



Appendix 7

Guidelines for the Preparation and Review of Applications in Interdisciplinary Research

Definition

Interdisciplinary research is “research that involves the interaction among two or more different disciplines” and occurs at the interface between disciplines. This may range from the sharing of ideas to full integration of concepts, methodology, procedures, theory, terminology, data, organization of research and training. Multidisciplinary research draws on knowledge from different disciplines but stays within the boundary of one primary field.* In this document, “interdisciplinary” is used to refer to both interdisciplinary and multidisciplinary research.

* OECD (1998) *Interdisciplinarity in Science and Technology*, page 4.

For administrative purposes, NSERC defines interdisciplinary grant applications as those that require the selection of referees from more than one discipline, the establishment of a review panel with members from more than one discipline, or the expertise of more than one selection committee or panel in the peer review process.

Context

The ongoing trend for greater interdisciplinarity in many research areas is widely recognized internationally. Interdisciplinary research evolves to meet the demands of many societal, environmental, industrial, scientific and engineering problems that cannot be adequately addressed by single disciplines alone (see also [Guidelines for the Preparation and Review of Applications in Engineering and the Applied Sciences](#)). Significant advances in research and development in the natural sciences and engineering increasingly involve a number of diverse fields, including those in the social sciences, humanities and health sciences. Such advances can occur rapidly when people with vastly different experience come together and share their expertise. In fact, research conducted by industry and government is not usually organized along disciplinary lines; when collaborating with non-academic partners, interdisciplinary research is the norm.

Interdisciplinary research relies on the strength of established disciplines to provide sound theory and methodology. It pushes the traditional boundaries of disciplines, helps ensure their growth and vitality as new and emerging lines of inquiry are pursued, and may lead to the development of new disciplines. Other benefits are sharing resources and facilities, building teams and networks and removing duplication of effort in research.

Barriers that inhibit interdisciplinary research and prevent the full realization of its benefits are also recognized internationally (e.g., discipline-based university departments



and journals, lack of communication between disciplines, high-risk nature of the research, lack of critical mass in the community for the dissemination of results, peer review and recognition).

Peer Review

NSERC supports and promotes high-quality research in the natural sciences and engineering, including research that occurs at the interface between disciplines or that requires the skills of several disciplines. Our programs, policies and procedures are designed to break down barriers against interdisciplinary research.

In all programs, an important principle of peer review is to ensure that the evaluation process addresses the application content: interdisciplinary proposals should receive interdisciplinary review.

The majority of NSERC grant programs have selection panels and committees that are interdisciplinary, covering either a very wide breadth of research areas in the natural sciences and engineering, or specific interdisciplinary themes or research topics. (For example, the E.W.R. Steacie Fellowships Selection Committee reviews all proposals submitted to that program, whereas the Strategic Projects Selection Panel for Sustainable Energy Systems reviews proposals in this target area.) Committee and panel members come from diverse backgrounds and rely heavily on reviews from experts in many fields (e.g., external referees) to ensure that proposals are evaluated fairly. Depending on program requirements, these panels and committees review either both disciplinary and interdisciplinary proposals, or just interdisciplinary proposals. When both types are in the same competition, interdisciplinary applications can usually be reviewed in the same way as those that are more focused on a single discipline. More emphasis should be placed on the selection of referees, particularly when committee/panel expertise is thin in a given area. When additional review mechanisms, such as site visits, are used in some programs, the reviewers selected for these reflect the interdisciplinary nature of the proposal.

Regardless of whether selection committees and panels are organized along disciplinary or interdisciplinary lines, NSERC requires that their membership represent diversified expertise in the areas covered by the committee or panel, including new and emerging ones that are often at the frontier between disciplines.

In cases where the research falls under the jurisdiction of more than one federal granting agency (NSERC, CIHR, SSHRC), special mechanisms exist for joint review and funding (see [Selecting the Appropriate Federal Granting Agency and Addressing Other Sources of Funding](#)). These mechanisms can be used in all NSERC grant programs.

In the review of interdisciplinary proposals, special attention should be paid to the following:



- Selection of referees who are involved in, or familiar with, interdisciplinary research. Additional referees should be sought to cover the range of research areas in the proposal.
- The peer review process should not create additional hurdles for interdisciplinary proposals in comparison to disciplinary proposals. Where needed, additional peer review mechanisms (e.g., site visits, sub-committees, consultations between committees) should be used to ensure the completeness and fairness of the peer review process.
- Some differences are inherent in interdisciplinary research: it may require a longer time frame; proponent(s) may lack a track record in a new, developing area or in an area new to them, and may use a more collaborative approach.
- As always, the evaluation of the quality and impact of research contributions should be of primary importance and not the journal in which the publication appears or the vehicle used for disseminating results. Interdisciplinary journals that focus on new and emerging areas may not be as mature or as well known as more established discipline-based ones.
- The proposed research and the applicant's contributions should be assessed in the broader context of interdisciplinary research and not just in the narrower context of the reviewer's own discipline and research interests.

Selection committees and panels will consider the following when assessing interdisciplinary applications:

- What is the “added value” of the interdisciplinary approach? Will new knowledge from the interdisciplinary research have an impact in different fields, or are technologies and methodologies from different fields being used to further knowledge in one discipline?
- Have the perspectives of all relevant disciplines been considered in defining questions, methodology to be used, etc.?
- Does the applicant(s) demonstrate an understanding of the core problems and basic theoretical assumptions of the other fields involved?
- Is the terminology used clearly explained to audiences from different disciplines?
- Is all the required expertise available?
- For collaborative research, is there clear leadership, coordination and communication?
- Is there sufficient time to complete the research?

Discovery Grants

For the Discovery Grants Program, the Grant Selection Committees (GSCs) are generally discipline-based. However, the purview of the GSC and the expertise available on it may be broad enough that some interdisciplinary proposals can be reviewed fairly by one committee. When applications cross the boundaries of two or more discipline-based committees, measures are taken to ensure fair evaluation (e.g., consultation with other discipline GSCs, broader selection of referees). The Interdisciplinary GSC has the



important role of reviewing a wide range of Discovery Grant applications that cannot be adequately reviewed through consultation between two GSCs. Like other interdisciplinary committees and panels, members come from diverse backgrounds and rely heavily on experts in many fields (i.e., external referees and members of other GSCs) to ensure that proposals are evaluated fairly.

Discovery Grant applicants who believe their proposal will benefit from interdisciplinary review may submit a covering letter with their Form 180 explaining why and indicating the GSCs they think are most appropriate for the review. Their proposals may be sent to additional referees, formal consultations between GSCs may take place and assignment to the Interdisciplinary GSC will be considered. The GSC Chairs meet in November to determine the final GSC assignments for all proposals, taking into account recommendations from applicants and staff, the subject matter of the proposed research and the expertise available on GSCs. NSERC makes the final decision on committee assignment.