The Walter A. Szarek Lecture Series

Walter A. Szarek was born on April 19, 1938 in St. Catharines, Ontario. He received his B.Sc. in Honours Chemistry in 1960, and his M.Sc. in 1962, from McMaster University. In 1962 he began studies towards the Ph.D. Degree with Professor J. K. N. Jones at Queen's University; he completed his studies in 1964 in the area of carbohydrate chemistry. He then went on to do postdoctoral work with Professor Melville L. Wolfrom who had developed the outstanding school of carbohydrate chemistry at The Ohio State University, Columbus, Ohio. Within a year he was offered the position of Assistant Professor of Biochemistry in the Department of Physiology and Biochemistry at Rutgers University in New Jersey. After launching his independent research program, but longing to be part of a Chemistry Department, in 1967 he returned to Queen's as Assistant Professor of Chemistry where he rose through the ranks to Full Professor in 1976. During the period 1976–1985 he was also Director of the Carbohydrate Research Institute at Queen's. In 2003 he became Professor Emeritus, and continued to be very active in research for several years. Professor Szarek's outstanding achievements in carbohydrate chemistry were recognized by the receipt of the American Chemical Society Claude S. Hudson Award in 1989 and the Melville L. Wolfrom Award in 1992.

Professor Szarek's research in carbohydrates was truly comprehensive, encompassing many diverse aspects, both chemical and biological. His knowledge was encyclopedic and he quickly became known as The Godfather of the carbohydrate family and The Prince of hospitality. In addition, he had a very active research program in the areas of Medicinal Chemistry and Drug Development. He is the author of over 300 peer-reviewed publications and has held numerous patents in the areas of Alzheimer's Disease, Cancer, Malaria, Anti-bacterial Agents, and therapeutic drugs for the treatment of chronic and acute pain. He was a co-founder of Neurochem, Inc. (now Bellus Health, Inc.) and was associated with PainCeptor Pharma Corp., and Osta Biotechnologies, Inc.

Professor Szarek was, at all times, a principled educator at both the undergraduate and graduate levels, having won four teaching awards including the Queen's University Arts and Science Undergraduate Teaching Excellence Award in 1989. His distinguished research career involved the direction of 23 M.Sc and 32 Ph.D. students, and ~85 postdoctoral fellows. His caring and insightful mentorship both in chemistry and in life evoked in his students, postdoctoral fellows, and colleagues, great respect and affection.

The Walter A. Szarek Lecture Series was established through an endowment initiated by a former student, B. Mario Pinto, and with generous contributions from past students, postdoctoral fellows, and colleagues. It is testament to his profound influence on the next-generations of scientists. A substantial donation was also made by the Szarek family in memory of Professor Szarek's brother, John.

RECENT PUBLICATIONS

DJ Carroll, MWN Burns, L Mottram, DC Propheter, A Boucher, GM Lessen, A Kumar, C Xing, LV Hooper, U Yrlid, JJ Kohler. Interleukin-22 (IL-22) regulates *B3GNT7* expression to induce intestinal fucosylation of *O*-linked glycans. *J. Biol. Chem.* (2022) 298: 101463

H Wu A Shajahan, J-Y Yang, E Capota, AM Wands, CM Arthur, SR Stowell, KW Moremen, P Azadi, JJ Kohler. A photocrosslinking GlcNAc analog enables covalent capture of N-linked glycoprotein binding partners. *Cell Chem. Biol.* (2022) 29: 84-97

BN Kakde, E Capota, JJ Kohler, UK Tambar. Synthesis of cell-permeable N-acetylhexosamine-1-phosphates. *J. Org. Chem.* (2021) 86: 18257–18264

A Sethi, AM Wands, M Mettlen, S Krishnamurthy, H Wu, JJ Kohler. Cell type and receptor identity regulate cholera toxin subunit B (CTB) internalization. *Interface Focus* (2019) 9: 20180076

AM Wands, J Cervin, H Huang, Y Zhang, G Youn, CA Brautigam, M Matson Dzebo, P Björklund, V Wallenius, DK Bright, CS Bennett, P Wittung-Stafshede, NS Sampson, U Yrlid, JJ Kohler. Fucosylated molecules competitively interfere with cholera toxin binding to host cells. *ACS Infect. Dis.* (2018) 4:758-770

PREVIOUS WALTER A. SZAREK LECTURERS

2022 • T. Lowary

2019 • L. Kiessling

2018 • F. Stoddart

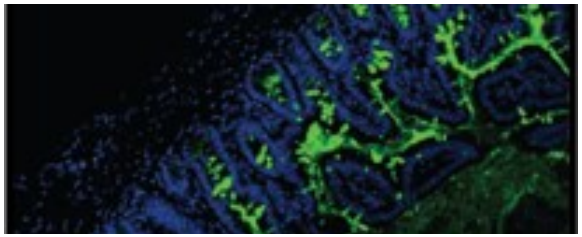
Queen's Chemistry

The Department of Chemistry, Queen's University

is honoured to host the 2022 Walter A. Szarek Lecture:

Dr. Jennifer Kohler
UT Southwestern Medical Center

"Intestinal fucose, in sickness and in health"



Friday, October 28, 2022

11:30 AM

Room 117, Chernoff Hall

DR. JENNIFER KOHLER

Jennifer Kohler
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University of Texas Southwestern Medical Center
Dallas, TX 75390-9038
email: Jennifer.Kohler@UTSouthwestern.edu

Jennifer Kohler received her AB in Chemistry from Bryn Mawr College in 1994. She conducted graduate research with Prof. Alanna Schepartz at Yale University, receiving her PhD in Chemistry in 2000. From 2000 to 2004, she was an American Cancer Society Postdoctoral fellow with Prof. Carolyn R. Bertozzi in the Chemistry Department at the University of California, Berkeley. She is now Professor of Biochemistry at UT Southwestern Medical Center in Dallas, TX, where her research group develops chemical biology methods and studies the biological functions of glycosylation.

Research in the Kohler laboratory focuses on uncovering the functional roles of glycosylation. The group has developed new chemical biology approaches and applied them to specific biological questions. The team developed photocrosslinking sugar analogs of sialic acid and GlcNAc that can be metabolically incorporated into cellular glycoconjugates and used to identify transient glycan-mediated interactions. Using the photocrosslinking sialic acid analog, the group discovered novel and functionally significant fucosylated binding partners for cholera toxin and validated the role of non-ganglioside host receptors for cholera toxin in vivo. Using the photocrosslinking GlcNAc analog, the team obtained evidence that the O-GlcNAc post-translational modification is intimately associated with nucleoporin-karyopherin recognition events that occur during nuclear transport. These photocrosslinking reagents have been shared with many research groups and one reagent is now commercially available. Through studies of cholera toxin, the group became interested in the regulation and function of glycoconjugates that line the intestinal epithelia. Current efforts focus on investigating mechanisms that regulate glycoconjugate biosynthesis, controlling features such as the length of glycan chains and the degree of fucosylation. The long-term aim is to determine how these glycan features vary among individuals, their association with disease states, and their relationship to intestinal microbiome composition and function.

SELECTED HONOURS & AWARDS

2018

- UT Southwestern Academy of Teachers (SWAT) Outstanding Educator Award

2009-2012

- Alfred P. Sloan Research Fellow

2007-2012

- NSF-CAREER Award

2007-2009

- Basil O'Connor Starter Scholar Research Award, March of Dimes

2005

- Camille & Henry Dreyfus New Faculty Award