People. Discovery. Innovation.
Les gens. La découverte. L’innovation.
How to prepare an Application

Guillaume Sabourin & Caroline Evans
Program Officers
May 2015
Discovery Grants Program

Objectives

- To promote and maintain a diversified base of high-quality research capability in the natural sciences and engineering (NSE) in Canadian universities.
- To foster research excellence.
- To provide a stimulating environment for research training.
Evaluation Process Overview

- Two-step process separates merit assessment from funding recommendations.
- Merit assessment uses six-point scale to evaluate:
  - Excellence of the researcher;
  - Merit of the proposal; and
  - Contributions to the training of HQP.
- Applications grouped in “bins” of comparable merit.
- Funding recommendations: similar overall ratings within an Evaluation Group (EG) receive comparable funding, with possible modulation related to the cost of research.

Demystifying the review process for NSERC Discovery Grants
# Two-Step Review Process

## Merit assessment

<table>
<thead>
<tr>
<th></th>
<th>Exceptional</th>
<th>Outstanding</th>
<th>Very Strong</th>
<th>Strong</th>
<th>Moderate</th>
<th>Insufficient</th>
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<tbody>
<tr>
<td>Excellence of researcher</td>
<td>![X]</td>
<td>![X]</td>
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<td>Merit of proposal</td>
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<td>Contribution to training of HQP</td>
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## Cost of research

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<th></th>
<th>High</th>
<th>Normal</th>
<th>Low</th>
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## Funding recommendation

- A (L, N, H)
- B (L, N, H)
- C (L, N, H)
- D (L, N, H)
- .
- N
- O
- P
# Possible Combination of Rating Indicators for Funding Bins

<table>
<thead>
<tr>
<th>Indicator Combinations</th>
<th>Bin</th>
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<tbody>
<tr>
<td>Exceptional</td>
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<tr>
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<tr>
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<td>Exceptional</td>
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<td>Very Strong</td>
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<tr>
<td>Moderate</td>
<td>Moderate</td>
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<tr>
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<td>Exceptional</td>
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<tr>
<td>Insufficient</td>
<td>Insufficient</td>
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<tr>
<td>Insufficient</td>
<td>Insufficient</td>
</tr>
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</table>

**Fatal Flaws:** A rating of Insufficient on any criteria

Moderate on EoR for an establishment researcher
Roles and Responsibilities in the EG

- **Members**
  - Key participants in the review process (5 per application)
  - Act as a reviewer within their EG and for other EGs (joint reviews)
  - Input on policy issues related to the discipline

- **Executive Committee**
  - Co-Chairs and Group Chair
  - Ensures quality of process (consistency and equity)
  - Confirms assignment of applications including joint reviews
  - Provides recommendation to NSERC on options to balance the EG budget following review of applications
  - Group Chair acts as EG representative on COGS
    - Acts as spokesperson on policies, scientific/engineering issues
The Conference Model

- Evaluation structure consists of 12 Evaluation Groups
- Similar to a scientific conference, several sessions occur in parallel streams.
- Members are assigned to various sections/applications on the basis of the match between their expertise and application subject matter.
  - Members may participate in reviews in several EGs.
- Flexibility allows applications at the interface between Evaluation Groups to be reviewed by a combination of members with pertinent expertise from relevant groups.
How Does the Conference Model Work?

**Genes, Cells and Molecules EG**
- Group Chair
- ~55 members
- 5 Section Chairs

**Biological Systems and Functions**
- Group Chair
- ~60 members
- 5 Section Chairs

**Evolution and Ecology EG**
- Group Chair
- ~25 members
- 3 Section Chairs

- **Molecular Neuroscience**
- **Cell Physiology**
- **Biochemistry**
- **Microbiology**

- **Microbiology**

- **Genetics**
- **Immunology**

- **Plant Physiology**
- **Food Science**
- **Animal Physiology**
- **Animal Production**
- **Kinesiology**
- **Cognitive Science**
- **Behavioural Neuroscience**

- **Ecosystems**
- **Evolution**
- **Populations**
- **Taxonomy**
- **Evolution of Behaviour**
Implementation of the Conference Model

Reader

Second Internal

Conflicts?

Excellence
Outstanding
Outstanding
Outstanding

Merit
Outstanding
Very Strong
Very Strong

HQP
Outstanding
Outstanding
Outstanding

COR Factor:
N
N
N

Observer
First Internal

Reader

Reader

Reader
Discovery Accelerator Supplements

- DAS provides resources to researchers who:
  - Have highly original and innovative research programs
  - Show strong potential to become international leaders within their field

- $120,000 - typically over three years
- Up to 125 Supplements per year
- Each EG will receive a quota of DAS nominations to recommend
- EG members nominate candidates. Executive Committee makes the final recommendation to NSERC
Budget 2015: The Highlights

- In 2014, $15 million per year to NSERC went to Discovery Grants, Post-Doctoral Fellowships and Research Tools and Instruments.

- 2015 Budget:
  - $15 million per year to NSERC for collaborations between researchers and companies (starting 2016-17)
  - Industrial Postgraduate Scholarships Program will be wound down
Research Tools and Instruments

- Smaller national competition with quota of applications per university

<table>
<thead>
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<th>2015</th>
<th>2014</th>
<th>2013</th>
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<tr>
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<td>$19.5M</td>
<td>$25M</td>
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<tr>
<td># Appl.</td>
<td>666</td>
<td>468</td>
<td>1,262</td>
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<tr>
<td># Funded</td>
<td>218</td>
<td>176</td>
<td>295</td>
</tr>
<tr>
<td>Success Rate</td>
<td>33%</td>
<td>38%</td>
<td>23%</td>
</tr>
<tr>
<td>Funding Rate</td>
<td>34%</td>
<td>38%</td>
<td>24%</td>
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# Discovery Grants Overall Results – 2015 Competition

<table>
<thead>
<tr>
<th>Data</th>
<th>Success Rate</th>
<th>Average Grant</th>
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</thead>
<tbody>
<tr>
<td>Early Career Researchers (ECR)</td>
<td>65%</td>
<td>$26,191</td>
</tr>
<tr>
<td>Established Researchers (ER)</td>
<td></td>
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<tr>
<td>Renewing their grant (ER-R)</td>
<td>82%</td>
<td>$35,109</td>
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<tr>
<td>Not Holding a Grant (ER-NHG)</td>
<td>38%</td>
<td>$26,756</td>
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</table>

1. Includes Discovery and Subatomic Physics (Individual and Team) Grants, but excludes the Subatomic Physics Projects.
2. Includes returning established unfunded applicants and experienced researchers submitting a first application.

Note: Non-official results
<table>
<thead>
<tr>
<th>Year</th>
<th>Early Career</th>
<th>Renewals</th>
<th>Non-renewals</th>
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<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2011</td>
<td>*</td>
<td>80%</td>
<td>43%</td>
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<tr>
<td></td>
<td>*</td>
<td>$31,000</td>
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<td>2012</td>
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<td>$31,143</td>
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<td>2014</td>
<td>*</td>
<td>75%</td>
<td>45%</td>
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<tr>
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<td>*</td>
<td>$39,500</td>
<td>$30,400</td>
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<td>2015</td>
<td>*</td>
<td>79%</td>
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<td>2015</td>
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<td>2012</td>
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<td>$26,740</td>
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NSERC Discovery Grants Funding (millions of dollars)

$19 million or 6% increase

* Expected expenditures.
Discovery Grants: Total Funding, Success Rates, Number of Awards and Average Award

<table>
<thead>
<tr>
<th>Year</th>
<th>Avg (x$1K)</th>
<th>S/R (%)</th>
<th>Total (x$100K)</th>
<th># Awards</th>
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Open Access

Tri-Agency Open Access Policy on Publications
• Researchers must make articles freely available online within 12 months of publication
• Applies to all grants awarded May 1, 2015 and onward
• How to comply:
  – Deposit peer-reviewed manuscript in a repository; and/or
  – Submit manuscript to journal that offers open access within 12 months
• For more information: Tri-Agency Policy FAQs and Toolbox or contact: openaccess@nserc-crsng.gc.ca
Program News – Team Grants

- Starting with the 2016 competition, Team Grant applications no longer accepted through the Discovery Grants Program
- All new applications must be for individual Discovery Grants
- Existing Team Grants will continue until completion
Applying to the Discovery Grants Program
Notification of Intent to Apply for a Discovery Grant – When and What?

- **Deadline:** August 3rd
  - Electronic submission only through the Research Portal
  - **Mandatory:** if not submitted by deadline, full application will not be accepted

- **Includes:**
  - Notification of Intent to Apply, listing up to five research topics in priority order
  - CCV
Notification of Intent to Apply for a Discovery Grant – Why?

- Facilitates preliminary assignment:
  - to an Evaluation Group;
  - of internal reviewers; and
  - of external reviewers.

- First indication of need for joint review
  - Informed by choice of Research Topics, keywords and proposal summary

- First review of subject matter eligibility
Notification of Intent to Apply for a Discovery Grant – Research Topics

- Important to select appropriate research topics
  - First must be from the suggested EG
  - Up to 4 others from suggested EG or other EGs
- Play an important role in the determination of a joint review with other EGs
Submitting a Discovery Grant Application

- Deadline November 2\textsuperscript{nd} through Research Portal
  - Check institutional internal deadline

- A full Discovery Grant submission includes:
  - Application for a Grant
  - NSERC Researcher CCV for the applicant
  - Samples of research contributions (reprints, pre-prints, thesis chapters, manuscripts, patents, technical reports, etc.)
Discovery Grants Evaluation Criteria

- Excellence of Researcher
- Merit of Proposal
- Training of Highly Qualified Personnel (HQP)
Excellence of Researcher

- Knowledge, expertise and experience.

- Contributions to, and impact on, proposed and other areas of research.
  - Focus on Natural Sciences and Engineering

- Assessment based on the quality and impact of contributions.

- Assessment based on achievements demonstrated over past six years.
  - “Most significant contributions” section of resume may include earlier work if they still have a significant impact (e.g., exploitation of patents).
Excellence of Researcher
Location of Information

- In **CCV**
  - “Contributions” section (publications, books, patents, etc.).
  - “Recognitions” section (honors, prizes and awards, etc.).
  - “Activities” section (international collaborations, event organization, editorial activities, assessment and review activities, knowledge and technology transfers, etc.).
  - “Memberships” section (service on committees).

- In **Application**
  - “Most Significant Contributions” section (discusses most significant contributions).
  - “Additional Information on Contributions” section (discusses choice of venues, order of authors, etc.).
Scientific or Engineering Excellence of the Researcher

- Describe up to five most significant research contributions (now in application) and highlight quality & impact
- List all types of research contributions (from 2009-2015)
- Explain your role in collaborative research activities
- List all sources of support
- Give other evidence of impact
- Explain delays in research activity (See Peer Review Manual)
Merit of the Proposal

- Originality and innovation
- Significance and expected contributions to research; potential for impact
  - Must describe a program of research that will advance knowledge in the Natural Sciences and Engineering
- Clarity and scope of objectives
- Clarity and appropriateness of methodology
- Feasibility of program
- Appropriateness of budget
  - Relationship to other sources of funds must be clearly explained
Merit of the Proposal

- Write summary in plain language
- Keep in mind that two audiences read your application: expert and non-expert
- Can provide a progress report on related research
- Position the research within the field and state-of-the-art
- Clearly articulate short- and long-term objectives
- Provide a detailed methodology and realistic budget
- Consider comments/recommendations you may have received for previous applications
Merit of the Proposal
Conceptual Overlap

- Conceptual overlap occurs when the ideas in the proposal are, or appear to be, the same ideas that are supported by other sources (applicant’s other projects/programs).
- Complementary parts of an applicant’s research program can be supported by different sources.
- The onus is on the applicant to differentiate between the research program covered by the Discovery Grants proposal and other research programs/projects supported by other sources.
- Funds requested from Discovery Grants must support a program of research in the Natural Sciences and Engineering.
Additional Tips …

- **Do…**
  - Be original and creative, but also show you have the expertise to carry out the program
  - Have long term vision and short term plan
  - Integrate HQP into the proposal

- **Don’t…**
  - Propose an unfeasible number of objectives
  - Propose a project or a series of disconnected projects
  - Use a lot of jargon and acronyms
  - Be vague when describing methodology
  - Only reference your own publications
Merit of the Proposal
Location of Information

- In **Application**
  - Proposal (dedicated 5-page section).
  - List of References (dedicated 2-page section).
  - Budget Justification (dedicated 2-page section).
  - Relationship to Other Sources of Support Explanation (dedicated 2-page section).

- In **CCV**
  - “Research Funding History” section to assess possible conceptual or budgetary overlaps.

- Standalone **attachment** (when applicable)
  - Relationship to Other Sources of Support
  - Attachments (Summary and budget section of applications to other agencies).
Contributions to the Training of HQP

- **Quality, extent and impact** of past contributions during the last six years

- Appropriateness and quality of proposed training in the Natural Sciences and Engineering.
  - Assessment based on appropriateness of plan to train particular trainees; Is the proposed level and mix of trainees (e.g. undergraduate, Master’s, or Ph.D. students; postdoctoral fellows) appropriate for the proposed program?
  - Capacity of the researcher to supervise the proposed number and type of HQP.

- Enhancement of training arising from a collaborative or interdisciplinary environment, where applicable.
Contributions to the Training of HQP

Past Contributions to Training:

- Use an asterisk to identify students who are co-authors on the listed contributions
- Explain any delays that might have affected your ability to train HQP
- Describe nature of HQP studies
  - HQP ranges from undergraduate theses and summer projects to postdoctoral levels
- Do not select “Academic Advisor”
Contributions to the Training of HQP

Training Plan

- Describe the nature of the training (e.g., length, specific projects) in which HQP will be involved, the HQP’s contributions and pertinence to the research program proposed
- Discuss the training philosophy and the expected outcomes
- Clearly define your role in any collaborative research and planned joint HQP training
Contributions to the Training of HQP

Location of Information

Record of Training

- In **CCV**
  - “Supervisory Activities”
  - “Contributions” section: Co-authors who are trained HQP are to be identified by an asterisk (*).

- In **Application**
  - Section “Past Contributions to HQP Training” in application

Plan for Training

- In **Application** - one dedicated page
Cost of Research

- Not used by all Evaluation Groups
- Relative cost of research of the proposed research program as compared to the norms for a given discipline / field of research.
  - High, Normal, Low.
  - It is expected that most applications will be deemed to have a normal Cost of Research relative to the discipline.
- A budget that is large simply because of the program’s size, while the cost of the activities is similar to the norm in the discipline / field of research, does not translate into a High cost of research.

Location

- In Application
  - Proposal (dedicated 5-page section).
  - Budget Justification (dedicated 2-page section).
Application Process for Discovery Grants

- Instructions are available on NSERC’s Web site.

- Applicants should carefully read the instructions on how to complete the NOI and NSERC CCV.

- Applicants are encouraged to complete their CCV as soon as possible as it can be time consuming to populate its fields the first time.
Support Tools for the Discovery Grants Program

http://www.nserc-crsng.gc.ca/Professors-Professeurs/Videos-Videos/Index_eng.asp
# NSERC Contacts

<table>
<thead>
<tr>
<th>NSERC Staff</th>
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