FACULTY OF GRADUATE STUDIES

NSERC Doctoral Scholarship
Student Workshop

Dr. Lisa Hughes, Assoc. Dean FGS
Leigh Conroy, Killam Scholar, Medical Physics
Kyle Wilson, Vanier & Killam Scholar, Biological Sciences

Thursday, September 15, 2016
Process-committee, feedback and mentoring

General tips for application prep.
Dr. Lisa Hughes, Assoc. Dean, Faculty of Graduate Studies

Perspectives from UCalgary Graduate Leaders
Leigh Conroy, Killam Scholar, Medical Physics
Kyle Wilson, Vanier & Killam Scholar, Biological Sciences

Graduate Leaders Circle Info
Scholarship Cafes Info
(You will have an opportunity to sign up for a Cafe IN PERSON at the end of the workshop)

Question period
Graduate Scholarship Officer:
   — Erin O’Toole (erin.otoole@ucalgary.ca) – NSERC
Applying and Eligibility


- University of Calgary information and deadlines: http://grad.ucalgary.ca/awards/tricouncil
A complete application consists of:

- Application details (form pages)
  - Academic background, experience, awards
- Outline of proposed research
- Contributions and Statements (2 pages)
  - Contributions to research and development
  - Most significant contributions
  - Applicant’s statement: research experience, relevant activities, special circumstances
- Transcripts
- Two referee assessments
- You DO NOT need a Canadian Common CV (CCV) for NSERC Doctoral applications
If you are applying through the University of Calgary, on the NSERC application, request the University Designate (Erin O’Toole, erin.otoole@ucalgary.ca) to upload copies of your transcripts to your application.

Send an email to gsaward@ucalgary.ca indicating ‘NSERC_Doctoral transcripts_your last name’ in the subject line.

In the body of the email, include your full name, University of Calgary student ID number and a list of all transcripts from every post-secondary institution you have attended. Ensure the University has your most recent and complete transcripts.

**Deadline to request is October 7, 4:30pm.**
Applications are submitted electronically through the NSERC Online Services Portal.

NSERC Doctoral Deadline: October 14, 2016
Tricouncil doctoral awards will eventually be harmonized (likely in either 2019 or 2020). The current NSERC weightings are:

<table>
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<tr>
<th>Selection Criteria Weightings</th>
<th>CGS D/PGS D (percent)</th>
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<tr>
<td>Academic excellence</td>
<td>30</td>
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<tr>
<td>Research ability or potential</td>
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<td>Communication, interpersonal, and leadership abilities</td>
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Our internal Graduate Awards Competition uses these criteria at weightings of 40:40:20 for both Masters and Doctoral.
Eligibility of Proposed Research and Programs

- Research must be part of an overall research program in a field that NSERC supports
- Research whose major challenges lie in NSE
- Research that advances NSE
  - Research that uses NSE methodologies and tools are not automatically eligible

- Not sure which Tri-Council you fall into? **Ask them!**
NSERC doctoral applicants forwarded to the national level will be *automatically* considered for QEII scholarships through the Faculty of Graduate Studies based on ranking in the university competition (annual value of $15,000)

Your program also receives a quota of QEII's to distribute in addition to any success in the Tri-Council competition.

*Apply to the Tri-Council and you have two chances at QEII awards, otherwise only one.*
What do you need to submit?

- Reference letters (x2)
- Research Proposal (1 page)
- Contributions & Statements (2 pages)
  - Contributions List
  - Most significant Contributions (x3)
  - Applicant Statement
    - Research Abilities
    - Relevant Experience
    - Special Circumstances
- Transcripts
- Awards list (up to 10)
## Selection Criteria

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<td>70</td>
<td>30</td>
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Academic Excellence (30%)

- **Academic record**
  - Transcripts: type of program, courses taken, course load, relative standing.
    - Note: the past 2 years are used for eligibility, but they may look back as far as 1st year undergrad.
  - References: academic potential, relative standing.

- **Scholarships and awards held**
  - Application form (Awards), reference letters.

- **Duration of previous studies**
  - If this is a potential weakness in your application you may address it in exceptional circumstances; and/or ask a referee to mention it in their letter.
Awards:

- If you have more than 10, choose carefully.

- Choose awards that are more impactful, rather than just by dollar value.

- For example: A federal travel award for $500 is better than a program travel award for $1500.
Research Potential: 50%

- Quality of contributions to research and development
- Relevance of work experience and academic training to field of proposed research
- Significance, feasibility, and merit of proposed research, and justification for location of tenure
- Ability to think critically
- Ability to apply skills and knowledge
- Judgment
- Originality
- Initiative and autonomy
- Enthusiasm for research
- Determination and ability to complete projects within an appropriate period of time
This portion is worth 50%, and comes almost entirely from three sections of the application:

1. Research Proposal
2. Contributions and Statements
3. Reference Letters (i.e. Reports on Applicant)

More about those later...
Communication, interpersonal, and leadership: 20%

- The ability or potential to communicate scientific concepts clearly and logically in written and oral formats. For example, this could include:
  - Quality of the application's presentation
  - Participation in preparing publications
  - Awards for oral presentations or papers

- Professional and relevant extracurricular interactions and collaborations. For example, this could include:
  - Mentoring, teaching
  - Supervisory experience
  - Project management
  - Chairing committees, organizing conferences and meetings
  - Elected positions held
What is “leadership”? 

- **Personal achievement:**
  - professional involvement in dance, arts, music, etc.;
  - significant artistic achievement;
  - recognized athletic achievement, especially in a leadership role;
  - entrepreneurial achievement (startup company); and/or
  - foreign travel and study.

- **Involvement in academic life:**
  - mentoring/teaching;
  - supervisory experience;
  - Involvement in student government and in the university community, including committees, teams, senate, boards, ethics committees, etc.;
  - project management;
  - roles in professional societies; and/or
  - organization of conferences and meetings.

- **Volunteerism/community outreach:**
  - community involvement in charity or not-for-profit organizations.

- **Civic engagement:**
  - parliamentary page positions and internships;
  - political activity; and/or
  - elected positions.
Demonstrating Research Potential, Communication & Leadership

- These account for 70% of the selection criteria
- Where do they come from?
  - Research Proposal
  - Contributions Statement
  - Reference Letters
Rule 1: Keep it simple! Reviewers may not be experts in your field, so write for a broad audience. Jargon in your field does not make you look like an expert, it says you can’t communicate outside your field. Minimize acronyms.

Suggestion: Keep intro very general and easy to understand, add SOME highly technical terms to the methods to make your project seem state-of-the-art (but be sure to explain them), and then bring everything back to general terms for your expected results/significance section. Think newspaper article style.
INTRO:
Oxygen deficient tumours are more aggressive and more resistant to conventional cancer treatments such as radiation therapy and chemotherapy than well-oxygenated tumours. A key aim in current cancer research is a better understanding of the relationship between tumour oxygenation, tumour vasculature, and treatment response. Pre-clinical studies of these effects could help guide clinical therapies and improve cancer treatments.

HYPOTHESIS/GOAL:
I propose to design, build, and implement a multimodal optical coherence tomography system capable of visualizing three-dimensional (3D) vascular structure, flow and oxygen saturation ($sO_2$) in vivo.

METHODS & AIMS:
The 1st aim will be the design and construction of a SOCT system...
The 2nd aim will be validation of the SOCT system for in vivo $sO_2$ measurements...
In the 3rd aim, I will design of a minimally-invasive interstitial needle probe...
In the 4th and final aim I will test the resultant technology platform in vivo for radiobiological monitoring...

CONCLUSION:
The expected impact of this project is two-fold: it will extend the in vivo capabilities of OCT to depth-resolved $sO_2$ imaging, and it will yield a means to study the radiobiological effects of ionizing radiation. The knowledge gained from this research may be used to improve and individualize radiation therapy treatments.
Rule 2: Make it visually appealing. The last thing reviewers want to see is a massive block of text. Separate sections, underline key points. Less is more. Do not make it hard to find important points.

Rule 3: Impact of your work is more important than impact of your research field. Make sure to emphasize what your project will do.
Rule 4: Explain your role in the project and envision what your next moves might be if everything works perfectly. Convince the reviewer that the project is feasible.

Suggestion: Provide evidence for why your training environment is going to help you excel in the program and link to national/university priority areas
Contributions & Statements

1. Contributions to Research & Development
   - List your papers/abstracts etc.

2. Most Significant Contributions (choose 3)

3. Applicant Statement
   - Research experience
   - Relevant activities
   - Special circumstances
How to Choose Most Significant Contributions

- They do not need to be all publications
- Choose things that have had the most impact on yourself as a researcher, or on the greater community
- Don’t double-up. Ex. A talk and a paper for one research project could be combined into one
- Explain why you are choosing each item – why was it significant? Did it demonstrate a specific criteria of the award?
EXAMPLE


In this randomized experiment, I studied the influence of wedged footwear on knee joint mechanics during running by altering wedge angle across 7 different footwear conditions. I found that as wedge angle shifted from a lateral wedge to a medial wedge across the 7 conditions, knee angular impulses (a variable commonly associated with the development and progression of various musculoskeletal conditions) significantly increased. This is an important finding because it highlights that the current practice of prescribing medial wedge footwear to treat running injuries should be questioned, and formed the framework for my PhD project. I was responsible for study design, subject recruitment, testing, analysis, and preparation of the manuscript and I collaborated with a podiatrist and adidas International to design the footwear used in the study.
Don’t just say what you did….

- Describe the skills you have gained and how that relates to your proposed project

- Describe the impact that you had on research and the community

- Suggestion: describe things chronologically – easier for the reviewer to follow
Summary of Previous Project

If you did a Master’s or UG project in the same group as your PhD, **DO NOT** simply use this as extra space for the Research Proposal. The committee wants to see you write concisely. Also, you lose the opportunity to show you can describe another field if you have another experience.

Special Circumstances

Only use this space for exceptional circumstances that have delayed your study (family care duties, child rearing, illness, ..) **DO NOT** use this for things like: lack of access to a journal, shipping delays, broken minor equipment, supervisor on sabbatical, etc.
Reference Letters

- Keep the criteria in mind and choose those who can **meaningfully** and **specifically** address them.
- Since NSERC is a research award, it is best to have researchers write your letters.
- This section is very important for your score: ensure that your referees know this and write their letter accordingly.
- Have the letters complement your application.
- Give your referees some time (2 weeks minimum).
Do not just ask someone for a letter. Be proactive and make it easy for your referee to write a good letter:

• Provide the review criteria.
• Provide transcripts and a CV: highlight areas you wish to have covered in the letter.
• Meet to discuss: what criteria do you think should address?
• Be strategic in choosing your referees in terms of covering the criteria.
- Address the criteria!! Characteristics and abilities are mostly assessed from reference letters. If a student has a straight A+ transcript and a page of awards, don’t devote 90% of the letter to talking about academic excellence.

- Leadership is not just extracurriculars, address the personality traits and comment on where you think this student will end up in their career.

- **Be specific.** Back a point up with an anecdote.

- Address your plans for development of this student. What opportunities will you/the program provide?
“Jim was involved in my lab as a 4\textsuperscript{th} year student last year where he assisted in mentoring a 2nd year student. Together, they worked on the development of a new bioreactor.”
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or

“Jim was involved in my lab as 4\textsuperscript{th} year student last year, where he showed outstanding leadership as a mentor to a 2nd year student who was new to research. He was easily able to communicate advanced topics to this student, and showed great organization in his mentoring plan, as he met with the student weekly to discuss their progress. Together, they undertook a very ambitious project, where they worked on the development of a new bioreactor.”
• **Step 1: University Evaluation**
  
  • Applicants are ranked by FGS Committee.
  
  • This committee will have people who are peripheral or even outside your discipline – will they understand your research and its **impact**?
  
  • The University has a quota that is forwarded to Ottawa from this point.
• **Step 2: NSERC Evaluation in Ottawa**
  • Committee of researchers from across Canada that is in your sub-discipline.
  • Each application reviewed by 2 committee members and a third is brought in if necessary based on agreement of the first members scores.
  • There is no discussion so the application must stand on its own.
Federal NSERC Doctoral Committees

- Civil and mechanical engineering
- Chemical, biomedical and materials science engineering
- Electrical engineering
- Computing sciences
- Mathematical sciences
- Physics and astronomy
- Chemistry
- Earth sciences
- Evolution and ecology
- Cellular and molecular biology
- Plant and animal biology
- Psychology
Top things the adjudicator wants to know

- What is this person going to do?
- Is the research feasible?
- What will be the outcomes and their **impact**? Is it new? Who will care?
- Do I have a picture of who this person is?
- Is this a good investment?

**Scan Test:**

- Have someone outside your field read you application *quickly* (scan it, ~ 5 minutes).
- What major point(s) do they take away from it? Is it what you wanted them to?
Top Reasons Good Students Don’t Get Funded

- A generic letter of reference. The letter is positive but gives no specifics and does not address criteria.
- Content, context and/or impact of research not clearly stated.
- Not following instructions (or stretching rules).
- Frustrating evaluators by making material hard to find.
- Diluting genuinely important/impressive material by describing generic material at length.
- Not addressing possible weaknesses in the application.
Opportunity to receive one-on-one feedback from successful Vanier and Killam scholarship applicants (members of the Graduate Leaders Circle (GLC))

Sign up for 20 min. session
  – Writing specialist
  – Scholarship specialist
CAFÉ DATES

- 13 September (Tues), 1:00 to 4:30pm
- 30 September (Fri), 1:00 to 4:30pm
- 12 October (Wed), 1:00 to 4:30pm

All Cafés will take place in MT 215.

To signup:
Contact: gradlead@ucalgary.ca
Connect and learn more about other workshops!

ucalgary.ca/mygradskills/workshops

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mygradskills@ucalgary.ca