

How to succeed with fellowship and grant applications?

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Why you should apply for fellowships or grants

For trainees, fellowships can open great career options

For researchers, external funding allows you pursue interesting ideas and increases productivity, and allows you to recruit staff and students

So, apply to ALL competitions that you are eligible for (there is a learning curve, and you will get better, with time and effort)

Before you apply for any competition....



Know your enemy and know yourself and you
can fight a hundred battles without disaster.

(Sun Tzu)

izquotes.com

Before you apply for any competition....

1. Carefully read the instructions, eligibility and evaluation criteria
2. Try and get hold of a couple of previous successful applications in that competition – use them as models or templates
3. Give yourself plenty of time to draft and go through multiple revisions and get comments from others

Postdoc and other fellowships

Find out what criteria will be used for grading proposals

Canadian Institutes
of Health Research



How does a CIHR committee review post-doc fellowship applications?

Remote review model; no face to face meetings or teleconferences (online discussion does happen) – **so, your application needs to speak for itself and objective/tangible items are critical to highlight**

1. Reviewers read the applications online and submit their preliminary reviews (ratings and comments)
2. Online discussion of the applications with the other reviewers
3. Confirm the reviews by submitting Ready for ranking
4. Break ties
5. Modify the rank list
6. Submit final reviews to CIHR

Criterion		Rating (O++, O+, O, E++, E+, E, G, F, P)	Reviewers Comments
1. Achievements & Activities of the Candidate (60%)	a) Training Expectations (10%)		Strengths: <ul style="list-style-type: none"> • • Weaknesses: <ul style="list-style-type: none"> • •
	b) Proposed Research Project (10%)		
	c) Honours, Awards and Academic Distinction (10%)		
	d) Publications and Related Research Achievements (30%)		
2. Sponsor's Assessment of the Candidate's Characteristics and Abilities (20%)			Strengths: <ul style="list-style-type: none"> • • Weaknesses: <ul style="list-style-type: none"> • •
3. Research Training Environment (20%)			Strengths: <ul style="list-style-type: none"> • • Weaknesses: <ul style="list-style-type: none"> • •

Descriptor	Abbreviation	Definition
Outstanding	O++	For this sub-criterion, the application excels in most or all relevant aspects. Any short-comings are minimal.
	O+	
	O	
Excellent	E++	For this sub-criterion, the application excels in many relevant aspects, and reasonably addresses all others. Certain improvements are possible.
	E+	
	E	
Good	G	For this sub-criterion, the application excels in some relevant aspects, and reasonably addresses all others. Some improvements are necessary.
Fair	F	For this sub-criterion, the application broadly addresses all relevant aspects. Major revisions are required.
Poor	P	For this sub-criterion, the application fails to provide convincing information and/or has serious inherent flaws or gaps.

For postdoc fellowships, your probability of success is high if...

You can tell a clear story of what you did in your MD/PhD, what you found *and published*, how that led to a postdoc fellowship, and how you plan to continue along that research trajectory with a new mentor/institution that is a good fit with your chosen field and will provide a good environment for you to grow into an independent researcher soon.



Ten things to keep in mind when applying for postdoc or other training opportunities

Professors at research intensive universities often receive hundreds of emails regarding potential training opportunities. Which request is likely to receive more attention? Which request is likely to be deleted without a response?

Ten things to keep in mind when applying for postdoc or other training opportunities

Do not send generic (copy/paste) emails to lots of people at the same time – few people bother to read such mass emails!

Do not write letters/emails without specifically addressing the professor by name.

Always investigate the background and research interests of the professor you are planning to contact (most professors will have their own websites). Make it clear in your letter that you are aware of the research focus of the professor. If you are responding to an advertisement, then make sure you meet the eligibility criteria. This issue of “fit” is absolutely critical.

Dear Dr. Pai,

I am writing you this email to inquire about the possibility of postdoc Researcher in your lab.

In June 2007, I received a doctor degree in Chemistry from the Department of Chemistry, University of Science & Technology of China (USTC). In August 2012, I earned my second PhD degree in electrical engineering South Dakota State University (SDSU)

During these two working periods, I got more than 20 publications as the first author or co-author. Due to these achievements, research supports and well done research works in the field of organic photovoltaics and dye-sensitized solar cells, I was selected as a Postdoc Researcher focus on nanocarbon photovoltaics, University of Kansas.

With hard but purposeful work at USTC, extensive experiments were conducted and tens of MOF structures were obtained. This academic achievement represented my comprehensive competence, assiduous attitude, and untiring efforts, which provide me a solid basis to fulfill my career goal.

Besides, at USTC, I once worked as a teaching assistant and supervised about 40 students to take undergraduate-level inorganic chemistry experiment course. I also trained and advised several undergraduate and postgraduate students to conduct research projects.

To conduct research for photovoltaic programs, I have extensively active and direct participation in the full process of developing and testing physical and chemical properties of thin solid films and corresponding devices. I am fully experienced in clean room and chemistry laboratory facilities and familiar with several characterization methods, such as absorption and fluorescence spectroscopy. I also have experience in using of atomic force microscope (AFM) and scanning electron microscope (SEM) with expertise in data prediction.

Enclosed is my C.V. which further outlines my qualifications.

Thank you for considering my application. I look forward to your reply.

Sincerely yours,
Yu XIE

Ten things to keep in mind when applying for postdoc or other training opportunities

In general, no point in contacting professors who don't share your research interests or have a completely different training background.

Publications (even co-authored) in your area of research are very important. If you have no publications, then you have a low likelihood of being accepted into any postdoc fellowship program.

If you have publications, attaching them (or at least a few major publications) will make a big impact.




Ten things to keep in mind when applying for postdoc or other training opportunities

Always send your latest CV along with your cover letter. Your CV should be well written, with no typographic errors. It should list your educational degrees, your research work, your publications, awards, etc.

Your CV should list the names and contact information of at least 3 referees who know about your work.

It often helps if someone else makes the initial contact on your behalf. For example, if your mentor or supervisor writes a letter introducing you, this might get more attention.



Ten things to keep in mind when applying for postdoc or other training opportunities

It is also very helpful if you have funding or fellowships of your own that you can bring with you.

Carefully proof read your email before sending it. Typographic errors and sloppy writing can easily put off people!

Lastly, if you don't get a response, try again after a while. Persistence often works!

Research grant applications



NIH grant scoring

Overall Impact or Criterion Strength	Score	Descriptor
High	1	Exceptional
	2	Outstanding
	3	Excellent
Medium	4	Very Good
	5	Good
	6	Satisfactory
Low	7	Fair
	8	Marginal
	9	Poor
Other Designations for Final Outcome		
AB	Abstention	
CF	Conflict of Interest	
DF	Deferred	
ND	Not Discussed	
NP	Not Present	
NR	Not Recommended for Further Consideration	



Criterion 1 - Concept

1. Quality of the Idea (25%)
2. Importance of the Idea (25%)

Criterion 2 – Feasibility

3. Approach (25%)
4. Expertise, Experience and Resources (25%)

Typical grant proposal (stick to guidelines!)

Summary


Background

Specific aims

Prior work/prelim data

Typical grant proposal

Methods

- Study design
 - Setting
 - Exposure/interventions
 - Outcomes
 - Sample size/power
 - Data analysis
- 

Typical grant proposal

Anticipated risks and mitigation strategy

Team and expertise

Ethical issues

Knowledge translation

Budget and budget justification

CVs of the team members

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If appendices are allowed, then include

Prior relevant papers

Draft questionnaires and instruments

Detailed power calculations

Figures/tables that won't fit into the main body



Use images and illustrations to make the grant more readable

2. OBJECTIVES, SPECIFIC AIMS AND HYPOTHESES

Overall objective: To evaluate the accuracy, potential reduction in time to treatment initiation, and cost-effectiveness of the Xpert MTB/RIF assay for rapid TB diagnosis in a routine clinic setting, among high-risk populations in Montreal, Quebec, and Iqaluit, Nunavut (study plan is illustrated in the graphic).

2.1 Specific aims

Specific aim 1: To determine the sensitivity and specificity of the Xpert test, performed by clinic staff at the point-of-care in a routine TB clinic setting, using TB cultures as the reference standard, and to determine if accuracy of a single Xpert assay is substantially higher than the conventional 3 sputum smears strategy.

Hypothesis: We hypothesize that in both settings, Xpert MTB/RIF will have a sensitivity of 99% in smear-positive, culture-positive cases, sensitivity of 70% in smear-

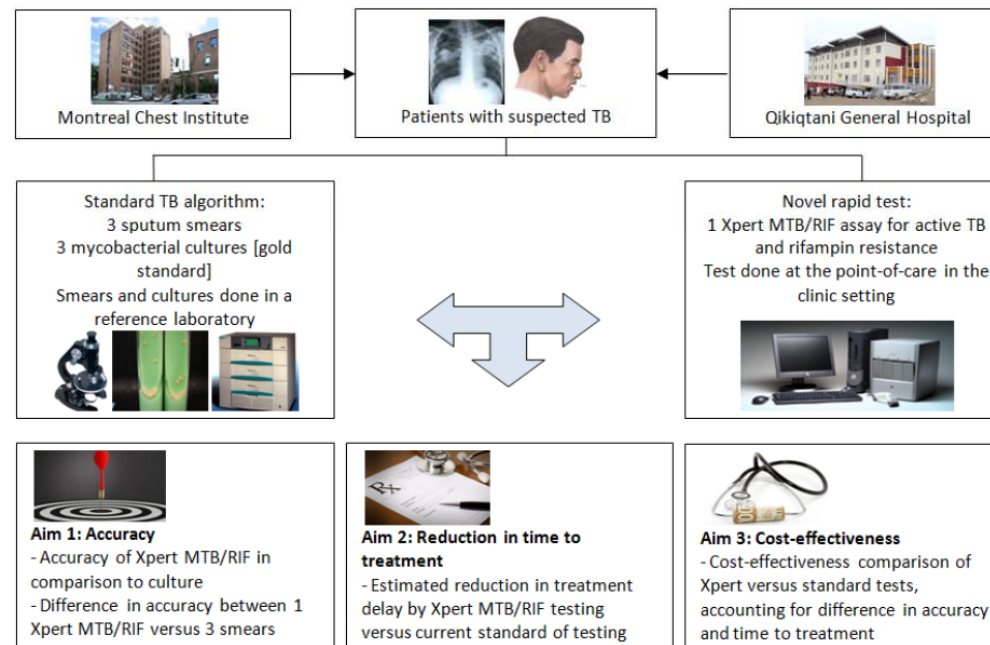
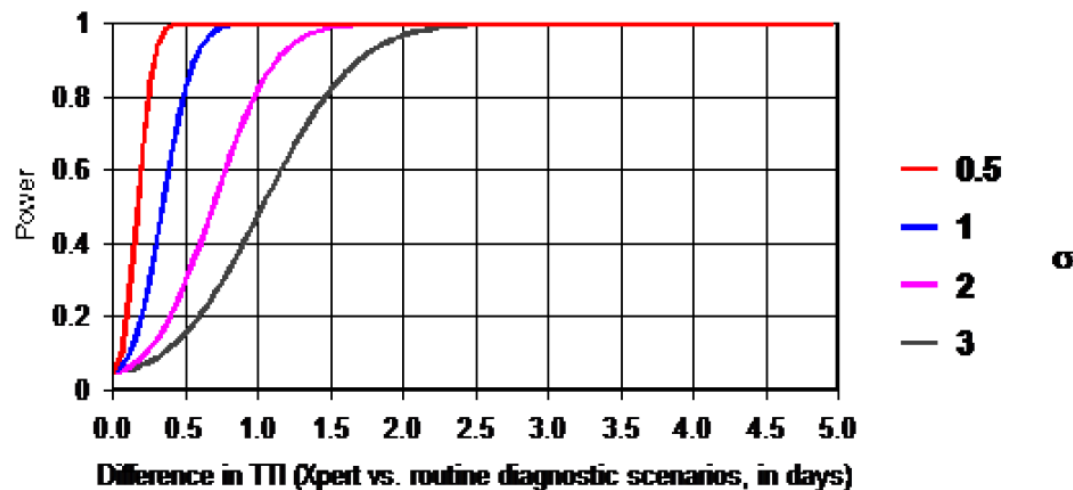


Figure 5. Power to precisely estimate median difference TTI between two diagnostic strategies in smear-positive cases



Difference in TTI means the net gain measured by the difference in time to treatment initiation (TTI) between Xpert MTB/RIF and routine diagnostic strategies. We expect that smear-positive cases in Montreal would have a median TTI of 4 days under routine diagnostic strategy and a median TTI of 1 day under Xpert MTB/RIF strategy. With about 35 smear and culture-positive cases in Montreal, we will be able to estimate at least a 3-day difference in TTI between the two diagnostic strategies with more than 90% power, accounting for lack of independence in our study sample (Xpert MTB/RIF estimates are from same patient sample).

TTI: Time to treatment initiation
 σ : standard deviation in mean TTI difference

Get feedback and iterate

The grant should have a clear focus and tell a story; within the first few minutes, a reviewer should understand what the grant is about

Write a first draft and keep improving on it

Get feedback from senior researchers who have grants

Pre-empt reviewer comments and try to address them

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Common mistakes

Not enough time to improve and produce a good version

Too much jargon and too many abbreviations

Very long introduction/background and not enough methods

Too many aims/objectives (not realistic)

No preliminary work in the area

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Common mistakes

Team is weak for the stated objectives

Limited details on sampling, sample size and analysis

Not copy edited (typos, poor formatting)

Unrealistic budget, or poorly justified budget

Your grant proposal needs
to be achievable in the
given timeline, budget,
and resources

PAI, M. Improving tuberculosis diagnosis in vulnerable populations: impact and cost-effectiveness of a novel, rapid molecular assay \$149,450
Budget Justification

BUDGET

Items	Year 1	Year 2	Year 3
Research staff (Montreal)			
1. Project coordinator/data manager (full-time)	40,000	40,000	40,000
▪ Benefits (20%)	8,000	8,000	8,000
▪ Sub-total coordinator	<u>48,000</u>	<u>48,000</u>	<u>48,000</u>
Total salaries in Montreal	<u>48,000</u>	<u>48,000</u>	<u>48,000</u>
Research staff (Iqaluit)			
2. Project coordinator/data manager (50% time)	20,000	20,000	20,000
▪ Benefits (20%)	4,000	4,000	4,000
▪ Sub-total coordinator	<u>24,000</u>	<u>24,000</u>	<u>24,000</u>
3. Lab technician (50% time)	20,000	20,000	20,000
▪ Benefits (20%)	4,000	4,000	4,000
▪ Sub-total lab technician	<u>24,000</u>	<u>24,000</u>	<u>24,000</u>
Total salaries in Iqaluit	<u>48,000</u>	<u>48,000</u>	<u>48,000</u>
Research trainees			
Doctoral student at McGill - annual stipend	20,000	20,000	20,000
Materials, Supplies & Services (both sites combined)			
1. Xpert MTB/RIF kits (cartridges & sample treatment reagent): 1800 x 16.86/test (WHO/FIND negotiated pricing*) x 20% procurement cost (incl. customs levy, shipping, etc.) * please refer to Cepheid Inc. price quote	12,000	12,000	12,000
2. Lab consumables (for Xpert MTB/RIF: Pasteur pipettes, storage tubes, etc.)	6,000	6,000	6,000
Total for materials and supplies	<u>18,000</u>	<u>18,000</u>	<u>18,000</u>
Equipment: \$40,281			
Not included in the budget, but described in the text separately			
Travel			
- PI (Dr Pai) to Iqaluit (one week-long visit each year)	6,450	6,450	6,450
- Co-PI. Dr. Alvarez* to Iqaluit (one week-long visit each year)			

BUDGET JUSTIFICATION

1. Provide full justification of all budget items relative to the proposed research:

Because this project will be conducted at 2 sites (Montreal and Iqaluit), we have, for most items, provided budget estimates and justification separately for each site. At the McGill University Health Centre, Montreal, standard fringe benefits are at the rate of 20%. This is also the case at the Qikiqtani General Hospital (QGH) in Iqaluit.

SALARIES

In Montreal, Quebec:

Project coordinator & data manager: Because this project involves follow-up of a cohort of TB patients, we budget for a project coordinator who will also serve as the data manager for the entire duration of the project. The role of the project coordinator will be to contact potential participants, obtain informed consent, assist with specimen collection, follow-up after test results become available, complete medical chart review, complete data entry, and ensure tests are performed as scheduled during follow-up. Therefore, an annual salary of \$40,000 (plus benefits) has been requested.

In Iqaluit, Nunavut:

Project coordinator & data manager: We budget for a project coordinator (50%) in Iqaluit who will also function as the data manager for the entire duration of the project. The role of the project coordinator will be to contact potential participants, obtain informed consent, assist with specimen collection, follow-up after test results become available, complete medical chart review and data entry, refer participants who need medical evaluation, and ensure tests are performed as scheduled during follow-up. Therefore, a 50% salary of \$20,000 (plus benefits) has been requested.

Lab technician: Since the Iqaluit site is currently experiencing a TB outbreak with a high number of TB cases, and has resource constraints, we request budget for a lab tech (half time), to handle the higher testing workload. We request a total salary (inclusive of benefits) of about \$24,000 per year.

Learning from reviews and re-submitting

Many grants do not get funded on the first round

Learn from the reviews and revise/resubmit

Assessment/Évaluation:

Research approach

Strengths

- This was a very well written proposal.
- The study is well justified and represents an important public health problem, particularly among the Aboriginal population in Nunavut where there has been an outbreak of active TB and limited laboratory capacity leading to diagnostic delays.
- The research has direct applications to clinical practice and policy since this represents a method to rapidly diagnose cases of TB in a primary care practitioners office and could lead to faster treatment initiation.
- The technology is novel and can be used at the point of care with minimal training, combining safety speed and simplicity
- The proposal has support of the community and Nunavut government and builds on existing grants held by the principal applicant(s), including a CIHR Research Resource grant, and TAIMA TB, a newly funded partnership initiative funded by PHAC to control TB in Nunavut, which aims to raise awareness about TB in Iqaluit followed by a door to door campaign that will provide screening and treatment using innovative tools and delivery options.
- The project is feasible based on the above infrastructure as well as buy-in from community and provincial partners; and recruitment estimates seem reasonable
- All relevant costs seem to be considered in the cost effectiveness analysis with appropriate sensitivity analyses
- Study timelines seem appropriate

Weaknesses

- One potential threat to study recruitment is if Health Canada approves the Xpert MTB/RIF assay before the end of the study as this might create an ethical issue if this test became the standard of care. This however is highly unlikely to happen over the course of the study since even if approved, the uptake of the technology into practice would not be instantaneous. If expensive then ministries of health would likely await results of the cost-effectiveness component before funding it as the market price of the equipment and cost per test is expensive.
- There is a potential ethical issue around not providing results to patients however the technology is not yet approved (the test's performance in the two settings is unknown) and patients will receive the current standard of care in terms of diagnostic testing.
- The recruitment strategy is not discussed in great detail other than stating that it will take advantage of the TAIMA TB project (which will be going door to door to offer screening) and that the number of patients recruited to their clinics should be sufficient. Will case finding through the TAIMA TB project influence the test performance (lower prevalence of active TB compared to opportunistic screening of symptomatic cases coming to their health practitioner).
- Strategies to protect the blinding of clinicians are not discussed. Will the test results be encrypted? How will they be transmitted to the study centre?
- The study is not a randomized trial which would be the ideal study design to assess the impact of the test on clinical outcomes; however an RCT would not allow the investigators to assess the characteristics of the test (sensitivity, specificity etc) and it is not approved by Health Canada for clinical use so each individual needs to undergo the standard diagnostic test.
- Individuals are to have both tests done on the same sputum sample - is there a possibility of only having enough sputum for one test in which case which would it be?
- Will the Xpert MTB/RIF test be repeated on a subsequent sample if the first is coded as nondiagnostic?

As with everything else, you get better at grant writing with time!



Thank you!!

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 - Kiran Chawla
- 