Tips on preparing a successful research application

A research proposal should merit the same meticulous attention as the preparation of a scientific paper for publication. Some of the basic principles in achieving this goal are highlighted below. The following is intended only as a general guideline which may be useful to some applicants. Applicants should feel free to consult other agencies for similar "grantsmanship" discussions, the general tones of which should be broadly applicable.

Applicants are also strongly encouraged to consult the companion document, Errors to avoid when preparing a research application, for additional useful information.

General considerations regarding grant submissions

All applicants

Any investigator proposing human embryonic stem cell research should review our stem cell policy and must contact the Canadian Cancer Society prior to submitting an application.

Applicants are encouraged to start applications early to ensure all online validation of errors can be corrected and the application can be submitted prior to the deadline.

The only materials that will be accepted after the deadline date are certificates (e.g. biosafety, animal care, human ethics approvals) and letters/emails from scientific journals regarding relevant submitted manuscripts.

All applicants are strongly urged to seek a "friendly review" by knowledgeable colleagues who are willing and able to provide a critique of both content and style. New investigators especially are strongly encouraged to seek out appropriate mentors for advice in preparing the grant application.

Funds must remain in Canada except in unique circumstances where scientific methodologies demand. Requests will be reviewed on an individual basis.

Applications involving tobacco use

Please note that the Canadian Cancer Society will not provide funds to individuals who receive support directly from tobacco manufacturers or from the Council for Tobacco Research or from the Smokeless Tobacco Council.

Some considerations for the proposal section of the grant application

1. General

- Write logically.
- Provide the information in the grant proposal in an orderly fashion.

- Lead the reviewer carefully and do not make them work to follow your path.
- Refer to the document Using the EGrAMS rich text editor for information on the correct way to format the proposal.

Remember, each reviewer has many other applications to read and evaluate in a very limited amount of time.

2. Cancer relevance

When requested, clearly describe why this study is important in terms of its relevance to cancer and the potential impact of this research on the burden of cancer:

- Link your study objectives to the Mission of the Canadian Cancer Society.
- Outline benefits and advances that will result from these data.
- Show how future studies will be able to build upon the results of this study.
- Keep in mind that your statement will be incorporated into the overall discussion of the review panel.

3. Background

- Provide a good review of the relevant literature.
- Outline a careful summary of preliminary data.
- Include an appropriate rationale for the study being proposed in the application.

4. Hypothesis

Itemize a limited number (1-3) of innovative concepts or correlations that will be tested.

5. Specific aims

Give a limited number of specific goals for the application.

- Goals should be focused and should be stated concisely and precisely.
- Avoid vague statements and broad sweeping all-inclusive hopes.
- Emphasize the collection and analysis of facts or the perceptions and experiences of the study cohort, not perceptions of the applicants.

6. Research design

- Keep the presentation of the design simple and logical.
- Give clear definitions for terms, study parameters, inclusion criteria, etc.

- Be certain that the research design is appropriate for the questions being asked in the study and that the data generated will answer these questions.
- Avoid sweeping or controversial assumptions.
- If appropriate (e.g. for clinical studies), consider important subgroups and stratify accordingly. *Stratification by such factors as stage of disease, therapeutic modality, treatment morbidity or community services may lead to greater homogeneity of the data and enhance statistical analysis.*
- In the past, many unsuccessful clinical applications were considered lacking in two specific areas: biostatistics (e.g. sample size calculations, point estimates, etc.) and feasibility.
  It is recommended that, where warranted, applications include either a formal consultation with a biostatistician or include a biostatistician as a Co-applicant in the planning, development and writing of the proposal.
- Consider the effect of the study upon the parameters being measured.
- Critique the study design yourself in the application.

7. Research methodology

- Describe the methods being used in sufficient detail so that the reviewer will understand how you will proceed and be confident in your methodology.
- Be certain that the data collected will be adequate to address the research question, e.g. to compensate for important independent variables.
- Match the methods employed carefully with the specific aims.
- Where applicable, (e.g. for psychosocial investigations), use established instruments or methodologies whenever possible unless the instrument itself is being studied.
- For clinical investigations, consider using pilot or published data to statistically justify sample size (including subgroup size).
- Ensure consistency between the details of the grant proposal and the instruments and protocols included as appendices.

8. Timetable for clinical investigations

- Document the numbers of research subjects available in each category or subgroup.
- Give evidence that accrual expectations will be met.
- Include data from pilot studies, tumour registries, etc.
- Letters of support should be specific about what items/expertise will be provided for the study.

For clinical applications where the planned study will take longer than the initial term of the award, applicants should clearly articulate the timetable for the study, so the reviewers will be better able to assess the feasibility of the proposal.

9. Involvement of colleagues

The Principal Investigator should briefly establish credentials as an investigator, focusing upon important background qualifications as well as current research involvement. Similarly, the credentials of Co-Principal Investigators and Co Applicants should be established.

- Outline how the expertise of each investigator is important for successful completion of the study.
- Involve all the Co-Principal Investigators, Co-Applicants, Additional Authors, consultants and collaborators in the study planning, design of the research proposal and the preparation of the grant application. This will avoid an impractical design and gaps in research methodology.
- Integrate knowledge end-users and stakeholders early and fully.

Other sections of the grant application

Scientific abstract/public summary

These should be simple overviews of the entire project. Write these sections last.

Letters of collaboration

Provide letters of support from collaborators indicating that the individual:

- understands the study objectives
- has participated in study design and planning
- will contribute in specific ways to the successful completion of the study

Budget justification

Explain the role of each major item required for completion of the project.

- Discuss how the provision of each item will enhance the study.
- The larger the budget item, the greater the need for explanation and rationale.
- For personnel, it is important that you specify the unique and essential role that each will play.
- Requests for salaries will be evaluated on the basis of the scientific merit of the project and the qualifications of the individual (when a specific individual is identified).
- Evaluation of support of research trainees will also take into consideration the overall educational/training environment.

Please view the list of current review panels for more information.