

ANNUAL
CELEBRATION
OF INNOVATION
AND
ENTREPRENEURSHIP

WEDNESDAY APRIL 27, 2016
5:00 PM TO 7:00 PM
McGILL UNIVERSITY
MACDONALD ENGINEERING
BUILDING LOBBY



THE WILLIAM AND RHEA SEATH AWARDS SUPPORT INNOVATIVE RESEARCH AT THE FACULTY OF ENGINEERING. THEY WERE MADE POSSIBLE THROUGH THE GENEROSITY OF ALUMNUS WILLIAM SEATH, B.ENG'52. THE AWARDS RECOGNIZE OUTSTANDING WORK BY ENGINEERING, ARCHITECTURE AND URBAN PLANNING STUDENTS AT THE UNDERGRADUATE AND GRADUATE LEVELS, AND BY PROFESSORS WHO CONDUCT INNOVATIVE RESEARCH WITH POTENTIAL FOR COMMERCIALIZATION.

Annual calls for applications to the William and Rhea Seath Awards competition are made in the fall. Up to three awards of approximately \$14,000 are given in the spring. The call for the 2016/17 competition will be October 3, 2016, with a submission deadline of December 2, 2016.

Applications are reviewed and awarded by the Dean of Engineering and a review committee composed of Faculty, industry and alumni representatives. Winners use the awards to support the commercialization of their research. Examples of eligible support include development, testing, prototype construction, specific market research, creation of a business plan and reduction in teaching time for professors, or salary stipends for students.

2015-2016 WRSA REVIEW COMMITTEE

Côme Laguë, BEng'89, is CEO of Zetta Research, an intellectual property management company that acquires, develops and sells portfolios of patents from start-ups and inventors. Earlier in his career he co-founded Nueva Ventures, a venture fund focused on capital efficient ventures in the communications, internet and software sectors. Mr. Laguë is a member of the Faculty of Engineering Advisory Board.

Naser Partovi, BEng'80, MEng'81, is Managing Director of Salzburg Investments Inc., a start-up focused on developing outpatient management software for patients with chronic conditions. He is also Chairman and CEO of Wellaho, a member of the Faculty of Engineering Advisory Board and a highly successful entrepreneur with more than 20 years of management, corporate development and operating experience.

Neal Gordon, BEng'83, is acting head of research products at 121 Bio, LLC, a Cambridge-based biopharmaceutical start-up that is developing a unique portfolio of antibody-based solutions for academic and commercial research laboratories. Dr. Gordon is a serial entrepreneur in the life sciences with product development and operating roles across research tools, therapeutics and diagnostics.

Jeff Kadanoff, BEng'94, is Chief Financial Officer at Knight Therapeutics Inc. He worked previously as a senior strategy and corporate development leader at Bain & Company, a top-tier consulting firm. He has extensive experience in identifying and driving revenue and profit growth opportunities and a proven track record of effectively leading corporate and client management teams to deliver strong financial and operational results. Jeff has experience across a variety of industries, including private equity, pharmaceuticals, retail, aviation, financial services, industrial goods and telecom. His core competencies include strategic and business planning, corporate development, M&A screening and due diligence, merger integration, ecommerce development and omni-channel strategy, and organizational design. In addition to his McGill education Jeff has an MBA from INSEAD [Institut Européen d'Administration des Affaires].

Emeritus Professor John Dealy was Dean of the Faculty of Engineering from 1994 to 1999. He is a Fellow of the Royal Society of Canada; he holds four patents; and he is the author or co-author of four books and 90 scholarly papers. Educated in the US, professor Dealy has received numerous teaching and research awards. He taught at McGill's Chemical Engineering Department from 1964 to 2004.

2015-2016 WILLIAM & RHEA SEATH AWARD
WINNERS IN ENGINEERING INNOVATION

2015-2016 WILLIAM & RHEA SEATH AWARD
WINNERS IN ENGINEERING INNOVATION

PROFESSOR
NATHALIE TUFENKJI
DEPARTMENT OF CHEMICAL ENGINEERING

POSTDOCTORAL FELLOW
VIMAL MAISURIA
DEPARTMENT CHEMICAL ENGINEERING

PROJECT TITLE:
Maple Syrup Extract to
Reduce Antibiotic Usage

POSTDOCTORAL FELLOW
MEHRDAD MAHOUTIAN
DEPARTMENT OF CIVIL ENGINEERING
& APPLIED MECHANICS

PROFESSOR YIXIN SHAO
DEPARTMENT OF CIVIL ENGINEERING
& APPLIED MECHANICS

PROJECT TITLE:
Green, Carbon-Negative
Construction Materials

PH.D. CANDIDATE
FARSHAD MIRSHAFIEI
DEPARTMENT OF CIVIL ENGINEERING
& APPLIED MECHANICS

POSTDOCTORAL FELLOW
MEHRDAD MIR SHAFIEI
DEPARTMENT OF ELECTRICAL
& COMPUTER ENGINEERING

PROJECT TITLE:
Novel, Three-Dimensional
Seismic Assessment Method
[3D-SAM] for Structures
Technology for Degradation
of Toxic Chlorinated Organic
Compounds in Water Treatment

Need: The overuse of antibiotics has fueled the emergence and spread of drug-resistant bacteria. A means must be found to combat this global public health crisis.

Solution: An extract from maple syrup can make disease-causing bacteria more susceptible to common antibiotics.

Impact: This simple and effective approach can reduce antibiotic usage by as much as 97%, significantly slowing the spread of antibiotic-resistance.

Summary: The maple syrup extract acts synergistically with antibiotics in destroying resistant bacterial communities known as biofilms. The proposed synergism-based treatment may expand the spectrum of existing antimicrobials, prevent the emergence of resistant strains and minimize potential cytotoxicity due to high antibiotic doses. The extract could be incorporated, for example, into antibiotic capsules or creams as an antibiotic-boosting agent. The WRSA funding is being used to conduct necessary in vitro and in vivo experiments with maple syrup extracts to confirm the efficacy of this non-obvious and potentially disruptive technology.

Need: Traditional concrete blocks utilize cement as a binder and generate significant carbon dioxide (CO2) emissions. "Green" construction materials would be less costly and more environmentally friendly.

Solution: Use of a carbonation activation technique to make waste steel slag a primary binder for construction block applications.

Impact: Eliminating the construction industry's reliance on Portland cement for concrete blocks will have multiple benefits that include reducing (CO2) emissions and converting steel industry waste into value-added products.

Summary: McGill University recently developed a patent-pending technology that produces construction materials using scrap steel slag as a binder and CO2 as an activator. A specific example is a standard construction block, which is traditionally made from Portland cement. The method developed uses the carbonation activation technique to make steel slag a primary binder for block applications. This eliminates the use of Portland cement, reduces carbon dioxide emissions, converts steel industry waste into value-added products, sequesters carbon dioxide into stable carbonates and consumes zero virgin materials. These construction blocks have mechanical properties comparable to commercial cement-based concrete blocks. As well, the production cost of these green blocks is approximately 25% lower than the commercial standard. WRSA funding will allow the team to further generate commercially-relevant data and de-risk the technology for future investment.

Need: Existing structural assessment techniques related to likely earthquake damage often lack a sufficient degree of accuracy, and they can be complex and time consuming.

Solution: The 3D seismic assessment method (3D-SAM), which is based on the use of sensors during the assessment process to record real data.

Impact: Improved assessment techniques, so that buildings can be retrofitted to prevent or lessen structural damage during earthquakes, save lives and reduce economic losses.s.

Summary: Earthquakes cause damage to structures, pose a threat to human life and result in huge economic losses. Existing earthquake assessment solutions start with a visual inspection of the structure, followed by assessments based on theoretical models that require detailed engineering plans. These studies are complex, time consuming and highly dependent on the accuracy of the engineer conducting the assessment. To address these shortcomings, Farshad Mirdhafiei and Mehrdad Mir Shafiei invented a three-dimensional seismic assessment method, 3D-SAM, that is based on real data recorded by sensors. The duo founded Sensequake in September 2015 to commercialize the idea. The WRSA funding

2015-2016 IAN McLACHLIN PRIZE
FOR ENTREPRENEURSHIP IN ENGINEERING

2015-2016 IAN McLACHLIN PRIZE
FOR ENTREPRENEURSHIP IN ENGINEERING

UNDERGRADUATE
STUDENT AIDAN KURTZ
DEPARTMENT OF MECHANICAL
ENGINEERING

PROJECT TITLE:
Lattice Design Software
for 3D Printing

PROFESSOR YAORYAO
FIONA ZHAO
DEPARTMENT OF MECHANICAL ENGINEERING

PHD CANDIDATE
YUNLONG TANG
DEPARTMENT OF MECHANICAL ENGINEERING

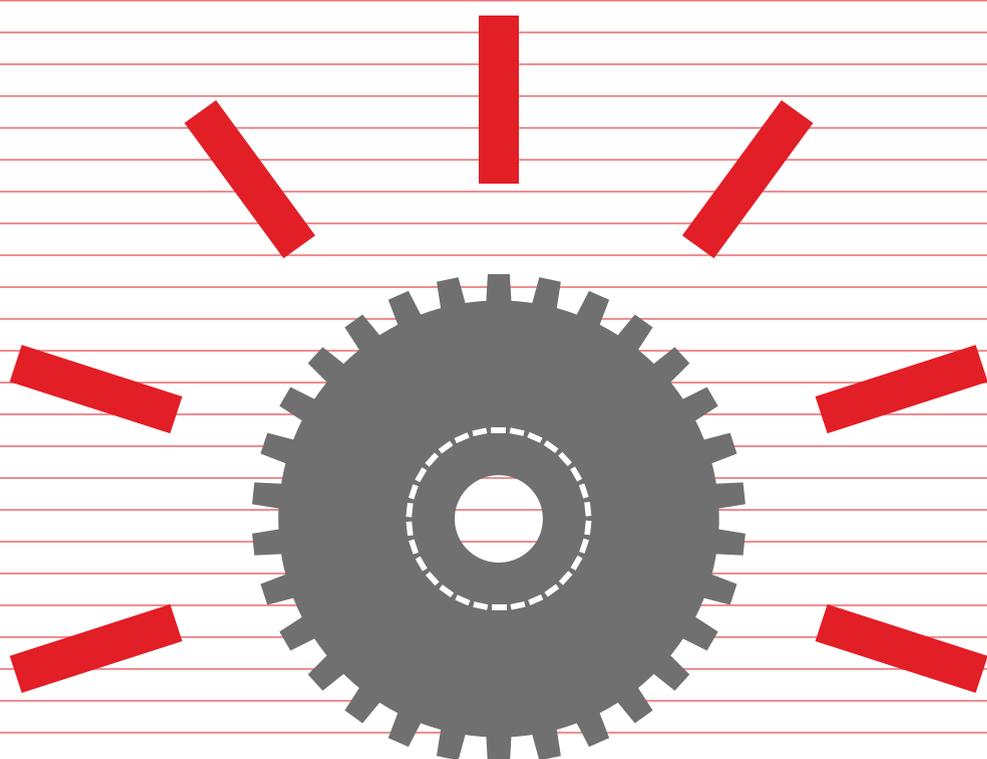
UNDERGRADUATE STUDENT
THOMAS KARATZAS,
DEPARTMENT OF ELECTRICAL
& COMPUTER ENGINEERING
CO-FOUNDER AND HEAD PROGRAMMER
OF SIMVOLUS INC.

PROJECT TITLE:
SIMVO - The Interactive Degree
Advising Platform

UNDERGRADUATE STUDENT
JOHN NNAMCHI,
DEPARTMENT OF BIOCHEMISTRY
CO-FOUNDER OF SIMVOLUS INC.

Summary: Manufacturing capabilities are growing at a rapid pace, particularly in the field of additive manufacturing (i.e. 3D printing), and design software has not kept pace with these advances. The Intralattice design software serves as a platform for cellular structure design, offering novel design functionalities and an extensible, modular workflow that makes it highly conducive to R&D. The Ian McLachlin funding will support the development of this platform as it extends into the commercial space and drives innovation in a wide range of engineering disciplines.

Summary: It is widely accepted that the vast majority of McGill students experience difficulty during their first semester when faced with the task of identifying and planning classes. A survey of 100 students indicates that the existing Minerva/E-calendar system is too confusing (some would say obsolete) for the tech-savvy minds of today's students. By giving students a holistic view of their entire degree program, Simvolus Inc. intends to create a software with a user-friendly platform engineered to (i) facilitate the process of degree planning and (ii) promote more accurate and efficient advising sessions. After an incubation test with Karatzas' and Nnamchi's stakeholders in the Department of Electrical & Computer Engineering, the Ian McLachlin award will be used to provide some of the resources required to commercialize this highly desired product: SIMVO.



THE INNOVATION FUND NEEDS YOUR SUPPORT

THE INNOVATION FUND LIES AT THE HEART OF OUR FACULTY'S MISSION OF ENCOURAGING ENTREPRENEURIAL THINKING—AT ALL LEVELS—THROUGH OUR SIX DEPARTMENTS AND TWO SCHOOLS. THE FUND SUPPORTS TEAM-BASED, INNOVATIVE PROJECTS THAT SPUR INVENTIVENESS, PROMOTE TECHNOLOGICAL INNOVATION AND HELP TRAIN STUDENTS TO THINK ENTREPRENEURIALLY.

THE INNOVATION FUND SUPPORTS:

TECHACCEL GRANTS THAT HELP STUDENTS JUMP-START AND ACCELERATE TECHNOLOGICALLY-BASED IDEAS THAT HAVE BUSINESS AND SOCIAL IMPACT POTENTIAL. THEY ARE AVAILABLE THROUGHOUT THE YEAR IN AMOUNTS AS HIGH AS \$10,000 PER PROJECT. APPLICATIONS ARE REVIEWED EVERY TWO TO FOUR WEEKS BY MEMBERS OF THE INNOVATION COMMITTEE.

THE INNOVATION FUND NEEDS YOUR SUPPORT THROUGH:

- AN ANNUAL CONTRIBUTION [SUGGESTED AMOUNT IS \$1K]
- A NAMED ENDOWMENT WITHIN THE INNOVATION FUND

THE INNOVATION FUND HAS BEEN SUPPORTED BY:

JIM & BARBARA BRODEUR

MICHAEL BARSKI

IAN MCLACHLIN

MARK LEVINE

PASQUALE DI PIERRO

ARTHUR LEVINE

FONEX

HOWARD STOTLAND

THE ANNA & LOUIS VIGLIONE
FOUNDATION

ROBERT WALSH

ICE Innovations Catalyst in Engineering
Catalyseur d'innovations en génie

Faculty of Engineering
University Advancement Office



McGill