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Roundtable Session on *Global Science Excellence*

Thursday, August 18, 2016

Saskatoon, SK

PARTICIPANTS

Updated August 16, 2016

Elena Bennett



Elena Bennett is an Associate Professor and Fellow in the Aldo Leopold Leadership Program in the School of Environment at McGill University. She attended Oberlin College as an undergraduate where she studied biology and environmental studies. She earned her MSc in Land Resources from the University of Wisconsin in 1999 and her PhD in Limnology and Marine Sciences in 2002. As a postdoc, she helped coordinate the Scenarios Working Group for the Millennium Ecosystem Assessment. Elena started working at McGill in 2005.

Growing demands for food, fibre, and fresh water are straining nature's ability to produce these and other essential services, with worrying implications for both people and the environment. Dr. Bennett develops approaches to measure, map, and model these interconnected ecosystem services to ensure their long-term sustainability. Her work provides practical information and easy-to-use tools that governments, industries, and communities need to understand the full ecosystem impacts of planning decisions. These tools help local governments develop land-use plans that, among other things, accommodate the need for development and connect fragmented forests to retain the region's rich biodiversity. The goal is to balance humanity's need for a diverse mixture of ecosystem services (e.g., food, fibre, fresh water, recreation, spiritual fulfilment) with our reliance on functioning ecosystems to provide these services in the future. Dr. Bennett was awarded an E.W.R. Steacie Memorial Fellowship in 2016.

(Dr. Bennett is unable to attend the roundtable in person but will contribute a written submission.)

Curtis Berlinguette



Dr. Curtis Berlinguette is an Associate Professor of Chemistry and Chemical & Biological Engineering at the University of British Columbia. After graduating with a BSc in 2000 from the University of Alberta, Dr. Berlinguette headed to Texas A&M University to pursue a PhD in inorganic chemistry before doing two years of postdoctoral studies at Harvard University. He started his independent career at the University of Calgary in 2006 before moving his program to the University of British Columbia in 2013. He currently leads a research program fully dedicated to solar energy conversion, which includes the design of novel nanoscale materials for advanced solar cells, and developing economically viable ways of storing solar electricity as high-density fuels. Dr. Berlinguette

holds several patents, has authored over 60 scientific articles, and holds a Tier II Canada Research Chair and an Alfred P. Sloan Research Fellowship.

Colleen Christensen



Dr. Colleen Christensen is an Industrial Technology Advisor at the National Research Council Canada. She served previously as the Executive Director of the Feeds Innovation Institute at the University of Saskatchewan (2007-13), Director of the Animal Nutrition Association of Canada (2012-13), and Industrial Liaison Scientists/Biomedical and Therapy Beamline Project Manager at the Canadian Light Sources (2001-07). Dr. Christensen has a PhD in immunoreproductive endocrinology from the University of Saskatchewan. She is an entrepreneurial scientist who has participated in the start-up of three companies, developed three transformational projects, and raised \$24,000,000 in infrastructure and research projects in Saskatoon, Canada.

James Colliander



James Colliander is an American Canadian mathematician. He is currently Professor of Mathematics at University of British Columbia and serves as Director of the Pacific Institute for the Mathematical Sciences. Colliander is also the Founder/CEO of an education technology company called Crowdmark. He was born in El Paso, Texas, and lived there until age eight and then moved to Hastings, Minnesota. He graduated from Macalester College in 1989. He worked for two years at the United States Naval Research Laboratory on fiber optic sensors and then went to graduate school to study mathematics. He received his PhD from the University of Illinois at Urbana–Champaign in 1997. Colliander was a postdoctoral fellow at the University of California, Berkeley and spent semesters at the University of Chicago, the Institute for Advanced Study, and the Mathematical Sciences Research Institute. Colliander's research mostly addresses dynamical aspects of solutions of Hamiltonian partial differential equations, especially non-linear Schrödinger equation. He is also an award winning teacher. Colliander's research mostly addresses dynamical aspects of solutions of Hamiltonian partial differential equations, especially non-linear Schrödinger equation.

Carl Gutwin



Dr. Carl Gutwin is a professor in the Department of Computer Science at the University of Saskatchewan. His main research areas are computer-supported cooperative work, interaction techniques, and surface computing.

Dr. Gutwin was recently selected as a Distinguished Scientist by the Association for Computing Machinery (ACM), the world's largest educational and scientific computing society. The award celebrates the exceptional contributions of leading members in the computing fields. Gutwin was one of only three Canadians to make the list this year.

In addition to teaching in Computer Science, Dr. Gutwin is also the director of the Human-Computer Interaction (HCI) laboratory at the U of S, which studies and innovates the way in which humans and computers interact. With computing technology now permeating everyday life, the group's diverse interests range from physical interactions—such as creating novel gestural and tangible interfaces, to emotional interactions—such as studying the effects that personal traits have on how people interact with technology.

Abdul Jalil



Dr. Abdul Jalil is the Director, Research Branch, Saskatchewan Agriculture. The Research Branch is responsible for provincial research and development investments in agriculture and food. Jalil is secretary to Agriculture Development Fund and is currently a member of the Board of Directors of Ag-West Bio Inc. and Prairie Agricultural Machinery Institute (PAMI). He represents the Ministry on the Federal/Provincial/Territorial Committee for Science and Innovation. Prior to joining the Ministry, Jalil worked for three years as a visiting scientist for Agriculture and Agri-Food Canada at Swift Current, Saskatchewan. His diverse career includes experiences in many areas, including teaching, research, and administration. Dr. Jalil was born in Pakistan and obtained his BSc (honours) and MSc (honours) in Soil Science from University of Agriculture at Faisalabad in Pakistan. Subsequently, he worked for seven years with Punjab Agriculture Department and Pakistan Agricultural Research Council. He moved to California in 1985 and completed his PhD in Plant Nutrition at University of California in Davis in 1991.

Meritt Kocdag



Meritt Kocdag is a policy strategist at Innovation Saskatchewan working primarily in the area of life sciences and research infrastructure. She has worked previously at the Johnson-Shoyama Graduate School of Public Policy and was a member of the Genome Canada funded research project, VALGEN, where her work focused on governance and regulatory structures for agricultural biotechnology.

Danya Kordan



Ms. Danya Kordan is a Senior Strategist for Innovation Saskatchewan, responsible for projects in life sciences and research infrastructure.

Kevin Leyton-Brown



Kevin Leyton-Brown is a professor of Computer Science at the University of British Columbia and an associate member of the Vancouver School of Economics. He holds a PhD and MSc from Stanford University and a BSc from McMaster University. Dr. Leyton-Brown is an NSERC E.W.R. Steacie Memorial Fellow. He studies the intersection of computer science and microeconomics, addressing computational problems in economic contexts and incentive issues in multiagent systems. He also applies machine learning to the automated design and analysis of algorithms for solving hard computational problems.

Jiangchuan Liu



Jiangchuan Liu is currently a full Professor (with University Professorship) in the School of Computing Science at Simon Fraser University and an NSERC E.W.R. Steacie Memorial Fellow. He is also an EMC-Endowed Visiting Chair Professor of Tsinghua University, Beijing, and an Adjunct Professor of Tsinghua-Berkeley Shenzhen Institute. He was a Microsoft Research Fellow and worked at Microsoft Research Asia (MSRA) in the summers of 2000, 2001, 2002, 2007, and 2011.

He received a BEng (Cum Laude) from Tsinghua University in 1999 and a PhD from The Hong Kong University of Science and Technology in 2003 (through HKUST's MED program with recommendation from Education Ministry of China and scholarship from Hong Kong Jockey Club; recipient of 2004 Hong Kong Young Scientist Award for the PhD work). From 2003 to 2004, he was an Assistant Professor in the Department of Computer Science and Engineering at the Chinese University of Hong Kong.

Alexander Moewes



Dr. Alexander Moewes is a Professor and Canada Research Chair in Materials Science with Synchrotron Radiation in the Department of Physics and Engineering Physics at the University of Saskatchewan. Dr. Moewes earned Master's and doctoral degrees from the University of Hamburg, Germany.

Dr. Moewes' research group at the U of S, the Beamteam, is studying the electronic structures of new and advanced materials whose research goals include developing new detectors, sensors and other devices with new or improved electric, optical, chemical and magnetic properties. Dr. Moewes' research interests concern generally the study of atomic, chemical and electronic structure of advanced materials.

A distinguished author, Dr. Moewes has authored/co-authored over 220 publications in peer-reviewed journals, and his group has published more than 170 peer-reviewed publications since 2000.

Maurice Moloney, Roundtable Chair



Maurice Moloney is the Executive Director and CEO of the Global Institute for Food Security (GIFS) at the University of Saskatchewan. Prior to joining GIFS, Dr. Moloney led the work of over 1,100 research and support staff in R&D in Agriculture, Food and Nutrition and Biosecurity at Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO). Previously, he was the Director and Chief Executive of the world's oldest agriculture research centre, Rothamsted Research. The UK-based institute is a world leader in food security and agricultural sustainability. He was the founder of SemBioSys Genetics Inc. based in Calgary and served as the company's president from 1994-98 and as Chief Scientific Officer from 1998-2010. He held a

Dow AgroSciences NSERC Industrial Research Chair in plant biotechnology from 1995 until 2003. He was the head of the Cell Biology Group at Calgene Inc., where he developed the first transgenic oilseed plants using Canola as the target. This resulted in a landmark patent in plant biotechnology and eventually became the basis of RoundUp Ready® and Liberty Link® Canola, which now commands more than 90% of the Canola acreage in Canada with a seed market of more than \$200 million per year and a

product value of >\$8 billion annually. Dr. Moloney has published more than 95 original research papers and is an inventor on 43 issued US patents and over 300 patents worldwide. He has served on NSERC Council (the governing body of NSERC) from 2001-2008. Dr. Moloney holds a Bachelor of Science degree in Chemistry from Imperial College, London, Associateship of the Royal College of Science, and was awarded his doctorate in plant biochemistry from De Montfort University/Leicester Polytechnic in the United Kingdom. He was honoured by the University of Lethbridge with a D.Sc. honoris causa in 2004 by De Montfort University in 2011 and by Lancaster University, UK in 2013.

Kumar Murty



Professor Kumar Murty is the Chair of the Department of Mathematics at the University of Toronto. His research fields are analytic number theory, algebraic number theory, arithmetic algebraic geometry and information security. He received his PhD from Harvard University and has authored more than a 100 scholarly papers and six books and holds two patents. His research has been recognized through the Coxeter-James Prize of the Canadian Mathematical Society, the E. W. R. Steacie Fellowship of NSERC, and the Balaguer Prize (jointly with Ram Murty). He was elected Fellow of the Royal Society of Canada (1995), a Fellow of the Fields Institute (2003), and a Fellow of the National Academy of Sciences (India) (2011). Dr. Murty has delivered more than 300 invited lectures at universities around the world. He is the founder of the GANITA lab, an academic research lab that develops novel applications of algebra, geometry and number theory to problems in information technology. He is co-founder of Prata Technologies and PerfectCloud, two companies which are commercializing technology developed in the GANITA lab. His interest in mathematics ranges from the pure study of the subject to its applications in data and information security.

(Dr. Murty is unable to attend the roundtable in person but will contribute a written submission.)

Fahima Nekka



Fahima Nekka is Associate Professor in the Faculty of Pharmacy at the Université de Montréal. After having completed a PhD in mathematics in the field of fractal analysis, her interests led her to the pharmaceutical sciences where she could contribute significantly to the quantitative growth of this discipline. Dr. Nekka's research has therefore evolved at the interface of mathematics and pharmaceutical and is characterized by both rigor and pragmatism. She leads numerous projects concerning the methodological development and the establishment of foundations in specialized quantitative pharmacology, a discipline pioneered in Canada. With her research group, Dr. Nekka has pioneered by incorporating into the same modeling approach the behavioural component of the patient (drug compliance) with the drug metabolism and physiological component. Her research attracted the attention of the pharmaceutical industry, which gave substantial grants to build the first specialized team in the Canada. Dr. Nekka served as Regional Director of MITACS, a centre of excellence in mathematics that has distinguished itself on the national and international scene through its many cutting-edge programs, from academic research to industrial innovation. Over the past three years, Dr. Nekka has worked with the NSERC committee on scholarships in pure and applied mathematics, first as a member and then as President. She is co-founder of the Centre for Applied Mathematics in Biosciences and Medicine, which plays a leading role in the application of mathematics in biological and medical sciences. Dr. Nekka is originally from Algeria, where she had received a valedictorian scholarship to study in the United States that she then transferred to Canada. (Dr. Nekka is unable to attend the roundtable in person but will contribute a written submission.)

Mario Pinto



Dr. B. Mario Pinto was appointed President of the Natural Sciences and Engineering Research Council of Canada (NSERC) in November 2014. He brings a strong dedication to building communities that link the business ecosystem to research innovation. He brings his personal ethos and creative tools to NSERC along with a vision for a more fluid, multidisciplinary approach where Canada plays a greater role in the competitive global research environment.

Before joining NSERC, Dr. Pinto held a number of senior research and administrative positions at Simon Fraser University spanning over 30 years, including Professor of Chemistry, Chair of the Department of Chemistry from 1999 to 2004, and Vice-President Research for 10 years.

While at Simon Fraser University, he brought knowledge and business acceleration together, bridging university innovators with British Columbia's start-up industry. Dr. Pinto also spearheaded cross-disciplinary and multinational linkages by bridging faculties and facilitating Canada-India collaborations. As a Chemical Biologist, Dr. Pinto has made a scholarly impact through publishing on a variety of interests with implications for the diagnosis or treatment of bacterial and viral diseases, Type 2 diabetes, and cancer. Among his achievements, he has received the Montréal Medal (2014) of the Chemical Institute of Canada, the Alfred Bader Award (2013), and R.U. Lemieux Award (2012) of the Canadian Society of Chemistry. He is a Fellow of the Royal Society of Canada.

Dr. Pinto has a proven track record as an advocate of science and innovation serving on many external boards, councils, and committees, including acting as Canada's representative to the International Carbohydrate Organization and President (2006-2008). He also served as the University Delegate to NSERC and the Social Sciences and Humanities Research Council of Canada, the President of the Canadian Society of Chemistry (2010-11), and the Vice-Chair of the Chemical Institute of Canada (2014). Throughout his career, Dr. Pinto has helped develop successful initiatives that further science and research such as Mimos Therapeutics Inc., the Centre for Drug Research and Development, the Pinto Research Group, the Simon Fraser University Community Trust Endowment Research Fund, Venture Connection, Venture Labs, the Zones of Incubation and Innovation, and Zone StartUps India. Dr. Pinto received his Bachelor of Science (1975) and PhD in Chemistry (1980) from Queen's University. He did his postdoctoral work at Le Centre national de la recherche scientifique in France as well as the National Research Council Canada.

Federico Rosei



Federico Rosei held a Canada Research Chair (Tier II) in Nanostructured Organic and Inorganic Materials between 2003 and 2013. He is Professor and Director of Institut National de la Recherche Scientifique, Énergie, Matériaux et Télécommunications, Université du Québec, Varennes (QC) Canada. Since January 2014, he holds the UNESCO Chair in Materials and Technologies for Energy Conversion, Saving and Storage, and since May 2016, he also holds the Canada Research Chair (Tier I) in Nanostructured Materials. He received MSc and PhD degrees from the University of Rome "La Sapienza" in 1996 and 2001, respectively.

Dr. Rosei's research interests focus on the properties of nanostructured materials and on how to control their size, shape, composition, stability and positioning when grown on suitable substrates. He has extensive experience in fabricating, processing and characterizing inorganic, organic and biocompatible nanomaterials. He has published over 225 articles in prestigious international journals (including

Science, Nature Photonics, Proceedings of the National Academy of Sciences, Advanced Materials, Angewandte Chemie Int. Ed., Journal of the American Chemical Society, Advanced Functional Materials, Nanoletters, ACS Nano, Biomaterials, Small, Physical Review Letters, Nanoscale, Chem. Comm., Applied Physics Letters, Physical Review B, etc.), has been invited to speak at over 230 international conferences, and has given over 190 seminars and colloquia and 30 public lectures in 42 countries on all inhabited continents. His publications have been cited over 7100 times and his H index is 46.

In 2014, he has been elected Fellow of the Royal Society of Canada. He is Member of the European Academy of Sciences, Fellow of the American Physical Society, Honorary Fellow of the Chinese Chemical Society, Fellow of the American Association for the Advancement of Science, Fellow of SPIE, Fellow of the Canadian Academy of Engineering, Fellow of ASM International, Fellow of the Royal Society of Chemistry (UK), Fellow of the Institute of Physics, Fellow of the Institution of Engineering and Technology, Fellow of the Institute of Materials, Metallurgy and Mining, Fellow of the Institute of Nanotechnology, Senior Member of the IEEE, Fellow of the Engineering Institute of Canada, Member of the Global Young Academy, Fellow of the Australian Institute of Physics and Member of the Sigma Xi Society.

He has received several awards and honours, including the FQRNT Strategic Professorship (2002-2007), the Tan Chin Tuan visiting Fellowship (NTU 2008), the Senior Gledden Visiting Fellowship (UWA 2009), Professor at Large at UWA (2010-2012), a Marie Curie Post-Doctoral Fellowship from the European Union (2001), a Canada Research Chair (2003-2013), a Friedrich Wilhelm Bessel Award from the Alexander von Humboldt foundation (2011), the Rutherford Memorial Medal in Chemistry (Royal Society of Canada 2011), the Herzberg Medal (Canadian Association of Physics 2013), the Brian Ives lectureship award (ASM international / Canada Council 2013), the Award for Excellence in Materials Chemistry (Canadian Society for Chemistry 2014), the NSERC EWR Steacie Memorial Fellowship (2014), the José Vasconcelos Award for Education (World Cultural Council 2014), the IEEE NTC Distinguished Lectureship 2015, the Lash Miller Award (Canada Section, Electrochemical Society 2015), the Chang Jiang Scholar Award (Government of China), the Khwarizmi International Award from the Iran Research Organization for Science and Technology (IROST), the Recognition for Excellence in Leadership from the American Vacuum Society, the Selby Fellowship from the Australian Academy of Sciences and the John C. Polanyi Award (Canadian Society for Chemistry 2016).

Steven Rothstein, Roundtable Co-Chair



Dr. Steven Rothstein, PhD is a Senior Research Chair and Professor in the Department of Molecular Biology and Genetics, University of Guelph. He serves as a Director at Ontario Genomics Institute. From 1984 to 1988, he was a Scientist at Ciba-Geigy Corporation (Novartis) and then became an Associate Professor in the Department of Molecular Biology and Genetics at the University of Guelph. He also served as the NSERC Industrial Research Chair. In 1995, Dr. Rothstein became a full Professor and Department Chair and held this position until 1998. From 1998 to 2001, he served as the Trait and Technology Development Research Director of Agronomic Traits at Pioneer Hi-Bred. He has been a leading expert in areas such as plant molecular biology, plant nutrition and reproductive biology. Throughout his career, he has had more than 70 articles published in refereed scientific journals and provided mentorship and leadership to the academic community and numerous post-graduate students. Dr. Rothstein received a bachelor's degree in chemistry from Swarthmore College, Swarthmore, Pennsylvania, in 1975; a PhD from the University of Wisconsin, Department of Biochemistry, in 1980; and did his post-doctoral training at the Plant Breeding Institute in Trumpington, Cambridge, England, from 1980 to 1983.

Barbara Sherwood Lollar



Dr. Barbara Sherwood Lollar, FRSC is a University Professor in Earth Sciences at the University of Toronto. She completed her studies at Harvard, Waterloo, and Cambridge in the United Kingdom before joining the University of Toronto in 1992. She is a CRC Tier I Chair in Isotopes of the Earth and Environment, Director of the Stable Isotope Laboratory, Senior Fellow of Massey College and President of the Geochemical Society. Sherwood Lollar has published extensively in research on stable isotope geochemistry to investigate groundwater remediation, to track the fate of carbon-bearing fluids and gases such as CO₂, CH₄ and H₂ in ancient fracture waters in the Earth's crust, and to investigate the role of deep subsurface microbial populations in carbon cycling. She has been a

recipient of many academic awards (including the NGWA Darcy Lecturer, Steacie Fellowship, Canada Council Killam Fellow, and NSERC Accelerator Awards) and was selected in 2000 by Time Magazine Canada for their feature on "Leaders for the 21st Century".

Most recently, Sherwood Lollar was awarded the 2012 Geological Society of America Geomicrobiology and Geobiology Award, and the 2012 Eni Award for Protection of the Environment. The prestigious international Eni Awards recognize outstanding research in fields of energy and the environment. The Protection of the Environment award is presented for research and innovation in areas concerning the environmental impact of human activities, specifically protection and restoration of the environment, with a special focus on research and innovative technologies to eliminate pollutants and to improve environmental conditions. Past recipients include J. Craig Venter (2008); Gérard Férey (2009); Francois Morel of Princeton University (2010); Jean-Marie Tarascon (2011). The awards are chosen by a 24 member scientific review panel and previous winners of the award include several Nobel Prize winners (see: <http://www.eni.com/eni-award/eng/home.shtml>). The award was presented on June 2012 in Rome by the President of Italy, and the recognition includes a gold medal specially minted by the Italian state mint.

Frank Tompa



Dr. Frank Tompa is a Distinguished Professor Emeritus and Adjunct Professor in the David R. Cheriton School of Computer Science and a member of the Data Systems Group at the University of Waterloo. Dr. Tompa was named an ACM Fellow in 2010 and awarded the Queen Elizabeth II Diamond Jubilee Medal in 2012. In 2015, he was the winner of a CACS/AIC Lifetime Achievement Award for outstanding and sustained contributions to computing.

Dr. Tompa was a principal in the founding of OpenText, a company spun off from a University of Waterloo project that developed technology to index the Oxford English Dictionary. It is now Canada's largest software company.

Professor Tompa's teaching and research interests are in the fields of data structures and databases, and he has been an active member of the Database Research Group and the Information Retrieval Group since their founding. His current interests are in text-dominated database applications, where the content is primarily long, semi-structured strings, which are not as well supported by traditional database systems as are numbers. The challenge is to discover how the complexity of text, with its intricate structure and diversity of expression, can be efficiently managed.

Doug Zolinsky



Mr. Zolinsky is an economist and currently serving as the Director General at Western Economic Diversification (WED), Government of Canada. He has been with WED since 2008 and previously served as Acting Assistant Deputy Minister (2013-14) and Director of Policy (2008-11). Mr. Zolinsky worked previously with the Government of Saskatchewan as the Assistant Deputy Minister – Innovation, Investment and Strategic Sectors (2004-08), Director of Strategic and Economic Initiatives (2003-04), and Senior Advisor to the Premier (1993-99). Mr. Zolinsky has a BA in Economics from the University of Saskatchewan.