

The Stan Brown Lecture Series



Stan Brown was born in High River, Alberta, and attended the University of Alberta for his B.Sc. (1964-1968) where he graduated with first class standing. Following undergraduate studies, Stan headed south to the UC, San Diego where he obtained his M.Sc. and then Ph.D. in chemistry (1968-1972) with the late Teddy G. Traylor. It was here that

Stan's fascination with reaction mechanisms took root as he made seminal discoveries in the 'vertical' stabilization of cations by s-bonds. Stan then moved on to the great Ronald Breslow's lab at Columbia University for postdoctoral work where he studied enzyme mimetic reactions. This would become a research theme throughout his academic career. In 1974 Stan returned to U of A to begin his independent research career where he rose to the position of full Professor in 1984. Over 21 years at U of A the Brown lab flourished, carving out major discoveries in photoelectron spectroscopy of bonding, substituent effects on ionization potentials, the hydrolysis of amides, acyl and phosphoryl transfer reactions, and enzyme model systems involving metal ions. His research also addressed the formation of the bromonium ion, and in 1994 his lab managed to obtain the X-ray crystal structure of a stable version of this iconic intermediate. In 1995 Stan was ready for a new challenge and moved his lab to Queen's University to become Head of the Department of Chemistry (1995-2001). During his time as Head, Stan further shaped the future of our department by orchestrating the hiring of Gang Wu, Hugh Horton, Hans-Peter Loock, Richard Oleschuk, Stephen Brown, Suning Wang, Natalie Cann, Victor Snieckus and Cathleen Crudden. At Queen's, Stan and his team developed a series of enzyme inspired, metal ion-based catalysts that accelerated the solvolysis of esters, amides, and phosphate esters. This discovery had immediate applications for the destruction of stockpiles of chemical warfare agents like VX and Soman, which quickly garnered the attention of the United States Army, and led to several patents. Over his research career, Stan has authored over 180 publications, 10 book chapters, and delivered more than 110 invited seminars. Stan holds a tremendous record of service in the Chemistry community, which has won him many awards over the years, including two Killam awards, the Syntex Award (CSC), the Alfred Bader Award (CSC), the Queen's Chemistry 'Prof of the Year', the Queen's University Prize, the Queen's University Award for Excellence in Graduate Student Supervision (2016), the R.U. Lemieux Award (CSC), the Montreal Medal (CIC), and the Catalysis Award (CIC). Stan is a fellow of the Chemical Institute of Canada, the Royal Society of Canada, and the International Union of Pure and Applied Chemistry.

SELECTED RECENT PUBLICATIONS

- Fully Aqueous and Air-Compatible Cross-Coupling of Primary Alkyl Halides with Aryl Boronic Species: A Possible and Facile Method. Molyneux S, Goss RJM. *ACS Catal.* **2023**, 13, 6365-6374.
- Halogenases: a palette of emerging opportunities for synthetic biology-synthetic chemistry and C-H functionalisation. Crowe C, Molyneux S, Sharma SV, Zhang Y, Gkotsi DS, Connaris H, Goss RJM. *Chem. Soc. Rev.* **2021**, 50, 9443-9481.
- SynBio-SynChem Approaches to Diversifying the Pacidamycins through the Exploitation of an Observed Pictet-Spengler Reaction. Cartmell C, Abou Fayad A, Lynch R, Sharma SV, Hauck N, Gust B, Goss RJM. *ChemBioChem*, **2021**, 22, 712-716.]
- GenoChemetic Strategy for Derivatization of the Violacein Natural Product Scaffold. Lai HE, Obled AMC, Chee SM, Morgan RM, Lynch R, Sharma SV, Moore SJ, Polizzi KM, Goss RJM, Freemont PS. *ACS Chem. Biol.* **2021**, 16, 2116-2123.
- A marine viral halogenase that iodinates diverse substrates. Danai S, Gkotsi, Hannes Ludewig, Sunil V. Sharma, Jack A. Connolly, Jagwinder Dhaliwal, Yunpeng Wang, William P. Unsworth, Richard J. K. Taylor, Matthew M. W. McLachlan, Stephen Shanahan, James H. Naismith & Rebecca J. M. Goss. *Nat. Chem.*, **2019**, 11, 1091-1097.
- A natural solution to photoprotection and isolation of the potent polyene antibiotic, marinomycin A. Bailey CS, Zarins-Tutt JS, Agbo M, Gao H, Diego-Taboada A, Gan M, Hamed RB, Abraham ER, Mackenzie G, Evans PA, Goss RJM. *Chem. Sci.*, **2019**, 10, 7549-7553.

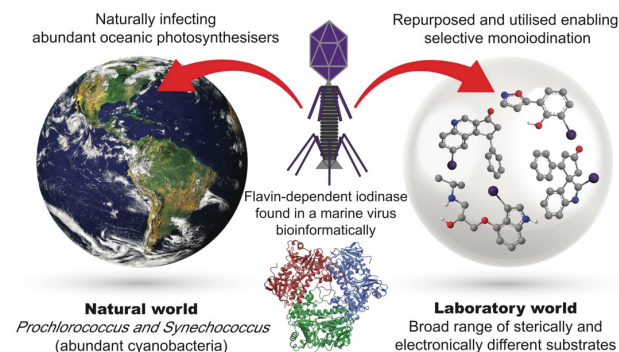


The Department of Chemistry,
Queen's University

is honoured to host the
2023 Robert S. Brown Lecture:

Dr. Rebecca J.M. Goss
University of St. Andrews

"GenoChemetic
Diversification of Natural
Products
(Blending SynBio+
SynChem : The Best of Both
Worlds)"



Tuesday, July 4, 2023
11:30 AM
Room 117, Chernoff Hall

DR. REBECCA J.M. GOSS



Rebecca J.M. Goss

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Rebecca J.M. Goss is a Professor in Biomolecular and Organic Chemistry in the School of Chemistry at the University of St. Andrews, UK. She obtained her PhD (2001) in Chemistry with David O'Hagan at Durham University, followed by a postdoctoral fellowship (2001-2002) with Jim Staunton and Peter F. Leadlay at the University of Cambridge. Dr. Goss began her independent career as a teaching fellow at the University of Nottingham (2002-2003) followed by lectureships at University of Exeter (2003-2005) and the University of East Anglia (2010-2012). Dr. Goss then joined the University of St. Andrews as a Reader in 2012 and since 2018 is a Professor of Biomolecular and Organic Chemistry. Dr. Goss is an elected member of the RSC Chemistry Biology Interface Division and an editorial board member for Chemical Society Reviews, RSC Chem Comm and RSC Natural Product Reports.

Dr. Goss's research interests include elucidating and engineering the biosynthesis of natural products at the chemical and genetic level. Her research group has pioneered innovative methods that employ a combination of synthetic chemistry and synthetic biology to harness entire biosynthetic pathways to enable expeditious access to libraries of medicinally relevant compounds. Such discoveries led Dr. Goss in 2020 to found X-Genix Ltd, a biotechnology company that blends synthetic chemistry with enzyme discovery, for which she was awarded the prestigious Converge Award by Converge Challenge, Scotland's largest company creation and enterprise programme.

SELECTED HONOURS & AWARDS

- Converge Award (2022)
- RSC Corday Morgan Prize (2022)
- ERC consolidator award (2014)
- Natural Product Report Emerging Researcher Lectureship Award (2013)
- UK's under 40 Organic Chemistry delegate for EuChem's Young Investigators Workshop (2011)
- JSP award to participate at the Burgenstock Stereochemistry meeting (2011)
- RSC Meldola Medal for the most promising UK chemist under the age of 32 (2007)
- Royal Society Dorothy Hodgkin Fellowship (2003)