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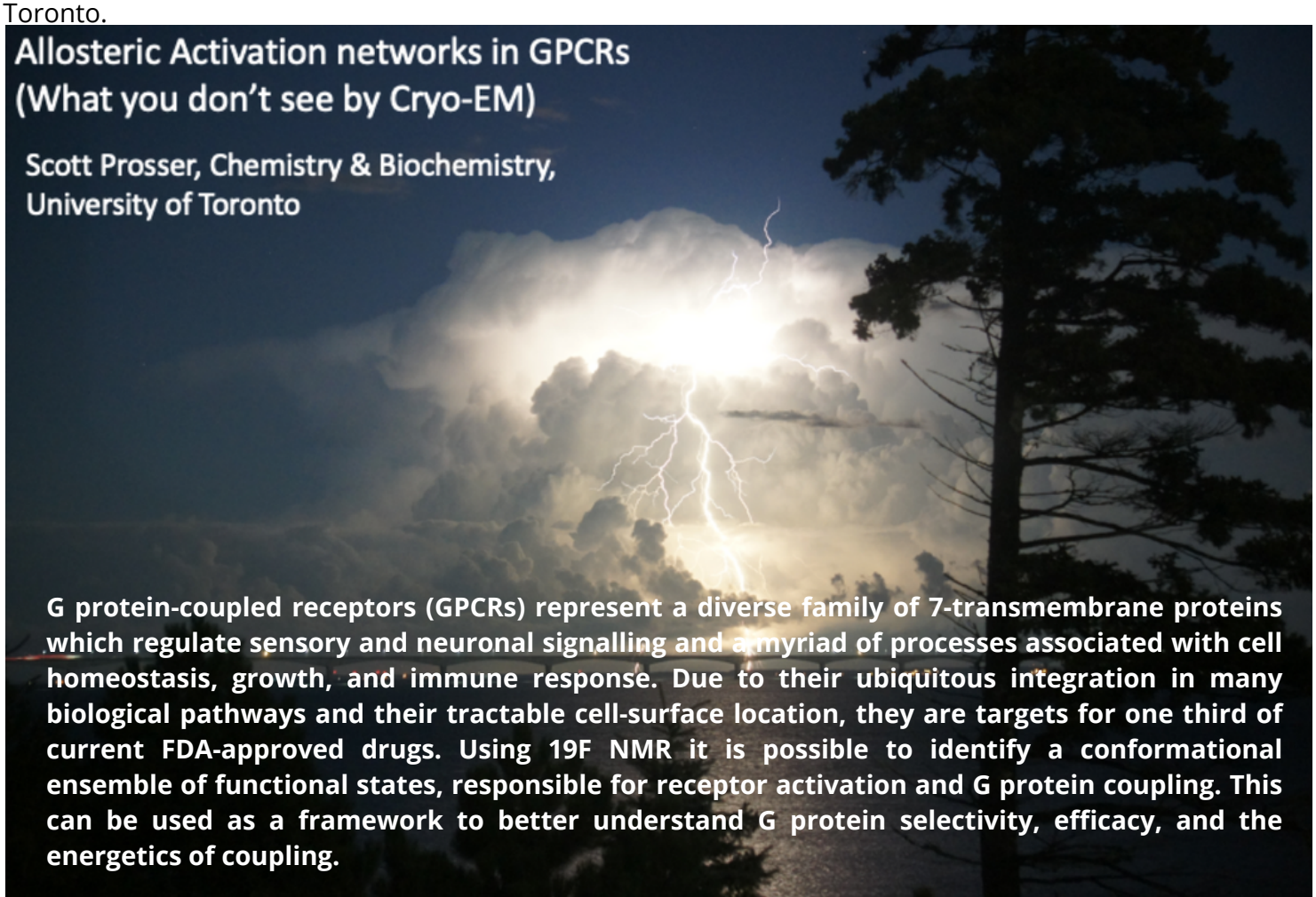
Professor Scott Prosser

Depts of Chemistry & Biochemistry
University of Toronto, CANADA

Born Halifax, NS, Canada, studied Math-Physics at University of New Brunswick and Biophysics at the University of Guelph with Postdoctoral studies in physical chemistry at the University of Stuttgart (exotic phases of membranes) and University of California, San Diego (bicelles and magnetically alignable model membrane systems). After taking a faculty position at the University of Toronto in 2001, Scott's research slowly evolved toward more biological systems in 2011, where his group began exploring properties of enzymes and GPCRs from the perspective of of allostery and mechanism. His current interests include fragment-based drug discovery, nanobody discovery, new fluorine NMR probes for drug screening, new approaches to biosynthetic labeling involving tryptophan analogues for structure activity relationships by NMR, and mechanisms of allostery in protein complexes. His more recent work was recognized by: 2017 Royal Society of Chemistry Jeremy Knowles Award for Advances in Chemical Biology; 2019 Univ. of Toronto Professor in Biophysical Chemistry; 2022 Canadian Society for Chemistry. Biological & Medicinal Chemistry Lectureship Award; 2022 AstraZeneca Endowed Chair in Biotechnology, Univ. of Toronto.



G protein-coupled receptors (GPCRs) represent a diverse family of 7-transmembrane proteins which regulate sensory and neuronal signalling and a myriad of processes associated with cell homeostasis, growth, and immune response. Due to their ubiquitous integration in many biological pathways and their tractable cell-surface location, they are targets for one third of current FDA-approved drugs. Using 19F NMR it is possible to identify a conformational ensemble of functional states, responsible for receptor activation and G protein coupling. This can be used as a framework to better understand G protein selectivity, efficacy, and the energetics of coupling.