

CIHR HINTS FOR RESEARCH GRANT APPLICANTS

Revised 2003

As of April 1, 2000, the Medical Research Council was folded into the Canadian Institutes of Health Research (CIHR). CIHR's Web site address is <http://www.cihr-irsc.gc.ca>

There are thirteen Institutes which share responsibility for achieving the fundamental objective of CIHR to excel, according to internationally accepted standards of scientific excellence, in the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products and a strengthened Canadian health care system.

A description of each of the Institutes is available on the web site at http://www.cihr-irsc.gc.ca/institutes/index_e.shtml.

Research in each Institute covers the four health research themes: 1) Basic Biomedical, 2) Applied Clinical, 3) Health Services and Health Systems and, 4) Societal, Cultural and Environmental Influences on Health and the Health of Populations.

General Comments:

See also CIHR's document entitled "Tips for Writing a Successful CIHR Grant Application or Request for Renewal" at <http://www.cihr-irsc.gc.ca/services/funding/apply/tipsfor.pdf>

Success with grant applications in a highly competitive climate dictates that, beyond having an excellent research problem, the application and supporting documentation be written in the clearest and most effective manner possible. Knowledge of the review process, evaluation criteria and the importance of the various modules of the application is essential. In addition to the details provided by the granting agencies with the application forms, the following information gleaned from the experience of successful applicants and colleagues who have served on grant selection committees will help to highlight points to consider in preparing your application.

The Peer Review Committees:

Refer to CIHR's web site at http://www.cihr-irsc.gc.ca/services/funding/peer_review/peerproc_e.shtml

Each CIHR Peer Review Committee (PRC) consists of about 10 scientists from across Canada or occasionally from abroad. Page 8 of CIHR Research Module invites you to recommend members for service on Peer Review Committees. Members are chosen to represent the various aspects of specific disciplines but it is quite possible that no one on the PRC will be thoroughly conversant with the details of your research interests. The PRC chairperson and Scientific Officer assign two PRC members to provide independent detailed evaluations and recommendations for discussion by the committee as a whole. In addition, one PRC member is assigned a general Reader role. CIHR expects that all members of the PRC will read all the research applications and in most PRCs this is indeed done. One of the external reviewers may be selected from the applicant's suggestions, with others selected by the PRC Chair and Scientific Officer. The PRC's rating of an application is arrived at by the PRC as a whole, after consideration of the internal reviews, external referees' reports and other factors. This is usually

by consensus of the two raters or, if they disagree, by a vote. The vote is taken by each committee member ranking the proposal within +/-0.5 points of the rating average.

Under the triage process, two assigned members state their rating. If the recommended ratings are 2.5 or less and there is no disagreement from any other committee member, there will be no further discussion. If there is disagreement, the application will receive regular discussion. Even if the application has not been discussed, the applicant will still receive copies of reports of the committee members and external referees. You will not receive copies of the Scientific Officer's notes, or comments on the budget.

The Review Process:

The CIHR forms should be completed with great care since they significantly affect the review of your grant proposal.

You should be aware that the PRC may not contain an individual who is an expert in the your area.

Remember also that the external review comments constitute only one source of input into the PRC's final evaluation. CIHR sends copies of the reviewers' comments back to applicants with the results of the competition. These can be useful if re-application is necessary. Please remember the external reviewers are at most comparing 4 applications and may be commenting on yours alone. The PRC must make decisions on up to 120 proposals, thus discrepancies in rating between internal and external reviews are not uncommon. It is important that applicants be aware that the criteria employed in determining awards are:

- A. Quality of Proposal (including strengths and weaknesses of the project and the scientific merit and potential of the work proposed)
- B. Applicant's Background:
 - Training and research experience
 - Significant contributions
 - Productivity during present funding period

The relative balance between these criteria may vary between PRCs but CIHR encourages equal weighting. However, this is not easily defined and may vary due to circumstances and career stage in any individual case. It is easier to judge the track record and quality of an established investigator than another at an early point in their career, for example. Funding pressures are so intense that the proposal itself plays a pivotal role in determining whether or not even very good investigators maintain their funding. It is imperative that even investigators who have been funded for many years do not rely solely on their past record.

Proposals are rated from 0 (unacceptable) to 4.9 (outstanding). To date, all 4.0 to 4.9 rated proposals have been funded. In recent competitions, terminal grants were given to unsuccessful renewals rated 3.0 and above. Council calculated the terminal grant at 12.5% of previous average annual funding.

A PRC member will remain in the room as long as the application is not from a departmental colleague or anyone else with whom the member may be in conflict of interest (e.g., close personal friend, enemy, collaborators, etc).

Advance Material (Registration): http://www.cihr-irsc.gc.ca/services/funding/apply/application_packages/research_programs/operating_grants_re_g_e.shtml

Applicants must register their intention to apply for a grant. This registration process provides CIHR with basic information far enough ahead to preliminarily identify the committee and external reviewer expertise that will be needed. The registration form consists of selected pages from the CIHR application modules: Research Module Page 1, Acknowledgement Page, Draft Summary of Proposal Page 2, Information Page (list of reviewers), Statistics Page, CV Module Cover Page (for principal and co-applicants and associates). Except for the named principal applicant, project title and suggested grant committees, this information may be revised in the subsequent full application. The deadline to register is August 15th for the September deadline and February 1st for the March deadline

OPERATING GRANT APPLICATION

Consists of: a) Research Module, b) Operating Budget Module, c) CV Module

http://www.cihr-irsc.gc.ca/services/funding/apply/how_to_apply_e.shtml

Research Module - Summary of Research Proposal

In writing the research summary, write for the non-expert and expert but keep the topic focussed. Clearly and concisely state the goals of the research in words that most committee members could be expected to understand. Avoid jargon.

A reviewer has multiple proposals to assess and the process is time consuming. The summary page is a reviewer's best friend. A carefully prepared and clearly organized application prejudices the reviewer in your favour. It is the most important page of the application.

Therefore, you should spend a great deal of time on it. The summary page should contain:

- An opening paragraph that turns the non-expert reviewer onto the field; gets them excited and wholly absorbed. The opening paragraph should contain:
 - three or four sentences introducing the field and telling the reviewer why the field is important.
 - two or three sentences highlighting what isn't known in the field and why it is important to solve these unanswered questions.
 - one sentence leading up to what you intend to do: "our specific aims are..."
- A series of no more than three bulleted paragraphs summarizing the three specific aims of the proposal. Each paragraph should list:
 - the specific aim: one sentence and maybe underline it. What you intend to do. Begin with a transitive verb: "To determine..."
 - the methods that will be used in attaining the goal that has been set; 2-4 sentences
 - what the data will tell us - why it is important to do what you want to do; 1-2 sentences

Bulleted paragraphs can be very useful for easily locating information during the meeting. If you use this approach, what the reviewer will know after reading your summary page is something about your field, what isn't known in the field, and what your general approach will be in solving the unresolved problems. In one page, you will have given the reviewer enough material to write

a summary of your proposal without even reading the grant! - you've made a friend of a very busy person!

Research Module - Summary of Progress

The people on the grants committees are scientists, so they know what you are going through and they know that you may not have done everything you set out to do three years ago; there is no need, however, for you to dwell on your own shortcomings. Stress what you achieved rather than what was not accomplished.

The progress report and proposal should be generously sprinkled with references to your own work, even older work. Remember that the committee will not have your earlier applications for reference.

Your progress report should summarize achievements, relate them to the original objectives, refer to papers produced, and explain how you have advanced the state of knowledge in the field. A new applicant should summarize previous work pertinent to this submission.

Research Module - Response to Previous Reviews

There is a separate section for response to previous reviews. Be positive in tone. Negative or defensive writing is inefficient. Telling the committee they were stupid the last time they reviewed your application may relieve your feelings, but is a **very** expensive form of therapy. If concerns of a previous review have been addressed, make note of this in a positive way. This response must stand alone as reviewers do not have access to previous application information. One additional page may be added, so you could append a copy of a previous review here.

Research Module - The Proposal

The body of the application is composed of 10 pages. In that space you need to: a) provide relevant background information, b) relate the background information to what you want to do in the application, c) provide in general terms a description of what you want to do and why you want to it, d) provide convincing evidence that the project is important and, e) provide sufficient detail to make them believe that you know what you are doing technically and information as to how you will interpret your results: In short, a lot of information on a few pages.

In the body of the research proposal, explain **your** contribution to collaborative work and multi-authored papers indicating the ideas, innovations or expertise you provided rather than the percentage of work. Highlight any unique, innovative contributions of your research papers rather than simply summarizing them. Has the work set new research directions? Has it resolved some long standing or important issues? It is important for the PRC to develop a good sense of your achievements.

Observe the space limitations and adhere to the guidelines regarding font style and particularly type size. Figures, tables and references can be added, they are not counted in the number of pages of text. All pertinent information you wish the reviewers to read should be in the grant application proper. You can append a manuscript but you should also refer to specific points in the proposal so the reviewer does not have to go back to the appendix. The PRC members do not always have the time to hunt through your application for pertinent information.

Within the 10 pages of the Research Proposal, provide:

- 3-5 pages of background information: remember your audience, provide enough to educate them, and relate the information to the project you want to do. Remember to tell a story:
 - Two audiences:
 - (i) primary and secondary reviewers - can be non-experts who you need to excite about the project,
 - (ii) external reviewers - experts who are already excited who need to be convinced that you understand the field and have stated the problem accurately.
 - Review of the literature should be relevant to the problem only and lead into the experiments to be done. Don't cover all the literature, only what is relevant to your story.
 - Show where the proposed work fits in the overall field. Discuss your experiments in terms of their relevance to the issues raised in the literature survey; also discuss your experiments in the framework of your specific aims (using only 1 to 3). Keep it simple; remember a clearly organized background and justification section will make it easier for the reviewer, which is in your interest.
- 5-7 pages of methodology: The methods section should be built around your specific aims. The remaining 5-7 pages of the body of the grant are devoted to methodology; how you will carry out your experiments, what are your controls, how you will interpret the data, what alternative results or explanations could arise. Again, use the specific aims as your framework. For example, restate the specific aim 1 as written on the summary page, provide a few sentences to refresh the reader on what experiments you intend to do and spend the rest of the time convincing them that you can do what you say you can. Do the same for aims 2 and 3. If you feel that you need to justify why you are doing the experiments, then your introductory 3-5 pages were not effectively done.
 - a) for techniques you've done, refer to previous work, if published.
 - b) for techniques you haven't done, describe them **in detail**. If you are using new techniques with little previous experience, it is helpful to indicate how these will be mastered. For example, assistance of a colleague (who should be named), new PhD joining the lab, visiting scientist, special training course, sabbatical, etc. If you are in a field new to you, show the reviewer that you know what is involved. If you have chosen to use methods other than "state of the art" you must justify your choice. The literature review must be up to date because the committee will consider how critically the applicant appraised and evaluated literature relevant to the research proposed.
 - c) attack soft spots, (e.g. controls, contingency plans, etc), before the reviewers do. It is important to discuss methods of data analyses, justify replication of experiments and the power to detect differences of concern in the testing of your hypothesis. This often is important in determining the validity of budget requests for materials and supplies.
 - d) discuss interpretation of the results, both negative and positive!
 - e) explain what alternative approaches you might try if it doesn't work. The application should have some preliminary data to show that the proposed approach to the problem has some probability of success. Make sure that there is a clear hypothesis statement. Acknowledge the possible direction changes. Point out that if these experiments lead to result A, then you will head off in one direction, if result B, then another direction. Experiments that open up other

important avenues for research are usually winners. Explain what is innovative about the techniques you propose

- Final paragraph: Finish the application with a short summary paragraph that will help the reviewer recall the importance of your work. This paragraph will help the reviewers write a cogent summary of the application in their review.

Suggested External Referees:

On Page 7 of the Research Module, you are asked to provide the names of up to six potential external reviewers. There are some things you should be aware of when making your choices. The PRC will try to get at least 2 external reviewers, more if it is felt that specific expertise is lacking within the Committee. Name the best people who know your work but who are not former colleagues, students, collaborators or current CIHR PRC members. If at all possible, it is a good idea to include some Canadians in your list. They are to some degree known entities to the PRC and more importantly know research funding and the CIHR system and are more likely to comply with the request to undertake a review. You should, if they are appropriate, also feel free to suggest international experts but judge whether or not they are likely to respond. Selection of individuals who have the appropriate expertise and who are likely to provide perceptive, detailed and unbiased comments on your application can be a very positive factor in your review. You may also indicate those referees to whom you would prefer NOT be used. You are also asked to list your collaborators for purposes of avoiding conflict of interest during reviewer assignment.

Cover letters should only be used to alert the CIHR secretariat to potential problems in the review, for example if you have changes in the orientation of your work.

Suggested CIHR Institute(s):

On Page 8, you are asked to select a primary CIHR Institute to which the grant should be assigned if it is successful in the competition. Additional choices are only to be indicated if the substance of the grant substantially overlaps with the research mandate of additional Institutes. Since the peer review process operates independently of the Institutes, your choice of Institute will not be made available to the reviewers and will have no impact on the review of the application.

Themes:

On Page 8, you are asked to indicate a primary theme. Indicate additional themes only where the substance of the grant substantially encompasses more than one theme.

Research Module - Appendix 1 - Letters of Collaboration/Support

You are asked to append letters from collaborators who are not listed as applicants. If you are working with collaborators, try to avoid creating the impression that they are the ones who are doing all the work. Stress that the expertise of each team member is complementary.

Operating Budget Module

If you request student support in the operating budget it is a good idea to indicate your supervisory experience. Otherwise, the PRC may be reluctant to give a lot of funding to

someone without documented experience. Include undergraduate, honours thesis students, summer students and graduate students.

Budget Details: Requests are usually for 3 years. They can be for 5 years for experienced investigators. The important thing is to **justify** every item. You can add as many pages as necessary for justification. Technicians are hired at the University salary scale; request a stipend for Trainees (benefits are not covered); Postdoctoral and Graduate Students and Summer Students are hired at CIHR stated rates; Travel support is usually from \$1500 to \$2000 per year for Conferences. Travel as part of research over and above conferences should be explained and justified. If a postdoc knows a specific technique necessary to your research, state this in the justification for hiring.

Equipment: It is important in equipment grant applications to demonstrate that the equipment is really needed. Indicate if there are no alternatives in the department or feasible research environment. Request what you need in the first year of the multi-year budget. Append letters from Department Heads and quotations. (For separate equipment/maintenance or multi-user equipment/maintenance requests, use the Equipment/Maintenance Budget Module).

CV Module

Details of Funds Held or Requested: Be scrupulously honest in completing the section on other funds. If a PRC knows you hold a grant or contract not listed, it throws the entire application into question. Attach a copy of the summary and budget pages of other funds held or applied for and provide details. Address any issues of overlap with other funding directly. PRCs tend to take the CV modules very seriously and so should the applicant. Provide one for each applicant and co-investigator (not for research staff or trainees). In addition, there should be a letter of support from any collaborator. Ensure that the information is accurate and particularly that your personal bibliography is organized as CIHR requests and is correct. Attach as many pages as allowed for publication lists. Keep publications listed in the categories suggested in the guidelines. The mixing of abstracts and conference talks with refereed papers looks sloppy and disorganized and will cause suspicion to fall on other aspects of your application. List publications by year chronologically. Refer to abstracts in the proposal if the work has not yet been published. (Yet, don't cite old abstracts because the Committee will question why these are not published). When papers are in press PRCs will accept that the journal has agreed to publish it. If papers are "submitted", add the acknowledgement from the publisher as proof. Some PRC members ignore papers submitted, but you should list them as a separate group. They help create the picture of an active and productive individual or lab. The quality and impact of the papers, not the quantity, is important. Indicate why you publish in certain journals. These may not always be the most prestigious but they may be very appropriate for the subject matter. The Committees may refer to the Citation Index for an indication of impact of your work.

Interruptions in Scientific Career:

On a separate page, accurately explain circumstances that may have led to delays in publication or caused significant research career interruptions: serious illness, childbirth and so on. This is not a place to make excuses but to describe legitimate situations which have had an impact on one's research, and your efforts to return to a fully active research career.

PROGRAMMATIC OPERATING GRANT APPLICATIONS

Programmatic Operating Grant applications are available in both CIHR theme 3) Health Services and theme 4) Societal and Cultural Dimensions of Health and Environmental Influences on Health and the Health of Populations.

These proposals describe connected sequences of conceptually related research projects, executed by the same team of investigators over a number of years. They should include more than one project, inside a clearly conceptually-linked theme and they require initial capital investments of ongoing support throughout the series of proposed projects/studies.

Present careful justification for three to five years of programmatic support. A progress report will be required after the first three years of a five year grant. Demonstrate that the program cannot be efficiently supported by a series of separate grant proposals. Explain the extent to which future studies, beyond those described in the initial investigations, show potential to address the program's specific research questions.

The regular CIHR operating grant application package is used and the usual competition deadlines are applicable to Programmatic Operating Grant applications.

In Closing:

1. Make sure that you check the spelling, grammar and budget. Poor writing and proofreading leave a poor impression concerning whether the research is equally sloppily done. Get a colleague from outside your specialty to read your application and comment before it is submitted. This is especially important if you are trying to get a grant back after losing one.
2. It is a great help to all department offices if applications can be finished before the deadline. Our secretaries can do better work if their jobs are not transformed into a last-minute cavalry charge. Start early!

New programs are being announced on an ongoing basis as the Institutes evolve. These are posted on the CIHR web site. You should refer to the CIHR web site regularly for updates to program information.

Prepared by Research Services & Programs in consultation with MRC Officer, Dr. K. Tibelius, July, 1995 and with UM/MRC Peer Review Committee Members February 1996-March 1999. Revised with CIHR references July 2000. Revised August 2002.

For more information, contact:

Wen Trask
Research Information Officer
Phone: 474-8390
e-mail: wen_trask@umanitoba.ca