NSERC Discovery Grants & RTI

USask
Ron Borowsky, NSERC Lead and former Member and Co-Chair of EG 1502 (2010-2014)
Danielle Baron, NSERC Research Facilitator, College of Agriculture & Bioresources
Lisa Jategaonkar, Associate Director, Strategic Research Initiatives

NSERC
Caroline Bicker, Acting Team Leader, Research Grants and Scholarships, NSERC (via Webex)
Sophie Debrus, Program Officer, Chemistry EG 1504, NSERC (via Webex)
Panel of NSERC EG/RTI members: Tips, Strategies, Q&A

- **Ildiko Badea**, Associate Professor of Pharmacy, College of Pharmacy and Nutrition – *Current member of RTI Engineering committee*

- **Julia Boughner**, Associate Professor of Anatomy and Cell Biology, College of Medicine – *Current member of NSERC EG 1501– Genes, Cells and Molecules*

- **James (J.D.) Johnston**, Associate Professor of Mechanical Engineering, College of Engineering – *Current member of NSERC EG 1512– Mechanical Engineering*

- **Lisa Kalynchuk**, Professor of Neurology, College of Medicine; Special Advisor to the Provost; Chair, University Council, Office of the Vice-Provost Health – *Current co-chair of NSERC EG 1502 – Biological Systems and Functions*

- **Pat Krone**, Professor of Anatomy and Cell Biology, College of Medicine – *Former chair of RTI Genes, Cells and Molecules committee, former member and co-chair of NSERC EG 1501– Genes, Cells and Molecules*

- **Juxin Liu**, Associate Professor in Mathematics & Statistics, College of Arts and Science – *Current member of NSERC EG 1508 – Mathematics and Statistics*

- **Regan Mandryk**, Associate Professor of Computer Science, College of Arts and Science – *Current co-chair of NSERC EG 1507 – Computer Science*

- **Raymond Spiteri**, Professor of Computer Science, College of Arts and Science – *Current member and incoming co-chair of NSERC EG 1508 – Applied Mathematics*
Professor Adil Nazarali

Born: June 25, 1954
Passed away: April 27, 2017
Celebration of Life: Saturday
May 27, 2017 at 1:00pm Marquis Hall
Agenda

8:30 – 9:00 am  Registration and Breakfast
9:00 – 10:00 am  Welcome, Introductions, and Overview of the Evaluation Group Process at NSERC
10:00 – 11:30 am  Panel of NSERC EG/RTI Members: Tips, Strategies, Q&A
11:30 – 11:45 am  NSERC Large-Scale Grant Programs
12:00 – 1:30 pm  Celebration/Networking Lunch (Marquis Hall)
What is NSERC?

NSERC = Natural Sciences and Engineering Research Council of Canada

- Part of the federally-funded Tri-Agency network (along with SSHRC and CIHR)

What is the Discovery Grants Program?

- Supports ongoing programs of research with long-term goals, rather than a single short-term project or collection of projects
- ‘Grants in aid’; provides long-term operating funds to help support the costs of a research program
- Up to five years in length
- Applicant must hold a tenure-track faculty position at an eligible Canadian post-secondary institution
NSERC Research Facilitators & Planning Officers

- **Agriculture and Bioresources**: Danielle Baron
- **Arts and Science**: Javier Tavitas
- **Engineering**: Heidi Smithson
- **Kinesiology**: Lori Ebbesen
- **Medicine (college)**: Bruna Bonavia-Fisher
  - **Department of Medicine**: Jon Watts
  - **Department of Surgery**: Karen Mosier
- **Pharmacy and Nutrition**: Gen Clark
- **School of Environment and Sustainability**: Kevin Driscoll
- **Western College of Veterinary Medicine**: Lianne McLeod
### NSERC Discovery Grant (DG) and Research Tools and Instruments Grant (RTI) 2017 Competitions

#### Internal Review and Submission Timelines

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicants initiate their intention to apply and/or request for internal review by submitting the Intention to Apply/Request for Internal Review Form for NSERC DG/RTI to <a href="mailto:grant_review@usask.ca">grant_review@usask.ca</a> (306-966-7521). Please put ‘Lastname_NSERC_DG/RTI’ in the subject heading. Attention RTI Applicants: In addition to NSERC’s Eligibility Criteria for Faculty, applicants and co-applicants must each currently hold, or be applying for one of the following NSERC research grants at the time of application: Discovery Grant, Strategic Partnerships Grants, Collaborative Research and Development Grants, Canada Research Chairs, and/or Canada Excellence Research Chairs.</td>
<td>June 30, 2017</td>
</tr>
<tr>
<td>NSERC Deadline for submission of DG Notification of Intent (NOI) to Apply NOI must be submitted to NSERC through the NSERC Research Portal.</td>
<td>August 1, 2017</td>
</tr>
<tr>
<td>Applicants participating in the Internal Review, please e-mail a copy of your submitted NSERC DG NOI to <a href="mailto:grant_review@usask.ca">grant_review@usask.ca</a> (306-966-7521). Please put ‘Lastname_NSERC_DG/RTI’ in the subject heading.</td>
<td>August 2, 2017</td>
</tr>
<tr>
<td>Applicants consult with their suggested reviewers, Research Facilitators, Associate/Vice-Deans Research, or mentorship teams to strategize and prepare their draft application.</td>
<td>June 30 – September 14, 2017</td>
</tr>
<tr>
<td>Applicants submit draft application and CCV for internal review to <a href="mailto:grant_review@usask.ca">grant_review@usask.ca</a> (306-966-7521). Please put ‘Lastname_NSERC_DG/RTI’ in the subject heading.</td>
<td>September 15, 2017</td>
</tr>
<tr>
<td>Completed internal reviews are returned to the applicants.</td>
<td>October 6, 2017</td>
</tr>
<tr>
<td>Applicants consult with their suggested reviewers, Research Facilitators, Associate/Vice-Deans Research, or mentorship teams to incorporate reviewer feedback. Research Facilitator reads for the logistical flow and completion of the proposal.</td>
<td>October 6 – 19, 2017 (RTI) October 6 – 25, 2017 (DG)</td>
</tr>
</tbody>
</table>
| Research Services Submission Deadline (RTI)
Final applications must be received through the University Research System (UnivRST) by Research Services and Ethics Office (RSEO).
NOTE: College/school/department approval deadlines precede the RSEO deadline. Please check with your Research Facilitator or Associate/Vice-Dean Research. | October 19, 2017 |
| NSERC RTI Submission Deadline
Final applications must be submitted by applicants to NSERC through the NSERC Research Portal, and will be forwarded by the RSEO staff. | October 25, 2017 |
RSEO submission deadline  
(ask your RF for earlier college/dept deadlines)

NSERC DG deadline

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Date</th>
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<tr>
<td>Research Services Submission Deadline (DG)</td>
<td>October 26, 2017</td>
</tr>
<tr>
<td>Final applications must be received through the University Research System (UnivRS) by Research Services and Ethics Office (RSEO). Note: College/school/department approval deadlines precede the RSEO deadline. Please check with your Research Facilitator or Associate/Vice-Dean Research.</td>
<td></td>
</tr>
<tr>
<td>NSERC DG Submission Deadline</td>
<td>November 1, 2017</td>
</tr>
<tr>
<td>Final applications must be submitted by applicants to NSERC through the NSERC Research Portal, and will be forwarded by the RSEO staff.</td>
<td></td>
</tr>
</tbody>
</table>

### Workshops and Webinars Calendar

<table>
<thead>
<tr>
<th>DG</th>
<th>RTI</th>
<th>EVENT</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>X</td>
<td>NSERC Discovery Grant/RTI Workshop and Celebration Luncheon</td>
<td>May 18, 2017</td>
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<tr>
<td></td>
<td></td>
<td>The workshop will provide insights on the evaluation process, successful strategies for grant writing, and tools and approaches to enhance the quality of DG and RTI applications. Celebration/networking luncheon with NSERC grant recipients to follow. To access the presentation slides and video file of this workshop (available approximately 2 weeks after the workshop), visit <a href="http://research.usask.ca/research-process/index.php">http://research.usask.ca/research-process/index.php</a>. Open Archived Resources to see the links.</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>NSERC CCV and Research Portal Computer Lab Sessions for DG and RTI Applicants</td>
<td>Mid-June (TBA)</td>
</tr>
<tr>
<td>X</td>
<td></td>
<td>DG Webinar: Submission of a Notification of Intent to Apply (English)</td>
<td>June 20, 2017</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To participate, visit <a href="http://nsercocanada.adobeconnect.com/complete-application/">http://nsercocanada.adobeconnect.com/complete-application/</a></td>
<td>11:00 am – 1:00 pm (SK)</td>
</tr>
<tr>
<td>X</td>
<td></td>
<td>DG Webinar: Submission of a Notification of Intent to Apply (English)</td>
<td>July 13, 2017</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To participate, visit <a href="http://nsercocanada.adobeconnect.com/complete-application/">http://nsercocanada.adobeconnect.com/complete-application/</a></td>
<td>11:00 am – 1:00 pm (SK)</td>
</tr>
<tr>
<td>X</td>
<td></td>
<td>RTI Webinar: Submission of an Application (English)</td>
<td>August 31, 2017</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To participate, visit <a href="http://nsercocanada.adobeconnect.com/complete-application/">http://nsercocanada.adobeconnect.com/complete-application/</a></td>
<td>11:00 am – 1:00 pm (SK)</td>
</tr>
<tr>
<td>X</td>
<td></td>
<td>RTI Webinar: Submission of an Application (English)</td>
<td>September 14, 2017</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To participate, visit <a href="http://nsercocanada.adobeconnect.com/complete-application/">http://nsercocanada.adobeconnect.com/complete-application/</a></td>
<td>11:00 am – 1:00 pm (SK)</td>
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<tr>
<td>X</td>
<td></td>
<td>DG Webinar: Submission of an Application</td>
<td>September 21, 2017</td>
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<tr>
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<td>To participate, visit <a href="http://nsercocanada.adobeconnect.com/complete-application/">http://nsercocanada.adobeconnect.com/complete-application/</a></td>
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<td>DG Webinar: Submission of an Application</td>
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<td>To participate, visit <a href="http://nsercocanada.adobeconnect.com/complete-application/">http://nsercocanada.adobeconnect.com/complete-application/</a></td>
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<tr>
<td>X</td>
<td>X</td>
<td>Computer Lab Sessions for DG and RTI Applicants</td>
<td>Mid-October (TBA)</td>
</tr>
</tbody>
</table>
# Rating Form - Discovery Grants Application

<table>
<thead>
<tr>
<th>Applicant</th>
<th>Department/University</th>
</tr>
</thead>
</table>

## Applicant Status:

**Title of proposal**

### Evaluation criteria (See Instructions for complete details)

#### Excellence of researcher

- Knowledge, expertise and experience
- Quality of contributions to, and impact on, the proposed and other areas of research in the NSERC
- Importance of contributions to, and use by other research and end-users

<table>
<thead>
<tr>
<th>Exceptional</th>
<th>Outstanding</th>
<th>Very Strong</th>
<th>Strong</th>
<th>Moderate</th>
<th>Insufficient</th>
</tr>
</thead>
</table>

**Rationale for rating:**

#### Merit of the proposal

- Originality and innovation
- Significance and expected contributions to research
- Clarity and scope of objectives
- Clarity and appropriateness of methodology
- Feasibility
- Discussion of relevant issues
- Appropriateness / Justification of budget
- Explanation of the relationship to other sources of funds

<table>
<thead>
<tr>
<th>Exceptional</th>
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<th>Very Strong</th>
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<th>Moderate</th>
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</thead>
</table>

**Rationale for rating:**

#### Contributions to training of highly qualified personnel

- Quality and impact of past contributions
- Appropriateness and clarity of the proposal for the training of HQP
- Training in collaborative and interdisciplinary environment (if applicable)

<table>
<thead>
<tr>
<th>Exceptional</th>
<th>Outstanding</th>
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</tr>
</thead>
</table>

**Rationale for rating:**

#### Cost of research (relative cost of the proposed research program as compared to the norms for the field)

| Low | Normal | High |

**Rationale for Cost of Research:**
# Evaluation, Merit Indicators, Bins

<table>
<thead>
<tr>
<th>Exceptional</th>
<th>Outstanding</th>
<th>Very Strong</th>
<th>Strong</th>
<th>Moderate</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Acknowledged as a leader who has continued to make, over the last six years, influential accomplishments at the highest level of quality, impact and/or importance to a broad community.</td>
<td>The accomplishments presented in the application were deemed to be far superior in quality, impact and/or importance.</td>
<td>The accomplishments presented in the application were deemed to be of superior quality, impact and/or importance.</td>
<td>The accomplishments presented in the application were deemed to be of reasonable quality, impact and/or importance.</td>
<td>The accomplishments presented in the application were deemed to be below an acceptable level of quality, impact and/or importance.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Purpose of the Proposal</th>
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<th>Purpose of the Proposal</th>
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</thead>
<tbody>
<tr>
<td>Proposed research program is clearly presented, is original and innovative and likely to have impact by leading to groundbreaking advances in the area and/or leading to a technology or policy that addresses socio-economic or environmental needs. Long-term vision and short-term objectives are clearly defined. The methodology is clearly defined and appropriate. The proposal and budget clearly demonstrate how the research activities to be supported are distinct from and complement those funded by other sources.</td>
<td>Proposed research program is clearly presented, is original and innovative and is likely to have impact by contributing to groundbreaking advances in the area, and/or leading to a technology or policy that addresses socio-economic or environmental needs. Long-term goals are clearly defined and short-term objectives are well planned. The methodology is clearly described and appropriate. The proposal and budget demonstrate how the research activities to be supported are distinct from and complement those funded by other sources.</td>
<td>Proposed research program is clearly presented, is original and innovative and is likely to have impact by leading to advancements and/or addressing socio-economic or environmental needs. Long-term goals and short-term objectives are clearly defined. The methodology is clearly described and appropriate. The proposal and budget demonstrate how the research activities to be supported are distinct from and complement those funded by other sources.</td>
<td>Proposed research program is clearly presented, is original and innovative and may have impact and/or address socio-economic or environmental needs. Long-term and short-term objectives are described. The methodology is clearly described and appropriate. The proposal and budget demonstrate how the research activities to be supported are distinct from and complement those funded by other sources.</td>
<td>Proposed research program, as presented lacks clarity, and/or is of limited originality and innovation. Objectives are not clearly described and/or likely not attainable. Methodology is not clearly described and/or appropriate. The proposal and budget do not clearly demonstrate how the research activities to be supported are distinct from and complement those funded by other sources.</td>
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</table>

<table>
<thead>
<tr>
<th>Training Record</th>
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<th>Training Record</th>
<th>Training Record</th>
<th>Training Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training record is far superior to other applicants, with HQP contributing to high-quality research. Most HQP move on to positions that require highly desired skills, obtained through training received. Research plans for trainees are appropriate and clearly defined. HQP success highly likely.</td>
<td>Training record is superior to other applicants, with HQP contributing to quality, original research. Many HQP move on to appropriate positions that require desired skills, obtained through training received. Research plans for trainees are appropriate and clearly described. HQP success is likely.</td>
<td>Training record compares favourably with other applicants. HQP generally move on to positions that require desired skills, obtained through training received. Research plans for trainees are appropriate and clearly described. HQP success is likely.</td>
<td>Training record is acceptable but may be modest relative to other applicants. Some HQP move on to programs or positions that require desired skills, obtained through training received. Plans for trainees are described and should contribute to HQP success.</td>
<td>Training record is below an acceptable level relative to other applicants. HQP do not, in general, move on to positions that require skills obtained through training received. Plans for trainees are not appropriate or are not described with enough information to predict likelihood of HQP success.</td>
</tr>
</tbody>
</table>
DG Proposal Sections

- Public Summary
- Budget
- Relationship to Other Research Support
- HQP Training Plan
- Past Contributions to HQP Training
- Most Significant contributions
- Additional Information on Contributions
- Proposal (5 pages)
- Budget Justification
- References
- Attachments
- CCV
DG Proposal Sections

- **Public Summary**: use this to your advantage!
- Budget
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HQP Training Plan

- Describe exactly what your students will do – be explicit
- Relate it to a specific research objective
- The level of research: Why is a PhD needed to tackle Objective 1, instead of a MSc?
- Describe what your students will learn: special skills, career training, etc.
- Include that students will publish and present – be specific
- Value-added: access special facilities, College poster/research days, industrial collaborators?
- Don’t forget about the undergrads! Research techs, summer students, Honours students
- Emphasis is on benefits to the student
### HQP tables (include in budget just.)

Provided by Jack Gray, Dept. Biology

<table>
<thead>
<tr>
<th>Program years</th>
<th>Yr 1</th>
<th>Yr 2</th>
<th>Yr 3</th>
<th>Yr 4</th>
<th>Yr 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaded cells indicate years of requested funds</td>
<td>MSc 1 = H1A &amp; B</td>
<td>MSc 2 = H2A</td>
<td>MSc 3 = H2B</td>
<td>PhD 1 = H3A &amp; B</td>
<td>T1 = H1-H3</td>
</tr>
<tr>
<td></td>
<td>UG (x2)</td>
<td>UG (x2)</td>
<td>UG (x2)</td>
<td>UG (x2)</td>
<td>UG (x2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student</th>
<th>Objectives/Student project</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name 1 (MSc.)</td>
<td>1</td>
<td>x</td>
<td>x</td>
<td></td>
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<tr>
<td>TBD1 (MSc.)</td>
<td>2</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
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<tr>
<td>TBD2 (MSc.)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Name 2 (PhD)</td>
<td>1</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>TBD3 (PhD)</td>
<td>2/3</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
Examples

(for more examples of successful DG applications please visit the USask Grant Repository)

https://share.usask.ca/go/ovpr/grants_repository/Pages/default.aspx
HQP: Describe what your students will do

“Two MSc students will be involved with Objective 2 (metabolic disruption arising from dietary Se exposures). A recently recruited MSc student (Name) will be conducting experiments in early life stage zebrafish exposed in ovo to SeMet. He will determine a variety of parameters associated with metabolic capacity, including respirometry, energy stores, and whole transcriptome gene expression using RNA-seq. A new MSc student will be recruited in 2019 (Year 4) to conduct complementary experiments in juvenile rainbow trout exposed to dietary SeMet. Two BSc Honours students will be recruited to conduct experiments in zebrafish and/or rainbow trout in years 3-5 of the proposed research. An additional 2 BSc summer research assistants will be recruited in 2016 and 2017 to assist Connor Pettem with Objective 2 and will have defined projects.”

- David Janz, Department of Veterinary Biomedical Sciences
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- David Janz, Department of Veterinary Biomedical Sciences
What will they learn?

“The HQP will develop and/or formulate the statistical models and carry out both analyses and simulations with input from me provided at regularly scheduled meetings. They will also be involved in the research projects by contributing new ideas, implementing methodologies and analyzing data. Because the computational and methodological burden will be high, HQP will indeed develop these skills while fulfilling the proposal's objectives. One of my key goals is to write computer algorithms and to develop statistical packages to implement the methods described in my proposal. This will help the HQP in developing programming skills, which will certainly be beneficial in their future careers.”

-Shahedul Khan, Department of Mathematics and Statistics
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Past Contributions to HQP

- What important, challenging skills have your students learned?

- How did this help them in their career? Non-academic career paths are good too!

- Have your students have published papers/presented at conferences/won awards?

- Don’t forget your undergraduate students!

- How did you interact with students?
Past HQP example

“My MSc students also contributed to my research in a significant way; everyone is co-author or even a lead author (Name1, Name2) of one or more refereed publications (paper with recent MSc, graduate, [Name3], was just accepted). Over the last six years my graduate students made ten conference presentations in person (poster or oral) and contributed to five of my presentations. My lab provides a high level of training on software development, data visualization, physical concept testing and networking with others. These skills allow my students to be successful in their further careers. [Name] (PhD, 2011) is now a Research Scientist with NRCan Geomagnetic Laboratory in Ottawa where she leads several key projects based on her training in Space Weather. Name3 is now a research assistant in ([Prof]’s group (Canadian Light Source Synchrotron Facility) helping on the software side. Over my career, I am proud to state that all 5PhD students that I supervised are professional researchers in the field of training in permanent positions and, among them, two are tenured Associate professors (USA and China).”

-Sasha Koustov, Department of Physics and Engineering Physics
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Past HQP example

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-Camille Partin, Department of Geological Sciences
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Past HQP (continued)

- Be descriptive. For example instead of saying “we meet weekly”, describe what happens when you meet. Do you trouble-shoot? Do students practice formal presentations? Is it an informal brainstorming session? Do you help focus creative ideas into tangible goals?

“We work together and talk through what we are doing, discussing such things as choice of experimental designs while programming experiments (EPrime), choice of analysis strategies while analyzing data (SPSS, Systat, PRAAT, AFNI, Brain Voyager), and choice of wording while writing papers.”

– Ron Borowsky, Dept. Psychology
## Training of HQP Merit Indicators

<table>
<thead>
<tr>
<th>Exceptional</th>
<th>Outstanding</th>
<th>V. Strong</th>
<th>Strong</th>
<th>Moderate</th>
<th>Weak</th>
</tr>
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<tbody>
<tr>
<td>Training record is at the highest level, with HQP contributing to top quality research. Most HQP move on to positions that require highly desired skills, obtained through training received. Research plans for trainees are appropriate and clearly defined. HQP success highly likely.</td>
<td>Training record is far superior to other applicants, with HQP contributing to high-quality research. Most HQP move on to positions that require highly desired skills, obtained through training received. Research plans for trainees are appropriate and clearly defined. HQP success highly likely.</td>
<td>Training record is superior to other applicants, with HQP contributing to quality, original research. Many HQP move on to appropriate positions that require desired skills, obtained through training received. Research plans for trainees are appropriate and clearly described. HQP success is likely.</td>
<td>Training record compares favourably with other applicants. HQP generally move on to positions that require desired skills, obtained through training received. Research plans for trainees are appropriate and described. HQP success is likely.</td>
<td>Training record is acceptable but may be modest relative to other applicants. Some HQP move on to programs or positions that require desired skills, obtained through training received. Plans for trainees are acceptable and not described with enough information to predict likelihood of HQP success.</td>
<td>Training record is below an acceptable level relative to other applicants. HQP do not, in general, move on to positions that require skills obtained through training received. Plans for trainees are not appropriate or are not described with enough information to predict likelihood of HQP success.</td>
</tr>
</tbody>
</table>

*The Discovery Grants Merit Indicators should be used in conjunction with the Peer Review Manual which outlines how reviewers arrive at a rating.*
DG Proposal Sections

- Public Summary
- Budget
- Relationship to Other Research Support
- HQP Training Plan
- Past Contributions to HQP Training
- **Most Significant Contributions**
  - Additional Information on Contributions
  - Proposal (5 pages)
  - Budget Justification
  - References
  - Attachments
  - CCV
Significant Contributions

- Cluster papers (‘Programs of Research’) together as a Contribution.

- Clustering papers/outputs allows you to bring in papers older than 6 years.

- For each cluster:
  - Id with a title, describe what was found.
  - Describe the implications
  - Describe who this is important to.
  - If applicable, describe the novelty in your approach.
1) Catalytic and Chemical Activity of Metallic and Bimetallic Nanoparticles (cv pubs #30, 26, 19, 17, 10, 6), invited keynote presentations (cv # 19, 15)
This work involved the development and characterization of metallic and bimetallic nanoparticles (NPs) using macromolecular stabilizers for both quasi-homogeneous catalysis (e.g. NPs dispersed in solvents) and heterogeneous catalysis. We have shown that the templating approach is an excellent route to the synthesis of chemically and structurally well-defined PdAu and PdAg catalytic NPs in the 1-5 nm size range. Characterization of such NPs involve using multiple techniques such as UV-Vis spectroscopy, HRTEM and single particle X-ray energy dispersive spectroscopy (EDS) mapping, and x-ray absorption spectroscopy (EXAFS and XANES) experiments at the Canadian Light Source (#26). Catalytic measurements are also used to study the structure/property relationships of these materials. Such bimetallic NPs are interesting as they can be used to develop highly selective bimetallic catalysts which can be guided by theoretical models and ultrahigh vacuum surface science studies. In particular, we have shown that catalytic activity is influenced not only by bimetallic compositions, but also the structures of the bimetallic NPs (for example, core-shell vs. alloy vs. cluster-in-cluster); alcohol oxidations are accelerated over Au@Pd core@shell NPs compared to their alloy counterparts (#17). […]

-Rob Scott, Dept. Chemistry
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-Rob Scott, Dept. Chemistry
Take a look at the **Most Significant Contributions Template** for some wording suggestions (prepared by Gen Clark and Jon Watts)

---

**PHRASE BANK: SIGNIFICANT CONTRIBUTIONS**

Theses generic phrases can be used as is, modified, or used for inspiration to underline the significance of scholarly contributions.

**Knowledge, expertise, and experience**
- My expertise was recognized by
- This led to an invited review/presentation
- Committee membership on
- Funded by
- Lead, pioneered, spearheaded, chaired

**Impact on Research**
1. Novelty and Innovation
   - This established for the first time
   - Our team made the unique observation
   - My team was the first to demonstrate
   - This led to the discovery of
   - This is the first use of [new methodology] in [field]

2. Advancement of knowledge
   - Our work has provided a better understanding of [new theory/hypothesis]

**Quality of contributions**
- This resulted in publications in [journals]
- A *top journal* in [field]
- A journal ranked [x] of [y] in [field]
- This is now well accepted in the literature
- This was *highlighted/featured* in a recent [editorial, letters, pre-publication, media coverage]
- *Most downloaded/accessed*
- Received *media interest* from
- This body of work has been *cited* [user] in [policy, reports, by user groups]
- The article has been cited [quantity]
- The article has been for cited for [quality/impact indicator]

**Importance to end users**
- Results have *important implications* for
# Excellence of Researcher Merit Indicator

<table>
<thead>
<tr>
<th>Excellence of the Researcher</th>
<th>Exceptional</th>
<th>Outstanding</th>
<th>Very Strong</th>
<th>Strong</th>
<th>Moderate</th>
<th>Insufficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledged as a leader who has continued to make, over the last six years, influential accomplishments at the highest level of quality, impact and/or importance to a broad community.</td>
<td></td>
<td>The accomplishments presented in the application were deemed to be superior in quality, impact and/or importance.</td>
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<td>The accomplishments presented in the application were deemed to be solid in their quality, impact and/or importance.</td>
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</tr>
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DG Proposal Sections

- Public Summary
- Budget
- Relationship to Other Research Support
- HQP Training Plan
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- Most Significant Contributions
- Additional Information on Contributions
- **Proposal (5 pages)**
  - Budget Justification
  - References
  - Attachments
  - CCV
Proposal

• Use indicated topics as subtitles: **Recent Progress, ST and LT Objectives, Literature Review, Methodology, Impact.**

• Subtitles can be combined, for example “Recent Progress and Methodology”

• Use direct sentences to clearly differentiate what you HAVE done, what you WILL do, and what OTHERS have done or will do.
  Instead of: “These results can be extended to an understanding of...”
  ▪ “I will use these results to guide the next phase of my research.”
  ▪ “These results will be useful to [other scientists] that are investigating..[x].”

• Ensure that your ST and LT **objectives** are easy to find.
• “Tell the story that makes sense given your CV”
The Long-Term Goals of my research program are to understand the molecular mechanisms underlying plant-pathogen interactions. Short Term Goals of this NSERC DG-funded research in the next 5 years are to explore critical components involved in cell wall appositions (CWAs) at the pathogen penetration site with 3 specific objectives: Objective I: to elucidate molecular and cellular pathways that contribute to CWAs. Objective II: to understand cellular trafficking mechanisms that coordinate deposition of cell wall materials to the pathogen penetration site, and Objective III: to uncover molecular components that are involved in the regulation of actin cytoskeleton rearrangement which contributes to CWAs and cellular trafficking at the pathogen penetration site. We will apply molecular biology, cell biology, biochemistry, genetics, and genomics approaches along with high throughput and classical plant pathology techniques to achieve these objectives.

-Yangdou Wei, Department of Biology
Objectives (example)

The **Long-Term Goals** of my research program are to understand the molecular mechanisms underlying plant-pathogen interactions. **Short Term Goals** of this NSERC DG-funded research in the next 5 years are to explore critical components involved in cell wall appositions (CWAs) at the pathogen penetration site with 3 specific objectives: **Objective I**: to elucidate molecular and cellular pathways that contribute to CWAs. **Objective II**: to understand cellular trafficking mechanisms that coordinate deposition of cell wall materials to the pathogen penetration site, and **Objective III**: to uncover molecular components that are involved in the regulation of actin cytoskeleton rearrangement which contributes to CWAs and cellular trafficking at the pathogen penetration site. We will apply molecular biology, cell biology, biochemistry, genetics, and genomics approaches along with high throughput and classical plant pathology techniques to achieve these objectives.

-Yangdou Wei, Department of Biology
The long-term objective of my research proposal is to provide better support and contribute additional evidence in favor of holography for rotating black holes. The outcome of this research proposal enhances our understanding of black holes in quantum gravity and leads to strengthening and advancement of knowledge in quantum theory and gravitational physics. Moreover I plan to extend my research on finding...

The short-term objectives of my proposal consist of six topics:
- Investigation about the phenomenological consequences of dual CFT to the rotating black holes.
- Finding correlation functions for the conformal operators of dual CFT.
- Construction of the deformed hidden conformal symmetry for rotating black holes [...]

Proposal (continued)

- **Lit Review** - cite recent works; be explicit if there is a lag and explain

- **Recent Progress** - Cite your own work

- **Methodology** – provide enough details to judge feasibility. Explain your rationale. Include possible challenges, and alternate approaches that show you have thought through your methodology
Objectives: Short-term Goals - Extending the Model:

i) Relationship Between Orthographic Lexical (whole-word) and Object/Picture/Symbol/Number Processing. Masters (soon to be PhD) student Layla Gould, and future students, will be doing research on how the whole-word processing along the ventral orthographic lexical pathway may have shared and/or unique activation loci relative to picture versions of the same referents, first by taking a behavioural/temporal approach using AFM, and then the spatial localization approach using fMRI. Recent debates between Price (2012) and Dehaene and Cohen (2011) have focused on whether the same system subserves both word and picture processing, but have not controlled for the degree of lexical reliance in
Proposal (continued)

- **Impact**
  - Impact on basic science, impact on technology, impact on society
  - Are there controversial or emerging areas of science?
  - Who will use your information and why?
  - Refer to the Phrase bank.
  - Connect with public summary.
Impact (cont.)

“The research directions outlined in this proposal involve not only advancing our knowledge of 2D Dirac materials and their band-structure engineering but also promoting basic research to develop practical electronics and photovoltaic devices. Technologies based on graphene and other Dirac materials has evolved to a very competitive field of worldwide research and development (R&D) in both academia and industry because R&D in these areas is essential to come with a solution to current issues in conventional CMOS technology and high efficiency photovoltaics, and attain further progress. Therefore, this research program is timely and has great potential to make a profound impact on information and communications technologies (ICT) and energy technologies which are two areas of Canada’s R&D priorities [45]. In addition to R&D outcomes, HQP will be trained in the fields of electronic device fabrication, advanced functional materials, and spectroscopic characterization, and become future employees in allied industries.”

-Gap Soo Chang, Department of Physics and Engineering Physics
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## Merit of the Proposal Indicator

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<thead>
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<th>Strong</th>
<th>Moderate</th>
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<tbody>
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<td><strong>Merit of the Proposal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed research program is clearly presented, is <strong>highly original and innovative</strong> and is likely to have impact by contributing to groundbreaking advances in the area and/or leading to a technology or policy that addresses socio-economic or environmental needs. Long-term vision and short-term objectives are clearly defined. The methodology is clearly defined and appropriate. The proposal and budget clearly demonstrate how the research activities to be supported are distinct from and complement those funded by other sources.</td>
<td>Proposed research program is clearly presented, is original and innovative and is likely to have impact by leading to advancements and/or addressing socio-economic or environmental needs. Long-term goals are clearly defined and short-term objectives are well planned. The methodology is clearly described and appropriate. The proposal and budget demonstrate how the research activities to be supported are distinct from and complement those funded by other sources.</td>
<td>Proposed research program is clearly presented, is original and innovative and is likely to have impact by leading to advancements and/or addressing socio-economic or environmental needs. Long-term goals are clearly defined and short-term objectives are planned. The methodology is clearly described and appropriate. The proposal and budget demonstrate how the research activities to be supported are distinct from and complement those funded by other sources.</td>
<td>Proposed research program is clearly presented, has original and innovative aspects and may have impact and/or address socio-economic or environmental needs. Long-term and short-term objectives are described. The methodology is partially described and/or appropriate. The proposal and budget demonstrate how the research activities to be supported are distinct from and complement those funded by other sources.</td>
<td>Proposed research program, as presented, lacks clarity, and/or is of limited originality and innovation. Objectives are not clearly described and/or likely not attainable. Methodology is not clearly described and/or appropriate. The proposal and budget do not clearly demonstrate how the research activities to be supported are distinct from and complement those funded by other sources.</td>
<td></td>
</tr>
</tbody>
</table>
Resources

- NSERC Presentation Standards (fonts, margins etc.) are at: [http://www.nserc-crsng.gc.ca/OnlineServices-ServicesEnLigne/pdfatt2_eng.asp](http://www.nserc-crsng.gc.ca/OnlineServices-ServicesEnLigne/pdfatt2_eng.asp)
  - Listed on timeline page 2
- UofS NSERC DG repository: [https://share.usask.ca/go/ovpr/grants_repository/](https://share.usask.ca/go/ovpr/grants_repository/)
- UnivRS workshops and resources: [https://wiki.usask.ca/display/itsproject217/UnivRS+-+Resources+for+Colleges%20](https://wiki.usask.ca/display/itsproject217/UnivRS+-+Resources+for+Colleges%20)
NSERC Grant Update

- 83 NSERC Discovery Grant applications, 58 successful (70%)
  - “$1,792,000 for 2017”
  - 2 Discovery Accelerator Supplements ($40,000/yr X 3yr)
  - All but 1 are 5 yr grants (6 yr for Early Career Researchers)
  - Overall value of these grants = $9,353,000

- 16 NSERC RTI Grant applications, 4 successful (25%)
  - $465,599 for 2017

- NSERC lowered Discovery Grant threshold for ECRs last competition:
  - Biological Systems and Functions
  - Geoscience
  - the 4 Engineering Evaluation Groups
NSERC Discovery Grant Success Rates
(National vs. USask 2011-2017)

- National Success Rate
- UofS Success Rate
NSERC Discovery Grant Success Rates for ECR (National vs. USask 2011-2017)

- National Success Rate
- UofS Success Rate
- UofS Internal Review Success Rate

<table>
<thead>
<tr>
<th>Year</th>
<th>National Success Rate</th>
<th>UofS Success Rate</th>
<th>UofS Internal Review Success Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>75%</td>
<td>85%</td>
<td>100%</td>
</tr>
<tr>
<td>2016</td>
<td>75%</td>
<td>100%</td>
<td>100%</td>
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<tr>
<td>2015</td>
<td>65%</td>
<td>18%</td>
<td></td>
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<tr>
<td>2014</td>
<td>57%</td>
<td>66%</td>
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<td>2013</td>
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<tr>
<td>2012</td>
<td>45%</td>
<td>62%</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>54%</td>
<td>60%</td>
<td></td>
</tr>
</tbody>
</table>
NSERC Discovery Grant Success Rates for ER-R (National vs. USask 2011-2017)

- **National Success Rate**
- **UofS Success Rate**
- **Workshop Success Rate**

Year | National Success Rate | UofS Success Rate | Workshop Success Rate
--- | ---------------------- | ------------------ | ----------------------
2017 | 80%                   | 88%               |                       
2016 | 82%                   | 76%               | 75%                   
2015 | 82%                   | 72%               |                       
2014 | 80%                   | 74%               |                       
2013 | 76%                   | 66%               |                       
2012 | 78%                   | 66%               |                       
2011 | 74%                   | 66%               |                       

www.usask.ca
NSERC Discovery Grant Success Rates for ER-NHG (National vs. USask 2011-2017)

<table>
<thead>
<tr>
<th>Year</th>
<th>National Success Rate</th>
<th>UofS Success Rate</th>
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<tbody>
<tr>
<td>2017</td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>37%</td>
<td>49%</td>
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<td>42%</td>
</tr>
<tr>
<td>2011</td>
<td>15%</td>
<td>33%</td>
</tr>
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</table>
NSERC RTI Grant Success Rates
(National vs. USask 2012-2017)

- **2017**: National Success Rate = 25%, UofS Success Rate = 16%
- **2016**: National Success Rate = 33%, UofS Success Rate = 24%
- **2015**: National Success Rate = 33%, UofS Success Rate = 18%
- **2014**: National Success Rate = 38%, UofS Success Rate = 23%
- **2013**: National Success Rate = 20%, UofS Success Rate = 11%
- **2012**: National Success Rate = 16%, UofS Success Rate = 20%

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**Quota**
- 2017: Quota = 12
- 2016: Quota = 17
- 2014: Quota = 12

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# Rating Form - Discovery Grants Application

<table>
<thead>
<tr>
<th>Applicant</th>
<th>Department/University</th>
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</tbody>
</table>

**Applicant Status:**

**Title of proposal**

## Evaluation criteria (See Instructions for complete details)

### Excellence of researcher

- Knowledge, expertise and experience
- Quality of contributions to, and impact on, the proposed and other areas of research in the NSE
- Importance of contributions to, and use by other research and end-users

**Rationale for rating:**

### Merit of the proposal

- Originality and innovation
- Significance and expected contributions to research
- Clarity and scope of objectives
- Clarity and appropriateness of methodology
- Feasibility
- Discussion of relevant issues
- Appropriateness / Justification of budget
- Explanation of the relationship to other sources of funds

**Rationale for rating:**

### Contributions to training of highly qualified personnel

- Quality and impact of past contributions
- Appropriateness and clarity of the proposal for the training of HQP
- Training in collaborative and interdisciplinary environment (if applicable)

**Rationale for rating:**

### Cost of research (relative cost of the proposed research program as compared to the norms for the field)

- Low
- Normal
- High

**Rationale for Cost of Research:**


# Rating Form

**Research Tools and Instruments Grant Application**

<table>
<thead>
<tr>
<th>Applicant</th>
<th>Department/University</th>
<th>First-time Applicant</th>
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<tr>
<th>Title of Proposal</th>
<th>Amount Requested</th>
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<tbody>
<tr>
<td></td>
<td>Number of Users</td>
</tr>
</tbody>
</table>

## EVALUATION CRITERIA (See Section 7 of Peer Review Manual)

### Excellence and experience of researcher(s)
- Caliber of applicant/users
- Relevant experience to use the equipment
- Demonstrated ability to fully use the equipment

### Merit of programs to be supported
- Quality of research program(s) of proposed users
- Recent track record
- Potential for major advances in the discipline

### Need and urgency
- Impact of delay in the acquisition of the equipment
- Impact of equipment on program(s) and areas of research (e.g., launch of new directions, drawbacks...)
- Accessibility of equipment to users
- Need for dedicated equipment
- Availability of similar equipment in the vicinity
- Institutional infrastructure limitations
- Need to upgrade or replace obsolete or failed equipment

### Suitability for proposed research
- Probability of utilization or accessibility of outside users
- Capability of applicant(s) to utilize equipment
- Accessibility of equipment (location & availability of technical support)

### Impact on HQP training
- Importance of the equipment for training
- Quality and extent of training
- Training received could be a marketable skill for HQP
- Opportunities for hands-on training

### Other comments (e.g., special circumstances):  

## Overall Impression/Priority:

## Rating:

### Recommendation (explain and describe item(s) if a partial award is recommended):

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NSERC Research Facilitators & Planning Officers

- **Agriculture and Bioresources**: Danielle Baron
- **Arts and Science**: Javier Tavitas
- **Engineering**: Heidi Smithson
- **Kinesiology**: Lori Ebbesen
- **Medicine (college)**: Bruna Bonavia-Fisher
  - **Department of Medicine**: Jon Watts
  - **Department of Surgery**: Karen Mosier
- **Pharmacy and Nutrition**: Gen Clark
- **School of Environment and Sustainability**: Kevin Driscoll
- **Western College of Veterinary Medicine**: Lianne McLeod
NSERC Discovery Grants Evaluation Groups

1501 – Genes, Cells and Molecules
1502 – Biological Systems and Functions
1503 – Evolution and Ecology
1504 – Chemistry
1505 – Physics
1506 – Geosciences
1507 – Computer Science
1508 – Mathematics and Statistics
1509 – Civil, Industrial and Systems Engineering
1510 – Electrical and Computer Engineering
1511 – Materials and Chemical Engineering
1512 – Mechanical Engineering
SAP – Sub-atomic Physics
Panel of NSERC EG/RTI members: Tips, Strategies, Q&A

- **Ildiko Badea**, Associate Professor of Pharmacy, College of Pharmacy and Nutrition – *Current member of RTI Engineering committee*

- **Julia Boughner**, Associate Professor of Anatomy and Cell Biology, College of Medicine – *Current member of NSERC EG 1501– Genes, Cells and Molecules*

- **James (J.D.) Johnston**, Associate Professor of Mechanical Engineering, College of Engineering – *Current member of NSERC EG 1512– Mechanical Engineering*

- **Lisa Kalynchuk**, Professor of Neurology, College of Medicine; Special Advisor to the Provost; Chair, University Council, Office of the Vice-Provost Health – *Current co-chair of NSERC EG 1502 – Biological Systems and Functions*

- **Pat Krone**, Professor of Anatomy and Cell Biology, College of Medicine – *Former chair of RTI Genes, Cells and Molecules committee, former member and co-chair of NSERC EG 1501– Genes, Cells and Molecules*

- **Juxin Liu**, Associate Professor in Mathematics & Statistics, College of Arts and Science – *Current member of NSERC EG 1508 – Mathematics and Statistics*

- **Regan Mandryk**, Associate Professor of Computer Science, College of Arts and Science – *Current co-chair of NSERC EG 1507 – Computer Science*

- **Raymond Spiteri**, Professor of Computer Science, College of Arts and Science – *Current member and incoming co-chair of NSERC EG 1508 – Applied Mathematics*
Strategic Research Initiatives (SRI)

Lisa Jategaonkar, Associate Director
NSERC CREATE provides $1.6M over 6 years for a research and training program aimed primarily for graduate students.

IRCs, jointly funded by NSERC and industry, build on existing research strengths.

The SPG-N ($5.5M), involves at least 5 academic researchers and commitment and involvement of industry and/or government partners.
CFERF - turn key strengths into world leading capabilities. Awards have ranged from $33M to $113M over 7 years.

CFI-MSI - ongoing operating and maintenance needs of national research facilities.

CERC - $10M over 7 years to support world-renowned researchers and their teams.

CFI-IFs – transformative infrastructure projects that will underpin cutting-edge, globally competitive research.
Faculty Awards

45% increase in faculty awards since SRI’s inception

Students in a 100-level Undergraduate Research Experience

5-fold increase in undergraduate student participation in course based research
SRI Contacts:

- Danielle Ellis, Senior Programs Specialist, Danielle.ellis@usask.ca
- Lisa Jategaonkar, Associate Director, lisa.j@usask.ca
- Laura Zink, Director, laura.zink@usask.ca
Thank you!