Discovery Grants (DG) 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.
Discovery Grants Program
Nature of Research Supported

- Research in the **Natural Sciences and Engineering (NSE)** encompasses a broad spectrum of activities: from investigations whose importance flows from the intellectual structure of the discipline, with no immediate application evident, to solution of problems suggested by social and industrial needs.

- The Discovery Grants program is open to activities across the entire spectrum.

- Any Discovery Grant application must seek support for a **program** of research.
Discovery Grants Peer Review Structure

The Conference Model

- Implemented in 2010 with the overall goal of improving the assessment of DG applications.
- Similar to a scientific conference where several sessions occur in parallel streams
- 12 Evaluation Groups (EGs) replace the former 28 Grant Selection Committees (GSCs)
- Flexible composition of Sections within each EG ensures comprehensive review of applications
- Members from different Evaluation Groups join various Sections to review applications covering topics that cross the traditional boundaries between disciplines.
Conference Model Overview

**EVALUATION GROUP A**

- **Group Chair**: ~40 members
- **4 Section Chairs**

Section A1-1: Research Topic A1
Section A2: Research Topic A3
Section A3-2: Research Topic A6
Section A4-2: Research Topics A9 and B5

**EVALUATION GROUP B**

- **Group Chair**: ~35 members
- **4 Section Chairs**

Section B1-1: Research Topic B1
Section B2: Research Topic B3
Section B3-1: Research Topic B4
Section B4-1: Research Topics B2 and B6

**EVALUATION GROUP C**

- **Group Chair**: ~25 members
- **3 Section Chairs**

Section C1-1: Research Topics C1 and B5
Section C2: Research Topic C3
Section C3-1: Research Topic C2
Section C3-2: Research Topics C5 and A5
Conference Model

How It Works

- Inside an Evaluation Group, applications are assessed within Sections.
  - Reviewers are drawn from the Evaluation Group’s membership as a function of the members’ expertise and the need to ensure balanced reviews.
- Members from different Evaluation Groups could participate in the review of any application, if required to ensure a comprehensive review.
  - Joint reviews.
  - Primary Evaluation Group: leads the review (“home” of application).
  - Secondary Evaluation Group(s): provides expert reviewer(s).
  - Reviewer(s) from secondary Evaluation Group(s): among the five reviewers assessing the application (full assessment, participation in deliberations, and vote).
List of Evaluation Groups

- Genes, Cells and Molecules (1501)
- Biological Systems and Functions (1502)
- Evolution and Ecology (1503)
- Chemistry (1504)
- Physics (1505)
- Geosciences (1506)
- Computer Science (1507)
- Mathematics and Statistics (1508)
- Civil, Industrial and Systems Engineering (1509)
- Electrical and Computer Engineering (1510)
- Materials and Chemical Engineering (1511)
- Mechanical Engineering (1512)
Evaluation Process Overview

Two-Step Process

- Two-step process separates merit assessment from funding recommendations.
- Merit assessment of applications decoupled from the previous grant held by applicants.
  - First Step - Evaluation Group assesses and rates the merit of each application based on three selection criteria, consistently using the evaluation indicators.
  - The ratings lead to the grouping of applications into categories ("bins") of comparable overall merit.
- Second step - (once all deliberations are completed) Executive Committee balances the amounts to be awarded to the merit bins in relation to the number of applicants funded. This is done at the global bin level and no specific application is singled out or discussed.
## Discovery Grants Indicators

### 6.13. DISCOVERY GRANTS MERIT INDICATORS

<table>
<thead>
<tr>
<th>Excellence of the Researcher</th>
<th>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.</th>
<th>The accomplishments presented in the application were deemed to be far superior in quality, impact and/or importance to a broad community.</th>
<th>The accomplishments presented in the application were deemed to be of superior quality, impact and/or importance.</th>
<th>The accomplishments presented in the application were deemed to be of solid quality, impact and/or importance.</th>
<th>The accomplishments presented in the application were deemed to be of reasonable quality, impact and/or importance.</th>
<th>The accomplishments presented in the application were deemed to be below an acceptable level of quality, impact and/or importance.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merit of the Proposal</td>
<td>Proposed research program is clearly presented, is extremely 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. The budget clearly demonstrates 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 highly 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 budget clearly demonstrates 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 defined and short-term objectives are planned. The methodology is clearly described and appropriate. The budget demonstrates 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 goals and short-term objectives are clearly described. The methodology is described and appropriate. The budget demonstrates how the research activities to be supported are distinct from and complement those funded by other sources.</td>
<td>Proposed research program 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. Research plans for trainees are appropriate and described. HQP success is likely.</td>
<td>Proposed research program is unacceptable due to low quality, impact and/or importance.</td>
</tr>
<tr>
<td>Training of HQP</td>
<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 superior to other applicants, with HQP contributing to high-quality research. Many 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 high-quality 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 is acceptable but may be modest relative to other applicants. Some HQP move on to 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 unacceptable due to low quality, impact and/or importance.</td>
<td></td>
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</table>

1The Discovery Grants Merit Indicators should be used in conjunction with the Peer Review Manual (Chapter 6) which outlines how reviewers arrive at a rating.

### Cost of Research

<table>
<thead>
<tr>
<th>Cost of Research</th>
<th>High</th>
<th>Normal</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Majority of justified expenses represent costs higher than the norm for the research area.</td>
<td>Majority of justified expenses are within the norm for the research area.</td>
<td>Majority of justified expenses are lower than the norm for the research area.</td>
<td></td>
</tr>
</tbody>
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2 Possible examples include: Cost of training of HQP; Equipment intensive research and/or high user fees; particularly expensive or frequent consumables; Travel (for collaborations, field work, access to facilities, conferences, ... )
Two-Step Review Process

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

Funding recommendation

A (L, N, H)  
B (L, N, H)  
C (L, N, H)  
D (L, N, H)  
...  
N  
O  
P
Discovery Grants Evaluation Criteria

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

- 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.
- Complementarity of expertise and synergy (Team grant applications).

Assessment based on achievements demonstrated over past six years (ten years, if from non-academic background). “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(s)
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.).
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.
  - Relationship to other sources of funds must be clearly explained.
- Appropriateness of budget.
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 grant 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.
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).
  - For Teams: “Research Team” section (discusses pertinent expertise and expected role and contributions of team members, operation of team, etc.).

- **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 (ten years if from non-academic background).

- 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

Location of Information

Plan for Training

- In **Application** - one dedicated page (2 pages in case of Team grant applications).
  
  - This page is to be used by applicant to present the training plan to be undertaken as part of the proposed research activities.

  - Among other things, the plan should provide **details** on activities in which trainees will be involved, skills and knowledge trainees would learn, the relevance of training activities for the level of trainees involved (undergraduate, Master’s, etc.), and the expected impact.
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
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.
Cost of Research

Location of Information

- In **Application**
  - Proposal (dedicated 5-page section).
  - Budget Justification (dedicated 2-page section).
  - Relationship to Other Sources of Support – Explanation (dedicated 2-page section).
Application Process for Discovery Grants

- Notification of Intent to Apply (NOI) and full application must be submitted through NSERC’s new Research Portal.

- Applicants and co-applicants must complete and submit NSERC’s version of the Canadian Common CV (CCV) at the NOI and application stages.

- Notification of Intent to Apply (NOI) must be submitted to NSERC by the deadline date of August 1, 8:00 pm Eastern.

- If an NOI is not submitted by the deadline, it is not possible to submit a full application.
Application Process for Discovery Grants

- Instructions are available on NSERC’s Web site.
- Applicants are encouraged to 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
NSERC’s Mandate (1)

• …to promote and assist research in the natural sciences and engineering, other than the health sciences… (NSERC Act 1978)

• The program of research and intended objectives must be primarily in the natural sciences and engineering (NSE)
NSERC’s Mandate (2)

• Current Resources
  – Selecting the Appropriate Federal Granting Agency
  – Discovery Grants Document: How NSERC determines whether a Discovery Grant application fits its mandate

• Next Steps
  – Clarification of NSERC guidelines, with help from external advisory committees
Research Portal

- **Single point of entry** for applicants, reviewers, committee members, institutions and partners

- **33,000 active users** for 10 funding programs (NSERC, SSHRC, CIHR) currently using the Research Portal

- **Over 12,000 applications** submitted through the Portal
Research Portal Enhancements

- Users can unlock their Research Portal accounts
- Application review and assessments submitted through the Research Portal, including improved PDF documents
- Clearer instructions for completing the NSERC program applications
- Improved RGO/SLO functionalities
- Clarify instructions regarding uploading of transcripts (CGS-M)
- Allow referees to save a draft report (CGS-M)
- Reword subject line of e-mail from the portal to avoid SPAM filters
Common CV - Challenges

- Need to enhance the applicant experience
  - Allow applicants to import publication data from existing sources
  - Shorten the NSERC CCV template by eliminating irrelevant fields

- Better organize output for peer reviewers
  - Reduce length, clutter and unnecessary elements
  - Improve the ‘Highly Qualified Personnel’ and ‘Publications’ sections
  - Remove some sections and fields
Common CV - Enhancements

Overall
- Transfer of CCV directly to the Research Portal
- Simplified navigation for the selection of the CV template
- Ability to import publication data directly from databases

NSERC CCV Template
- Shorter and more appealing layout of CCV data
- Elimination of unnecessary required fields in the NSERC CCV template
- Clearer instructions for completing the CCV