemical probes to previously under-studied proteins.

### Protein Structures



**4,000+**

Protein structures have identified and deposited into public databases



**5,000+**

SGC plasmids, distributed by Addgene to more than 50 countries



**1,500+**

Detailed purification protocols



**1,100+**

Peer reviewed publications of structures

### Chemical Probes



**200+**

Novel chemical probes developed in collaboration with industry and academic partners



**50,000+**

Samples of chemical probes distributed globally by SGC and trusted vendors



**13,000+**

SGC chemical probes used by scientists around the world



**85+**

Clinical trials and late-stage preclinical programs based on therapeutic hypotheses generated with SGC chemical probes

## Benefits and why join SGC?

- Unifies academia and industry through a collaborative open science approach, leading to expeditious advancement of drug discovery.
- Members have access to a broad scientific network and data repository, poised to propel future discoveries on new medicines and treatments for patients, improving their quality of life.
- Scientific efforts pivot towards exploring the unknown genome, leading to the identification of drug target discoveries for both prevalent and less studied or rare diseases.
- Access to datasets that are essential inputs to machine learning tools aimed at accelerating new drug discovery.

Currently seeking to expand the SGC community by attracting additional academic and commercial partners for open science collaboration.