NSERC Discovery Grant Writing Session

Discovery Grant Fundamentals

Andrea Craig, Research Grants Officer (NSERC)
Dr Prashen Chelikani (Oral Biology) and Dr Neeloffer Mookherjee (Immunology) – Former members EG 1501 [Genes, Cells and Molecules]

A206 Chown Bldg.
28 August 2019, 10:15-11:45am
Research Services Homepage

- Tri-Agency pages
- Internal grants
- Funding opportunities
- ORS Forms (FAAF, e.g.)
- ORS Workshop
- Announcements and Presentations
- Research Facilitators
Session Overview and Objectives

- Overview
- Review Process and Success Rates
- Composition
- Conclusion
Important Dates

Discovery Grants*:
• Full proposal due at ORS........................................ 18 October 2019, 4:30pm
• Full proposal due at NSERC..................................... 1 November 2019, 4:30pm

Research Tools & Instruments (RTI) Grants:
• Full proposal due at ORS........................................ 11 October 2019, 4:30pm
• Full proposal due at NSERC..................................... 25 October 2019, 4:30pm

* Including Northern Research Supplements (NRS)
Subject Matter Eligibility

The intended outcome of the research must primarily be to add to our understanding and knowledge of individuals, groups, and societies.

The intended outcomes of the research must... primarily improve or have **impact on health** and/or produce more effective health services and products and/or strengthen the Canadian health care system.

The intended objective(s) of the research must primarily be to advance knowledge in one or more of the natural science or engineering disciplines.

Program, not project

Projects have a clear start and end, probably deliverables stated which you’re expected to accomplish by the end of the project.

- Projects answer, complete, finalize, achieve, conclude...

Discovery Programs are funded in 5-year cycles but have no particular end. Within the cycles you’re expected to publish results and train students, but are not assessed against your DG proposal.

- Programs explore, elucidate, examine, investigate...

Your program could have projects within it, but they must be unified by the theme of your program
Grant-In-Aid

Discovery grants are relatively small ($20-$30k/yr on average) and aren’t intended/expected to fully fund your program...

• contrast with e.g., CIHR operating grant

...but you must still request about 2-3x this amount, or your described program won’t be very compelling

• There is no maximum or minimum, but I recommend aiming around $45-90k/yr
Evaluation Mechanics

How will my NSERC Discovery Grant application be evaluated?
Evaluation Groups and the Peer Review Process

12 discipline-based 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

3 Equally Weighted Criteria

- Excellence of the Researcher
- Merit of the Proposal
- Training of HQP
### NSERC Discovery Grant Rubric – Merit Indicators

<table>
<thead>
<tr>
<th></th>
<th>Exceptional</th>
<th>Outstanding</th>
<th>Very Strong</th>
<th>Strong</th>
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A rating in any of the three criteria of ‘insufficient’ will result in an unsuccessful application.

### DISCOVERY GRANTS MERIT INDICATORS

The Merit Indicators should be used in conjunction with the Peer Review Manual, which outlines how reviewers arrive at a rating.

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<tr>
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<th>MODERATE</th>
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<tbody>
<tr>
<td>Research excellence, accomplishments, and service are far superior to others.</td>
<td>Research excellence, accomplishments, and service are superior to others.</td>
<td>Contributions presented in the application are very high-quality.</td>
<td>Research excellence, accomplishments, and service are reasonable.</td>
<td>Contributions presented in the application are of reasonable quality.</td>
<td></td>
</tr>
<tr>
<td>Contributions present in the application are of the highest level of quality.</td>
<td>Contributions presented in the application are of high-quality.</td>
<td>Contributions presented in the application are above average in quality.</td>
<td>Contributions presented in the application are of good quality.</td>
<td>Contributions presented in the application are lesser than good.</td>
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<tr>
<td>Impact and importance of the work is clearly evident and groundbreaking.</td>
<td>Impact and importance of the work is evident.</td>
<td>Impact and importance of the work is evident.</td>
<td>Impact and importance of the work is somewhat evident.</td>
<td>Impact and importance of the work is not clearly evident.</td>
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**Merit of the Proposal**

- Proposed research program is clearly presented, is original and innovative and is 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 and appropriate.
- The methodology is clearly defined and appropriate.
- The methodology is described and/or appropriate.
- Long-term goals and short-term objectives are described.
- Objectives are not clearly described and/or limited originality.

**Training of Highly Qualified Personnel**

- Post training is at the highest level in terms of the research training environment provided and HQP contributions to research.
- Most HQP move on to highly impactful positions that require skills gained through the training received.
- Training philosophy and research training plans are of the highest quality: highly appropriate, clearly defined and expected to produce high quality results in terms of the overall approach and specific projects for HQP; challenges related to equity, diversity and inclusion specific to the institution and field of research are clearly described; and specific actions to support the recruitment of a diverse group of HQP and an inclusive research training environment are clearly defined.

**Training of Highly Qualified Personal**

- Post training is far superior to other applicants in terms of research training environment provided and HQP contributions to research.
- Most HQP move on to impactful positions that require skills gained through the training received.
- Training philosophy and research training plans are far superior: highly appropriate, clearly defined and expected to produce high quality results in terms of the overall approach and specific projects for HQP; challenges related to equity, diversity and inclusion specific to the institution and field of research are clearly described; and specific actions to support the recruitment of a diverse group of HQP and an inclusive research training environment are defined.

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## 2-Step Review Process

In the conference review model, your proposal will be read by 5 PEOPLE: 2 Assessors, 3 Readers - each with a vote

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</table>

- Strong • Very strong • Strong

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<tr>
<th>Funding Bin</th>
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<th>D</th>
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<th>F</th>
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Early Career Researchers

Who is an ECR?
- Holder of an independent academic position for 5 years or less
- Self-declare on DG application

Eligible for additional support from NSERC
- One-time Launch Supplement ($12,500) for first-time ECR awardees in addition to DG
- Additional 6th year with funding offered at the end of 1st DG award cycle

Evaluated with Established Researchers (ER)
- but NSERC will fund to lower bin levels in recognition of limited opportunities to train HQP, e.g.
EG: Average Award Amounts (2019-2020) and Success Rates (Early Career/Established-Renewing)

<table>
<thead>
<tr>
<th>Category</th>
<th>Early Career</th>
<th>Established-Renewing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1501 – Genes, Cells &amp; Molecules</td>
<td>$34,970/46,084</td>
<td>51%/70%</td>
</tr>
<tr>
<td>1502 – Biological Sys. &amp; Functions</td>
<td>$32,364/44,350</td>
<td>44%/79%</td>
</tr>
<tr>
<td>1503 – Evolution and Ecology</td>
<td>$32,147/44,530</td>
<td>49%/91%</td>
</tr>
<tr>
<td>1504 - Chemistry</td>
<td>$27,941/55,176</td>
<td>49%/91%</td>
</tr>
<tr>
<td>1505 – Physics</td>
<td>$29,567/44,681</td>
<td>67%/88%</td>
</tr>
<tr>
<td>1506 – Geosciences</td>
<td>$28,257/41,702</td>
<td>65%/90%</td>
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Source: [http://www.nserc-crsng.gc.ca/_doc/Professors-Professeurs/2019CompStatsDiscoveryRTI_e.pdf](http://www.nserc-crsng.gc.ca/_doc/Professors-Professeurs/2019CompStatsDiscoveryRTI_e.pdf)
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<th>Field</th>
<th>Average Award Amounts</th>
<th>Success Rates</th>
</tr>
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<td>1507 – Computer Science</td>
<td>$29,421/40,008</td>
<td>70%/89%</td>
</tr>
<tr>
<td>1508 – Mathematics &amp; Statistics</td>
<td>$19,765/23,508</td>
<td>70%/87%</td>
</tr>
<tr>
<td>1509 – Civil, Industrial and Systems Eng.</td>
<td>$29,212/39,367</td>
<td>61%/87%</td>
</tr>
<tr>
<td>1510 – Electrical &amp; Computer Eng.</td>
<td>$30,381/43,844</td>
<td>55%/79%</td>
</tr>
<tr>
<td>1511 – Materials and Chemical Eng.</td>
<td>$30,527/39,005</td>
<td>66%/87%</td>
</tr>
<tr>
<td>1512 – Mechanical Eng.</td>
<td>$28,250/41,979</td>
<td>50%/87%</td>
</tr>
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Source: [http://www.nserc-crsng.gc.ca/_doc/Professors-Professeurs/2019CompStatsDiscoveryRTI_e.pdf](http://www.nserc-crsng.gc.ca/_doc/Professors-Professeurs/2019CompStatsDiscoveryRTI_e.pdf)
Proposal Composition

Answering the call
Equity, Diversity, and Inclusion

“...implementing policies, processes and initiatives to identify and mitigate barriers and biases ... 

Not just numbers

Write something in your own words

Describe your planned approach to ensuring your group represents a variety of perspectives

How have you made your environment comfortable and inclusive?
Proposal Composition – Overall

- Researcher Excellence
- HQP Training
- Proposal Merit
- Researcher Excellence
- HQP Training
- Proposal Merit
Proposal Building Blocks

- **What**
  - Objectives
  - Questions

- **Why**
  - Background
  - Lit. review

- **Who**
  - Researchers
  - HQP

- **How**
  - Plan
  - Design
  - Methods

- **Outcome**
  - Predicted results

- **Impact**
  - Significance of findings

For every component of your application – from text boxes to attachments – the information you provide addresses one (or more) of these building blocks.
Application Superstructure

**Summary**

- What
- Why
- Who
- How
- Outcome
- Impact

**Past HQP Training**

- What
- Who
- How
- Outcome
- Impact

**Most Significant Contributions to Research**

- Who
- What
- Impact

These are only a few examples of how to put building blocks into different sections of the application.

Look at the application guidelines to understand what the funder wants to know, which guides what you tell them.
Proposal

- **Recent research progress** related to the proposal (esp. attributable to your previous DG)
- **Objectives** : short- AND long-term
- Pertinent **literature** : put your research in the context of the state of the art
- **Methods** and proposed approach
- Anticipated **significance and/or impact**
Additional Proposal Considerations

1. Layout (Walk the Walk):
   - Times New Roman
   - 12-point font size
   - Minimum margins ¾”
   - All tables and figures are included in page limits
   - No appendices
   - No letters of support

2. Language (Talk the Talk):
   Proposals stand out as “other” (especially as a “health application”) when they:
   - Use words and headers not typical to NSERC:
     - Rationale -> use Background
     - Hypothesis
     - Specific Aims -> use Objectives
     - Pitfalls
   - Leave HQP out of most of the application
   - Request in budget for a lab coordinator
   - Continually refer to “this project”
   - Other funding and publications seen only to have outcomes outside NSE

When in Rome...

Writing and presenting in an NSERC-familiar way allows reviewers to focus on assessing the program you want them to fund.
Budget & Budget Justification

• Supports details about your plans
• **Justify** the purchase of what you are requesting – each budget item
• Consider a Gantt chart to clarify HQP involvement
• **Ask for what you need** to carry out proposed research, within reason (avg grant is ~$30k/yr)
  • Design a program with feasible scope, calculate what it will cost
• NSERC set **page limit of 2** – use fully, but discuss budget **only**

✓ Salaries / Stipends
✓ Equipment
✓ Materials
✓ Travel
✓ Dissemination
✓ Other
Tri-Agency Open Access Policy on Publications

“Grant recipients are required to ensure that any peer-reviewed journal publications arising from Agency-supported research are freely accessible within 12 months of publication.”

http://www.science.gc.ca/default.asp?lang=En&n=F6765465-1
### Highly Qualified Personnel

<table>
<thead>
<tr>
<th>All types of HQP</th>
<th>UG, MSc, PhD, PDF</th>
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<tbody>
<tr>
<td>Visible</td>
<td>Throughout application, proposal</td>
</tr>
<tr>
<td>Be explicit</td>
<td>Who, doing what</td>
</tr>
<tr>
<td>What is important to offer HQP?</td>
<td>“Training Philosophy”</td>
</tr>
<tr>
<td>What will you offer to HQP once funded?</td>
<td>“Research Training Plan”</td>
</tr>
<tr>
<td>Consent to use HQP names</td>
<td>Signed form, email will do</td>
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HQP Training Plan

Training Philosophy

• Your mentoring approach
• Type of research train’g and development opportunities provided

Research Training Plan

• Describe the work
• Discuss relevance and involvement
• Expected training outcomes
• Training value
• Co-supervisory details/plans
• Use an active voice

“Applicants are encouraged to increase the inclusion and advancement of women and other under-represented groups [in the NSE] ... to enhance excellence in research and training.”
Past Contributions to HQP Training

Training Environment

- Opportunities provided, such as:
  - Science outreach and engagement
  - Interdisciplinary research
- Describe EDI considerations

HQP Awards and research contributions

- Describe research contributions (publications, presentations...)
- Awards, scholarships, fellowships

Outcomes and skills gained by HQP

- Your role and its positive impact on HQP
- How HQP are using skills gained under your mentorship
Relationship to Other Research Support

**Purpose** is to demonstrate/discuss:

- No duplication of funding
- Expenses requested in DG are not covered elsewhere

Include details of other grants held or applied for:

- Students you’re training
- Researchers you’re working with
- Initiatives you’re involved in

**CIHR and/or SSHRC funding held? Discuss how:**

- proposed ideas, objectives and expenditures of DG *entirely distinct*
- anticipated contributions to research *will be distinct*
- Attach budget and summary pages for this support *(mandatory)*
Most Significant Contributions to Research

- the last 6 years
- appropriate to proposal
- narrative style
- discuss the importance of the contribution to your target community (advancements, influence...)
- for collaborative contributions, elaborate on your role

Focus on your role, and the impact the contribution made

AVOID SUMMARIZING FINDINGS ONLY
Additional Information on Contributions

Opportunity to **explain or highlight** items that deserve attention:

- Journal choice
- Author order
- Identification of HQP authors
- Relevant items not captured in CCV
Proposal Summary

What
- nature of work to be done

Why
- to whom is the research important?

Who
- briefly - introduce the team

How
- briefly - your plan to meet objectives

Outcome
- anticipated results

Impact
- anticipated benefits

Write in plain language
Easiest to write last
Discovery Grant Resources

❖ Discovery Grants Information Centre:
   www.nserc-crsg.gc.ca/Professors-Professeurs/DGIC-CISD_eng.asp

❖ Discovery Grant Program Guidelines/“Program Literature”:

❖ Resource Videos
   http://www.nserc-crsg.gc.ca/Professors-Professeurs/Videos-Videos/Index_eng.asp

❖ Complete 2019-2020 Peer Review Manual:

❖ Framework on Equity, Diversity and Inclusion

❖ Instructions to External Reviewers
Final Thoughts

Clear
Consistent
Complete
Compelling
Andrea Craig, Research Grants Officer (NSERC)
Tel: 204.480.1819
Email: andrea.craig@umanitoba.ca