“A Vision for Innovation in Alberta”
Government of Alberta Grant

Year Four Report – submitted by the University of Alberta, July 2019

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# Table of Contents

Executive Summary .................................................................................................................. 1  
Highlights of Year Four ......................................................................................................... 1  
Introduction .......................................................................................................................... 2  
The Graduate Student Internship Program (GSIP) ............................................................... 2  
  Connecting Employers with Graduate Students ............................................................... 2  
  Performance Indicators and Metrics: Alberta Employers Benefiting from Graduate Student Research, Innovation and Problem Solving Skills .................. 3  
  Evidence of Commercialization, Product Realization and Innovation ......................... 5  
  Significant Program Impact on Graduate Student Skills Development and Positive Employment Outcomes ................................................................. 6  
Professional Skills ................................................................................................................ 11  
  Focused Activity Informed by Data Collection ................................................................ 13  
Entrepreneurship and Mentorship ..................................................................................... 15  
PhDiversification: Outcomes Achieved ............................................................................... 21  
Curricular Change ................................................................................................................ 26  
Conclusion: Sustaining the Momentum .............................................................................. 27  
Appendix 1: Graduate Student Internship Program (GSIP) ................................................ 29  
Appendix 1A: GSIP Employers ........................................................................................... 30  
Appendix 1B: Performance Indicators and Metrics ............................................................ 33  
Appendix 2: Professional Skills .......................................................................................... 34  
Appendix 2A: Invest In Your Future 2018 (Program) ........................................................ 35  
Appendix 2B: PD Days 2018 .............................................................................................. 42  
Appendix 2C: CAGS Award Submission ........................................................................... 53  
Appendix 3: Entrepreneurship and Mentorship ................................................................. 60  
Appendix 3A: Celebrate Mentorship 2019 Posters ............................................................. 61  
Appendix 3B: Entrepreneurial Mindset and Innovation Course Survey .......................... 65  
Appendix 3C: Innovator’s Handbook .................................................................................. 68  
Appendix 3D: PhD Flash Team: Livable Economy .............................................................. 121
<table>
<thead>
<tr>
<th>Appendix 4: PhDiversification</th>
<th>127</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix 4A: Influences on PhD Employment</td>
<td>128</td>
</tr>
<tr>
<td>Appendix 4B: PhD Preparation and Outcomes Study</td>
<td>129</td>
</tr>
<tr>
<td>Appendix 5: Curricular Change</td>
<td>141</td>
</tr>
<tr>
<td>Appendix 5A: PhDiversification and Learning Outcomes</td>
<td>142</td>
</tr>
</tbody>
</table>
Executive Summary

The University of Alberta has been collaborating with partners on and off campus to help our 7,600-plus graduate students achieve success and realize their full potential as contributors to the province’s social and economic sectors, which benefits all Albertans.

Funds from the Government of Alberta (GOA) grant “A Vision for Innovation in Alberta: Excellence and Transformative Talent” were invested in four areas to support the graduate student journey: internships, professional skills, entrepreneurship and career mentoring and curricular change.

Alberta employers, innovators, entrepreneurs and students have benefited from the grant-funded initiatives. The Year Four Report provides outcomes and evidence of lessons learned from grant investments and outlines the strategies to sustain momentum.

Highlights of Year Four

- **207 net new** graduate students gained valuable work experience through the Graduate Student Internship Program (GSIP) from April 1, 2018 to March 31, 2019. As of March 31, 2019, the cumulative total of internship positions is 475.

- **24 net new GSIP** positions are fully funded by the employer.

- **83 per cent** of GSIP employers are more likely to hire a graduate student in the future because of their experience with the program.

- **70 net new graduate students** have been matched with career mentors who reflect the diversity of Alberta’s economy.

- The Faculty of Graduate Studies and Research (FGSR) established a cross-campus working group to generate a set of learning outcomes for each of research-based PhD and master’s degrees.

- The U of A has established a quantitative picture of employment outcomes for 85 per cent of the 5,125 PhDs who convocated between 2005 and 2017.

- **26 per cent** of our found PhDs are in tenure track positions and **24 per cent** are in professional positions outside the post-secondary sector. A further **14 per cent** are researchers and scientists outside the post-secondary sector.

- **46 per cent** of our found PhDs are contributing to the economic and social sectors of the province.

- U of A international graduates have contributed to a net brain gain of **831 PhDs** working in the province and across the nation.
Introduction

The University of Alberta has invested grant funds to support graduate students in four areas:

- Internships (based on a wage-subsidy model)
- Professional Skills (with a focus on transferable skills)
- Entrepreneurship and Career Mentoring
- Curricular Change (with an emphasis on doctoral programs)

This report reinforces the overall impact of grant initiatives and describes key learnings within the four areas of grant investment, while identifying strategies to keep the momentum going.

The Graduate Student Internship Program (GSIP)

Connecting Employers with Graduate Students

Since January 2016, the Graduate Student Internship Program (GSIP) has successfully demonstrated the value of hiring a graduate student. GSIP was launched as a wage-subsidy program to reduce the risk to employers of hiring an “unproven” employee. GSIP has become a go-to program for Alberta’s employers, reflecting the full diversity of the province’s economic sectors. GSIP has given and continues to give organizations much-needed access to high-quality talent within a current framework of economic uncertainty and reduced resources.

GOA grant funding has built capacity for the U of A to connect graduate students with more than 170 distinct employers—this has more than doubled since the submission of last year’s interim report—and the employer list includes 19 departments across three levels of government. In addition, graduate students have been hired on campus in non-discipline related positions representing 39 unique employers, which include departments, faculties and service providers. (See Appendix 1A for the complete list of GSIP employers.)

As of March 31, 2019, the cumulative total of internship positions is 475. This cumulative total includes 24 GSIP positions that are fully funded by the employer, 371 graduate students who have completed an internship and 80 graduate students who are currently working. There are an additional 50 positions that started after March 31, 2019, including 26 Sustainability Scholars and three fully funded GSIP positions with Alberta Education. As of May 31, 2019, the cumulative total of GSIP positions is 525, with 49 per cent of those filled by international students. (See Appendix 1B for the program’s pace of growth and the breakdown of graduate student participation across programs and citizenship status.)

This represents 237,902 hours of graduate student contribution to Alberta’s social and economic sectors.

1 The university began a pilot in 2018 to determine the demand for GSIP positions in the absence of a wage subsidy.
2 The Sustainability Scholars GSIP positions
3 This number does not include the total hours of internships fully funded by the employer.
Percentage of placements in each sector based on 525 internship positions created as of May 31, 2019

Employment Sector
- Public (16.4% of positions are with the University of Alberta and 34.9% span across three levels of government)
- Public Health Sector
- Private Sector (includes Finance 3.2%, Industry 9.3%, Agriculture 3.6%, Tech 11.2% and other 3.6%)
- Not-for-Profit

Note: The total of 525 positions includes 27 GSIP positions that were fully funded by the employer.

In addition, a waitlist of 41 employers representing 65 potential net new GSIP positions was generated in anticipation of a GOA response to the university’s proposal for a no-cost grant extension. The U of A is confident the 110 internship positions funded by the no-cost grant extension will be quickly filled, as the demand for the wage-subsidized GSIP positions is exceeding supply.

Performance Indicators and Metrics: Alberta Employers Benefiting from Graduate Student Research, Innovation and Problem Solving Skills

<table>
<thead>
<tr>
<th>Employers who responded to the post-program survey</th>
<th>n=112, 60% response rate of 187 surveys distributed</th>
</tr>
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<tbody>
<tr>
<td>Percentage of employers who replied that the GSIP interns filled short-term staffing needs moderately, considerably or a great deal</td>
<td>90%</td>
</tr>
<tr>
<td>Percentage of employers who were very satisfied or moderately satisfied with the intern</td>
<td>96% (70% very satisfied, 26% moderately satisfied)</td>
</tr>
<tr>
<td>Percentage of employers who would consider hiring the intern again</td>
<td>78%</td>
</tr>
<tr>
<td>Percentage of employers who said the GSIP helped develop talent for the future of their organization [moderately, considerably or a great deal]</td>
<td>76%</td>
</tr>
<tr>
<td>Percentage of employers who reported they will hire people with graduate degrees as a result of participating in GSIP</td>
<td>63% very likely 25% moderately likely</td>
</tr>
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</table>

All GSIP employers (direct supervisors of graduate students) are surveyed at the end of each internship position and 76 per cent said GSIP helped develop talent for the future of their organization. This number increases to 86 per cent if we include those who believed the program “slightly” helped develop talent.
EMPLOYER FEEDBACK from the Comment Section of the Post-Internship Survey

The intern came with a very innovative outlook. He was very skilled at handling large data sets and making them accessible to our team. **FRANKLY, HE PROVIDED KEY INSIGHTS TO HELP WITH OUR STRATEGIC DECISIONS.**

**The quality of work was exceptional.**

**This funding is key to helping graduates connect with industry and reality.** It shows people without advanced degrees that people with them are easy to connect with... Keep going with this funding, because it is helping Alberta's economy expand and mature, slow and steady.

The two students we hired through the GSIP program were absolutely exceptional and independent thinkers who brought in some very unique ideas for how to develop our wellness services on this campus. They were very competent and excited about their work. If I had the funding to sustain both of their roles, **I would hire them permanently in a heartbeat.**

She is a great contributor, very intelligent with excellent analytical and communication skills. She is a great addition to our team—we hired her into a new role after her internship ended.

Our intern provided research capacity into a particular area of study that we were unable to undertake on our own. Their work has served to inform our program and on a level that is more relevant to our clients and stakeholders.

**BECAUSE OF HIS EXCELLENT SKILL SET AND WORK, WE WERE able to achieve even more project work than was anticipated** during his internship. He exceeded our expectations overall and worked at a junior professional level. In addition, he had an excellent attitude and was a great addition to our team.

I believe that the GSIP is an excellent program that enables employers to work with students for specific initiatives that are not within the capacity of their current staffing situation. Once onboarded and working with the organization, it is easier to bring them on full time so there is a benefit for both the student and the employer.
Evidence of Commercialization,
Product Realization and Innovation

Last year we reported growing evidence that graduate student participation in GSIP was creating a ripple effect in the province’s innovation and entrepreneurial ecosystems. This trend continued throughout the current reporting period.

Medo.ai is an Edmonton startup that has used artificial intelligence and cloud computing to develop software that eliminates the need for an expert to perform or analyze an ultrasound scan. This company has hired eight graduate students through GSIP and has expressed an interest in hiring more. The company’s research and development lead says these interns have dramatically accelerated the startup’s progress.

“The graduate students gave us-top notch product development. GSIP bridges the gap between the research domain and getting to market.”

~ Abhilash Rakkunedeth, research and development lead, Medo.ai

Medo.ai is one of 30 startups that have benefited or are benefiting from hiring a graduate student, and FGSR anticipates the demand for GSIP students from the tech sector will continue to grow. The following is a short list of some of these startups. They show this sector’s unique and diverse innovation needs, all of which GSIP is meeting.

- Trioova (a virtual health-care group, designed for patients, caregivers and family, to simplify access to health-care services)
- Discover Coding (coding classes for children)
- Roshan Water Solutions (solutions for safe and clean water while protecting the environment)
- Maapera (environmental service company improving soil analysis and remediation activities)
- Copperstone Technologies (autonomous amphibious robots and wireless sensor networks for environmental monitoring)
- Preza Technologies (building advanced sensors for underserved markets)
- AltaML (conceptualizing, developing and commercializing ML software products)
- Fitset (using one membership to connect Edmontonians with 86 fitness studios)
- vrCAVE (virtual reality experiences with a strong social element)
- Clark Ecoscience and Sustainability (maximizing ecosystem services through native ecosystem conservation, restoration and rebuilding projects)
- Engineering Beyond Inc. (machine vision and automation)
Significant Program Impact on Graduate Student Skills Development and Positive Employment Outcomes

Program evaluation results tell us that graduate student participation in meaningful, paid work experiences is having a significant impact on mental health indicators (confidence and optimism), skills development (new skills and identification of transferable skills) and positive employment outcomes (many internships extending into continued or permanent opportunities).

All GSIP students are surveyed three times: at the start of their internship, at the conclusion of their work experience and then six months later. The following are survey results for graduate students whose internship ended between fall 2018 and spring 2019.

<table>
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<tr>
<th>GSIP student survey responses after completing their internship</th>
<th>n=64, 57% response rate of 112 surveys distributed</th>
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<tr>
<td>Percentage of students who believe that participating in GSIP strengthened their current skill set (moderately, considerably or a great deal)</td>
<td>95%</td>
</tr>
<tr>
<td>Percentage of students who felt they gained experience in an area of interest to them (moderately, considerably or a great deal)</td>
<td>95%</td>
</tr>
<tr>
<td>Percentage of students who felt they acquired new skills (moderately, considerably or a great deal)</td>
<td>95%</td>
</tr>
<tr>
<td>Percentage of students who said they learned about their work-related preferences and interests (moderately, considerably or a great deal)</td>
<td>95%</td>
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- 97 per cent of survey respondents said they experienced an increase in confidence about future work searches and career prospects as a result of participating in GSIP.
- 89 per cent of survey respondents said they had become more aware of the potential career options outside of academia.
- 89 per cent of survey respondents either strongly or moderately agree with the statement “I am optimistic about my career.” Survey results prior to the start of the internship garnered a 67-per-cent response rate.

86.5 per cent of students who replied to the six-month post-program survey (n=165, 55.2-per-cent response rate) said the GSIP experience helped them secure their current employment.
This internship largely increased my confidence in my ability to work as a scientist in a team and to communicate my ideas effectively. I was able to expand my network and better understand the many ways that I can pursue my career in science.

This program was extremely helpful for regaining my confidence on technical aspects while I was somehow struggling in my studies. The positive feedback expressed by my superiors at work kept me motivated and gave me confidence both at my internship tasks and my academic tasks. I AM SO GRATEFUL FOR HAVING THIS OPPORTUNITY.

Since completing the internship, my knowledge of what I can do with my degrees has expanded immensely. Prior to my internship, I felt I had really lost my way—I had initially planned on a career in academia, but considerations involving the job market made me reconsider. The Institute of Public Administration Canada (IPAC) internship program exposed me to both non-profit and government work. I AM CURRENTLY IN A PERMANENT POLICY ANALYST ROLE WITH THE PUBLIC SERVICE COMMISSION IN THE GOVERNMENT OF ALBERTA.
GSIP’s impact can also be felt in ways that are not captured by the program evaluation surveys completed by employers and graduate students. Through GSIP presentations to graduate students and current and potential employers, as well as through numerous discussions with current participants, FGSR has discovered the program has the potential to be a game changer in the following ways:

- **GSIP has the potential to support an Alberta brain-gain strategy.** GSIP is already contributing employment opportunities to international PhD and masters students staying in Canada. Other international student interns have repeatedly and consistently voiced their appreciation for gaining valuable Canadian work experience through the program. They express confidence that this experience will increase their ability to remain in Alberta and Canada post-graduation.

- **GSIP is contributing to talent growth in Alberta.** The program’s career adviser has spoken with multiple prospective students and families, including some international students, who say GSIP influenced their decision to move to Alberta and enrol in a graduate program at the U of A.

- **GSIP supports talent retention and expansion of the province’s entrepreneurial ecosystem.** Over the past year, there has been a measurable uptake of graduate student hiring for positions in machine learning and artificial intelligence. GSIP is giving employers and graduate students alike early exposure to the province’s active entrepreneurial and innovative ecosystem, which is laying the groundwork for employment decisions post-graduation. We are showcasing the city and the province as viable alternatives to the pursuit of careers in Silicon Valley. Graduate students are staying in Edmonton to take these internships, which are turning into permanent employment.

- **The program has also illuminated to students the vast array of employment opportunities that exist in the province.** This has boosted graduate student confidence in their ability to secure meaningful employment post-graduation.

- **GSIP is connecting Alberta’s employers with U of A researchers and innovators.** Many GSIP employers have found GSIP to be their portal into the campus community. As one Epcor manager said, “GSIP has given us a window into what graduate students are learning and what research is happening on campus. This sets us up for joint initiatives with the U of A and it gives us access to future hires.”
Key Learnings:

- **The wage subsidy model** reduces the risk involved with engaging in a labour population that many employers view as untested. For others, GOA grant funds allowed them to “sell” the internship program within their respective organizations against a backdrop of economic uncertainty. There is no doubt employers representing the province’s economic and social sectors benefited from the GOA grant, and the continuation of this model would maintain the size and growth of the program. The wage subsidy also acted as an incentive, enticing employers to inquire about the program, and allowed word-of-mouth to be the primary method of promotion. Very little effort was required in program promotion before employers were reaching out daily to the U of A’s Career Centre.

- For many employers, the value of GSIP goes well beyond the wage subsidy. Many companies and organizations have hired multiple graduate students over subsequent internship periods because of the **significant contributions made by interns**. The U of A pilot-within-a-pilot (securing fully employer-funded GSIP positions) speaks to this impact, as does the number of interns we see being hired on permanently, and those whose contracts were extended beyond the end of the 640-hour internship.

- **GSIP promotes and increases career management skills.** Many graduate students are benefiting from the additional resumé and interview support they receive during one-on-one meetings with the program’s career adviser. Since July 1, 2018, over 75 graduate students have improved their application, resumé writing and interviewing skills. This skill development and support has served them well in securing GSIP positions and equipped them with the right skills to pursue **future employment opportunities**. This individualized support has also contributed to graduate students’ confidence, optimism and mental health.

- **Critical mass** is a key ingredient for the success of a graduate student internship program. Program staff needs to be held at a minimum of two people to create and support 150 high quality internship opportunities annually. Many technology startups, health-innovation companies and small to medium-size businesses lack the corporate infrastructure to initiate contact with the U of A and GSIP. The addition of a third GSIP program adviser would result in more connections with these organizations by shifting the onus of the initial program contact from the organization to the U of A. A three-person team would also build additional capacity for GSIP to deepen relationships with employers, which is critical for the program’s ability to respond to and anticipate changing industry needs.

- **GSIP has been purposefully designed to be flexible** to meet the unique needs of the university’s diverse student population, who are enrolled in over 500 graduate programs. This flexibility has supported a graduate student participation rate that fully reflects the university’s graduate student population. In addition, the GSIP adviser has been able to collaborate with five U of A departments to create internship opportunities specific to graduate students in these program streams. The departments of computing science, public health, urban planning, math and statistical sciences have established, or are creating, work experience/internship components or requirements within their graduate degree program streams. These successful collaborations have the potential to positively impact the number of graduate student programs that incorporate work-experience components into their curriculum.5

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5 Dr. Michael Li with the Department of Math and Statistical Sciences has expressed his appreciation for the support his students have received from the GSIP adviser. He has also accessed this support in anticipation of the approval of a new graduate program, which includes a formal work-experience component. Li says he believes many “other graduate degree programs on campus could benefit from GSIP” by leveraging the program’s resources, processes and employer relationships.
• The flexibility of GSIP has also resulted in a number of graduate student-driven employment opportunities where the student has been instrumental in identifying a position within an organization or starting their own entrepreneurial enterprise. This self-starter approach has led to increased student confidence in their personal abilities to forge career connections and paths. It has also expanded the program’s reach into economic and social sectors that were yet to be explored by GSIP’s advisers.

Strategies to Maintain Momentum

Together with the university’s Career Centre, FGSR will continue to develop partnerships on and off campus with the eye to creating cohort internship opportunities. The strategy of having one employer commit to a number of graduate students has proven to be an efficient and effective way to expand the program. In addition, FGSR will hire a consultant to develop a business case to grow the pool of employers who are willing to hire a graduate student intern without a wage subsidy.
Professional Skills

Professional development for graduate students has been a university priority for over a decade and this track record speaks to why FGSR’s institution-wide professional development skills program is the longest running in Canada.

Over the past three grant-reporting periods, U of A has leveraged the timing of the introduction of the Graduate Student Professional Development (PD) Requirement and the investment of funds for the non-disciplinary training in the skills and competencies required for success in the workplace as recognized by employers.7

In this reporting period (April 1, 2018 to March 31, 2019), FGSR has focused on elevating the net new offerings developed with the support of grant funds while listening to feedback from students and employers about how to fine-tune those offerings while closing programming gaps.

Highlights of Net New PD Activities

- 207 graduate students actively participated in a two-day career exploration conference called Invest in Your Future 2018. This represents a 30-per-cent increase in attendance from the inaugural conference that was held in November 2016. The cumulative attendance for the three conferences supported by GOA grant funds is 551. (See Appendix 2A for the symposium program and a breakdown of student participation by graduate program and citizenship status.)

- In collaboration with our Comprehensive Academic and Research University (CARU) partners and with the Campus Alberta Neuroscience Network, 30 non-neuroscience graduate students immersed themselves in an interdisciplinary learning environment at the Banff Centre for the Arts. Topics covered in three stand-alone workshops focused on increasing student confidence and skill in navigating collaborative communication, leadership roles and career transitions. Since fall 2017, a cumulative total of 60 non-neuroscience graduate students have benefited from these high quality, high-impact two-day retreat-style workshops.

- 389 net new MyGradSkills courses were completed in 2018-2019 after FGSR transferred three of the most relevant online courses from the MyGradSkills platform to the university’s online learning management system [eClass). This represents a three-fold increase from 2015-2016, despite the reduction in the number of MyGradSkills offerings. The cumulative total of MyGradSkills courses completed by U of A graduate students and post-doctoral fellows since spring 2015 is 2,191.

- A total of 430 graduate students participated in Professional Development Days, May 2018 (180) and 2019 (250). Many of the students attended more than one workshop, which translates into 914 seats filled over the course of the five days spanning the two iterations. (See Appendix 2B for workshop details and a breakdown of participation numbers.)

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6 Since fall 2016, all graduate students enrolled at the University of Alberta are required to complete an Individual Development Plan (IDP) and eight hours of professional development activity. A professional development activity fulfills the U of A PD requirement if it contributes to the acquisition of skills, knowledge or mindset and includes all three components: comprises formal training for active learning with an assessment component; falls outside of research methods training, capstone project, thesis or equivalent, and required practicum; supports the career goals and or seven competencies identified in the IDP.

7 A Vision for Innovation in Alberta: Excellence and Transformative Talent [Addendum, p.3]

8 With the support of GOA grant funds, FGSR signed a contract with MyGradSkills.ca in May 2015 to give graduate students and post-doctoral fellows free access to 18 online modules. In the spring of 2018, MyGradSkills.ca was decommissioned by the Ontario Consortium for Graduate Professional Skills due to a lack of operating funds.
STUDENT FEEDBACK (Surveys Distributed Post-Event)

“Keynotes and workshops brought up new insights.”
-Participant, Invest in Your Future 2018

“The workshop allowed me to test my current branding strategy on people from different faculties.”
-Workshop participant, Professional Development Days, May 2018

“It was an amazing experience and opportunity to grow my network. I learned a lot from Masters Alumni panel and keynote speakers. Even the rapid résumé and LinkedIn profile review was great!”
-Conference participant, Invest in Your Future 2018

“The activities in this session were really good. We talked in front of other grad students and it was nice to see that we share the same fears when we present in public.”
-Workshop participant, PD Days, May 2018

“This is the first time that I’ve been in a structured environment doing this work. It was mentally exhausting. I was surprised at how hard it was. But the deliverables I now have—my purpose and story—are invaluable in both my personal self-discovery and my professional growth.”
-Participant, Campus Alberta Neuroscience workshop/retreat on leadership, Banff, January 2019

“I thought it was interesting and informative that there can be more than one career path that one can take and that it’s OK to look for different paths other than academia.”
-Workshop participant, PD Days, May 2019

“I really now understand and am aware about my impostor syndrome and with this workshop I have realized that I am really good enough to be where I’m now, and also that all my stories have an important learning for my life and I can use that to show my strengths in an interview or in my personal relationship.”
-Participant, Campus Alberta Neuroscience workshop/retreat, Designing your Future, Banff, spring 2018
Focused Activity Informed by Data Collection

During the summer of 2018, FGSR conducted an environmental scan (escan) of all 73 departments representing the 18 faculties, to create a snapshot of professional development offerings on campus. This data was gathered through a survey tool and in-person meetings. It was used to inform the second area of grant investment: the creation of net new opportunities for the non-disciplinary training in the skills and competencies required for success in the workplace as recognized by employers.9

Two graduate student researchers were hired to execute the escan with the intent of identifying the following:

- the average number of graduate student PD workshops/courses/initiatives offered at the department or faculty level
- the number of PD workshops/courses/initiatives offered at the department or faculty level that meet the PD requirement
- the number of PD offerings/workshops/initiatives offered at the department or faculty level that support the seven competencies as identified in the Individual Development Plan (IDP)10

Key Findings of the Environmental Scan

- 60 departments offer at least one PD workshop/course or initiative targeting graduate students.11
- Of the 48 departments who responded to either the survey or an in-person meeting (which represents a 66-per-cent response rate), 40 per cent of their PD offerings fulfil the PD requirement, and a further 24 per cent fulfil the Academic Integrity and Ethics requirement for degree completion.
- In-person workshops dominate the PD learning landscape (40 per cent) with courses following at 25 per cent.
- The skills/competencies most likely to be addressed by PD offerings at the department or faculty level include communication (specifically presentations), time management and critical problem solving.
- Larger departments and faculties have developed full PD programs with targeted and mandatory activities for their graduate students.
- FGSR is in a unique position to support smaller departments and faculties and lead the way in developing PD content that specifically targets innovation, creativity and entrepreneurial skills development.
- There is a noticeable gap in online PD offerings that have the potential to address time pressures identified by graduate students through student surveys.

9 A Vision for Innovation in Alberta: Excellence and Transformative Talent (addendum, p. 3)
10 The seven competencies as outlined in the IDP are creativity, communication, confidence, scholarship, ethical responsibility, critical thinking and collaboration. These seven skills and competencies were identified by a University of Alberta committee struck in 2013, which was led by Steven Dew (current provost and vice-president academic, U of A)
11 Escan data was supplemented with information garnered through department and faculty websites.
Formal (student feedback surveys) and informal comments made to the PD team reinforce the fact that the PD requirement is supporting graduate students as they navigate their academic journey within the context of fulfilling their full potential upon convocation. In a recent survey of the largest population of our graduate students—the faculties of Arts, Engineering, Science and Medicine & Dentistry—the following results validate the strength of this degree requirement (n=868, represents a 17.5-per-cent response rate):

- 75 per cent of graduate students reported never having completed an IDP before being introduced to the PD requirement. IDPs are quickly becoming the national career development tool of choice to increase career success. Recent examples include the adaptation of this career planning tool by the Canadian Institute of Health Research and the University of Toronto.

- More than 55 per cent of graduate students reported that they had improved their communication skills, which they had identified through the IDP process as the skills they most needed to develop.

- 77.3 per cent of survey respondents agreed they had enough access to PD sessions related to their specific discipline.

**Key Learnings**

Graduate students have benefited directly from GOA grant funds through the expansion of targeted PD programming, and indirectly through the data-gathering efforts supported by grant funds. Data collection and program evaluation have given FGSR valuable information that helps us deploy resources for the greatest impact and close programming gaps.

- The introduction of a campus-wide PD degree requirement (fall 2016) coincided with the timing of GOA grant funds. This timing accelerated the adoption of graduate student professional development activity by students, supervisors, senior leadership and administrators. In turn, this has increased PD participation rates by graduate students while empowering faculties and departments to create more high-quality, discipline-specific PD activities and programs.

- Since the launch of the GOA grant, the faculty’s PD strategy has been influenced by formal student feedback, data analysis, employer insights and input from on-campus and off-campus advisory groups. This has resulted in content-rich, interdisciplinary, interactive and relevant PD offerings that have had a positive impact on the graduate student learning experience.

- FGSR’s PD team has strategically hired workshop and conference presenters with graduate degrees to reinforce for students the connection between academic programs and the diversity of career options available that include industry, public and not-for-profit sectors.

- Graduate students seek interdisciplinarity because they want to learn from students outside of their own disciplines. As a central unit, FGSR is in a unique position to support cognitive diversity—a recognized ingredient of creativity, entrepreneurial thinking and innovation—through its ability to hold PD sessions with participants reflecting a range of research areas and programs.

- **Online workshops and courses have an inherent appeal** to graduate students as they help them deal with the reality of conflicting priorities. This is evidenced by the 47-per-cent growth rate of online registrants for the IDP introductory course, which is offered online and in person. Of the 940 graduate students who have registered for the online version, 347 have completed it.

12 See Appendix 2C for the submission application of the PD requirement for the 2019 Graduate Student Experience Award, Canadian Association for Graduate Studies (CAGS). CAGS will present FGSR with the award at its annual conference this November in Halifax, Nova Scotia.

13 Mitacs also reports significant numbers for its online PD courses, and over the past academic year, 314 “unique” U of A graduate students have enrolled in these offerings.
Entrepreneurship and Mentorship

The Graduate Student Career Mentoring Program

Since the hire of the graduate student career mentoring co-ordinator and the launch of U of A’s expanded career mentoring program in August 2016, and since the last reporting period, **70 net new graduate students** have been matched with career mentors who reflect the diversity of Alberta’s economy. This brings the cumulative total to **215 matches**. In the absence of grant funds, this total would have been closer to 30.

The U of A Career Mentoring Program has served undergraduate, post-doctoral fellows and graduate students since its inception in 2008. With the support of GOA grant funds and in partnership with the Career Centre, FGSR expanded the program to better serve the graduate student demand for this high-impact program. The hire of a career mentoring co-ordinator (net new position) increased the program’s capacity to focus on the career needs of graduate students. We also revised the program structure in the following ways to reflect the academic journey of this student population:

- an application process that went from one fall intake to four intakes, mirroring the graduate student program start times (this resulted in a more flexible program)
- the development of a cohort model to foster a community of learners (connects graduate students from different disciplines)
- the shortening of the official mentoring relationship from eight to six months (acknowledges the time constraints faced by graduate students)
- the addition of one-on-one career mentoring meetings with graduate students by the newly hired career education co-ordinator (supports more immediate career mentorship opportunities)

---

14 This additional individualized service resulted in 74 graduate student appointments in 2018-2019.
Performance Indicators and Metrics

Note: Prior to the GOA grant, the Career Mentoring Program supported nine graduate students—four PhDs and five students enrolled in a master’s program—during the 2015-2016 academic year.

Mentor and Mentee Matches: August 2016 to March 31, 2019

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Number of Applications Received</th>
<th>Number of Mentees Interviewed</th>
<th>Number of Mentees Accepted</th>
<th>Number of Net New Matches</th>
<th>Number of Mentees who Completed the Program as of March 31, 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>20</td>
<td>9</td>
<td>9</td>
<td>9 [2]</td>
</tr>
<tr>
<td>2</td>
<td>33</td>
<td>30</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>3</td>
<td>42</td>
<td>30</td>
<td>26</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>4</td>
<td>32</td>
<td>30</td>
<td>26</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>36</td>
<td>30</td>
<td>19</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>6</td>
<td>45</td>
<td>30</td>
<td>22</td>
<td>20 [2 withdrew from the program for personal reasons]</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>34</td>
<td>30</td>
<td>22</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>8</td>
<td>29</td>
<td>25</td>
<td>19</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>9</td>
<td>34</td>
<td>30</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>10</td>
<td>40</td>
<td>37</td>
<td>21</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>11</td>
<td>20</td>
<td>20</td>
<td>13</td>
<td>13</td>
<td>In progress</td>
</tr>
<tr>
<td>12</td>
<td>22</td>
<td>22</td>
<td>19</td>
<td>In progress</td>
<td>In progress</td>
</tr>
<tr>
<td>Totals</td>
<td>387</td>
<td>334</td>
<td>236</td>
<td>215</td>
<td>202</td>
</tr>
</tbody>
</table>

Of the 215 graduate students who were matched:

- 130 (60.5 per cent) were/are enrolled in a master’s program
- 85 (39.5 per cent) were/are enrolled in a PhD program
- 98 (45.5 per cent) were/are international students
- 117 (54.5 per cent) were/are domestic students

15 A smaller number of participants was accepted in the first cohort to allow for the validation of program processes, workflow and mentor-mentee training sessions. Adjustments were made accordingly before the launch of the second cohort.
In May 2019, FGSR celebrated the graduates of the career mentoring program, with 100-plus mentors and mentees in attendance. Many mentees described their relationship with their mentor as life changing and this sentiment was often echoed by mentors. This year’s celebration included graduate student poster presentations about the lasting impact of the program. (See Appendix 3A for more details.)

Data gathered from pre- and post-program student surveys (see table below) illustrate the positive impact the program is having on networking and career navigation skills.

<table>
<thead>
<tr>
<th>Please indicate your level of agreement with the following statements:</th>
<th>Pre-Completion of Program</th>
<th>Post-Completion of Program</th>
<th>% Change between Pre &amp; Post</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Self-evaluation (n=51; 62% response rate from surveys completed between April 1, 2018 and March 31, 2019)</td>
<td>Self-evaluation (n=42; 28% response rate from surveys completed between April 1, 2018 and March 31, 2019)</td>
<td></td>
</tr>
<tr>
<td>I anticipate that my career will change over time.</td>
<td>46</td>
<td>73</td>
<td>+27</td>
</tr>
<tr>
<td>I have useful connections with professionals in my field.</td>
<td>21</td>
<td>43</td>
<td>+22</td>
</tr>
<tr>
<td>I am aware of potential career options in my field.</td>
<td>21</td>
<td>46</td>
<td>+25</td>
</tr>
<tr>
<td>I have the ability to identify areas where I can improve.</td>
<td>31</td>
<td>58</td>
<td>+27</td>
</tr>
<tr>
<td>I am confident in explaining my career decisions.</td>
<td>30</td>
<td>60</td>
<td>+30</td>
</tr>
<tr>
<td>I am confident that I will be able to find employment after I graduate.</td>
<td>21</td>
<td>51</td>
<td>+30</td>
</tr>
</tbody>
</table>

**Additional Outcomes:**

- Through the Career Mentoring Program, FGSR is building relationships with members of the business community. This has translated into other engagements with different aspects of graduate education, including organizations and individuals becoming GSIP employers.

- Graduate students are more likely to explore other career support services offered by the Career Centre once they have come through the door via the Graduate Student Career Mentoring Program.

- Program participation supports graduate student mental health. The mentor-mentee relationship is often a source of positive feedback (bolsters self-esteem and confidence) and personal connection (promotes feelings of well-being).
Key Learnings:

Graduate students have directly benefited from the GOA grant funds. Post-doctoral fellows and undergraduate students have benefited indirectly because the existing program co-ordinator has been able to focus on two client populations rather than three. The expansion of the program was launched with confidence because of a number of factors that were either well-known in advance (based on best practices) or validated through the current program evaluation process. These factors include the following:

- Graduate students are looking for career mentoring opportunities that complement the academic schedule.
- Graduate student mentees are sophisticated learners with unique career needs and they require access to high calibre mentors.\[16\]
- The program has the potential to be life changing and many of the mentor-mentee relationships continue past the official end of the program.
- It takes dedicated resources to meet the graduate student demand for this high-impact program.

Entrepreneurship and Innovation

Fall 2016 was the first iteration of a graduate-student pilot course called The Entrepreneurial Mindset and Innovation. The course was created in partnership with the Alberta School of Business, and to date 75 net new students have completed the for-credit course open to all non-MBA graduate students.

Engineering students have traditionally dominated class registration and fall 2018 proved to be no exception:

Course Completion by Faculty (Fall 2018): n=21

67 per cent of learners were international students
33 per cent of learners were domestic students
76 per cent of course participants were master’s students, 20 per cent were PhDs and four per cent were "other"

\[16\] As reported last year, many of the program’s mentors are in senior leadership positions in Alberta’s public, private and not-for-profit sectors.
Performance Indicators and Metrics

<table>
<thead>
<tr>
<th>Number of graduate students who completed the course</th>
<th>Fall 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note: Pilot course was open to non-MBA graduate students</td>
<td>21</td>
</tr>
</tbody>
</table>

- Students who agree or strongly agree they would recommend this class to other students: 100%
- Students who agree or strongly agree they can immediately apply the knowledge gained from the course: 100%
- Students who agree or strongly agree they are more confident about taking an entrepreneurial or innovative approach to their research or area of study: 88.9%
- Students who agree or strongly agree they have learned basic business skills from this course: 88.9%

Key Strategies and Lessons Learned

Over the course of the GOA grant, it has become evident that graduate students are keen to learn about entrepreneurial thinking and innovation.

FGSR has responded to this interest by creating content that is specific to a graduate student audience and by playing a leadership role in supporting innovation on campus.

Content Creation

FGSR contracted serial entrepreneur and alumnus Evan Hu, MEng ’87, to create the graduate student workshop Cultivating Innovation Habits, which was delivered during PD Days, May 2019. This workshop built on the success of the entrepreneurship workshop he presented at the inaugural Invest In Your Future symposium in November 2016 and again in 2018. Hu met with Tim Hannigan (who designed and taught the Entrepreneurial Mindset and Innovation pilot course) in advance of developing the innovation workshop to ensure the content would be relevant to a graduate student audience. FGSR anticipates this workshop will be offered again in 2019-2020.

Leading Collaboration

In November 2018, FGSR was the gold sponsor for the fall 2018 summit for Rainforest Alberta (Edmonton Chapter) with the intent of building relationships with entrepreneurship service providers and organizations that support entrepreneurial activity at the provincial and municipal levels. Three graduate students from Hannigan’s course also attended the summit, which was hosted at the Shaw Conference Centre with the support of Edmonton Economic Development Corporation. Since then, graduate students have been encouraged through FGSR’s e-newsletter to attend the organization’s weekly Wednesday “lunch without lunch” networking sessions.

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17 A student survey was distributed in person by the GOA grant project manager to 18 graduate students (86-per-cent response rate) who were in attendance for the last lecture Dec. 5, 2018. Surveys were filled out during class time without the instructor present. Survey responses are consistent with earlier iterations of the pilot course. See Appendix 3B for survey details.

18 This is the text that was included on Rainforest Alberta’s website and printed materials for the summit: “The knowledge that helps ‘students’ evolve into ‘solvers’ and ‘innovators’ is foundational to graduate education and the entrepreneurial mindset. The Faculty of Graduate Studies and Research is committed to cognitive diversity and sharing knowledge with society as a whole. Our principles of leadership, engagement and trust align with the essence of the Six Pillars of Rainforest Alberta. We are natural partners in nourishing the province’s innovation ecosystem.”
Through campus and off-campus conversations, it has also become evident there is some confusion or uncertainty about how graduate students might begin to participate in Alberta’s innovation and entrepreneurial ecosystems. Graduate students are often employees of the university (as research and teaching assistants) and this dual role of student/employee has led to a knowledge gap or misinformation around issues such as intellectual property rights and commercialization. Graduate students are unsure about how to take the first step in the innovation journey.

In an effort to begin a broad-innovation conversation, FGSR spearheaded a cross-campus project called the Innovator’s Handbook: A Guide for Graduate Students. FGSR hired a consultant19 to research and write the guide book in partnership with the Faculty of Medicine & Dentistry (FoMD) and, specifically, with FoMD’s newly hired innovation coach. The handbook was released online in March 2019 and 500 copies are being distributed in book form to campus and non-campus partners. Partners include eHub20, the faculties of Engineering and Science, the Alberta School of Business, TEC Edmonton, Office of the Vice-President (Research) and the University of Alberta’s Venture Mentoring Service. (See Appendix 3C for details of the handbook.)

Strategies to Maintain Momentum

FGSR is committed to growing the number of workshops and initiatives that support the development of graduate student innovation and entrepreneurial thinking skills. Specifically, FGSR is:

• developing an innovation-space strategy for graduate students. In spring 2019, FGSR updated a current meeting space with movable tables and whiteboards to create suitable classroom space for PD offerings with specific attention to fostering design thinking and creativity. The next phase of the project is to imagine how current FGSR spaces could be transformed to further foster the development of these skills.

• collaborating with the faculties of Science and Engineering to create opportunities for graduate students to participate in their respective innovation and maker-spaces

• marketing the Innovator’s Handbook with senior leadership across campus and with a range of partners such as the University of Calgary’s Hunter Hub for Entrepreneurial Thinking

• supporting the Alberta School of Business’s plan to transition the pilot course The Entrepreneurial Mindset and Innovation to a cross-listed undergraduate and graduate course targeted at business and non-business students (fall 2019)

• launching three PhD Flash team events in 2019-2020 to build on the success of a pilot event where 10 PhD students—representing a diversity of disciplines—used creative problem solving techniques to tackle a client problem within a day. In February 2019, the problem to solve was “creating a vision for a livable economy” from the perspective of business, government and those who would be served by the vision (individuals living on the poverty line or who are one paycheck away from disaster). The PhD Flash Team clients were End Poverty Edmonton, Edmonton Community Development Company, Edmonton Social Planning Council and the Community-University Partnership for the Study of Children, Youth and Families. (See Appendix 3D for more details of the PhD Flash Team concept and pilot outcomes.)

PhDiversification: Outcomes Achieved

19 The hire of a consultant and the printing costs for the handbook were supported by A Vision for Innovation grant funds.
20 eHUB is a physical space in the University of Alberta’s HUB mall where graduate and undergraduate students get access to expertise, mentorship and partner networks as they collaborate and co-operate in developing new ideas, companies and social ventures.
In the summer of 2016, FGSR partnered with a Lean Six Sigma practitioner to develop a data-driven project to improve employment outcomes for PhD students. This methodology gave U of A a visual view of the PhD employability process [extracted from the credentialing journey] with a view to launching PhDs as innovators and change agents for the diversification of Alberta’s economy.

The project was aptly named PhDiversification, and it was deliberately and strategically connected to the four areas of grant investment: graduate student internships, entrepreneurship and mentorship, the development of transferable professional skills and curricular change.

Since last year’s interim grant report, FGSR has focused on the implementation of the following three immediate solutions to influence PhD employment success. (See Appendix 4A for a diagram of influences on PhD labour outcomes as determined through data analysis.)

- the introduction of a formal cross-campus PhD onboarding process
- quantification of the demand for U of A PhDs
- identification of opportunities to influence the demand picture

---

The PhD Onboarding Seminar (Pilot)

The PhD Onboarding Seminar was designed to accomplish four outcomes based on the results of the PhD Admissions Survey and focus groups held with newly admitted PhDs:

- address the issue of impostor syndrome by increasing the students’ confidence in their ability to successfully start their PhD journey
- give newly admitted PhDs a reality check so they know what it takes to navigate their first year
- raise the profile of FGSR so students feel supported from the outset
- connect PhDs with each other so they can begin to build their social networks

The pilot was held in late August to connect with PhDs who were newly admitted but had not yet begun their program or research. FGSR accepted 50 registrants for the pilot seminar, which was held over a day-and-a-half.

The Onboarding Seminar offered newly admitted PhDs the opportunity to:

- meet and network with other first-year PhD students
- learn strategies to build a strong relationship with their supervisor
- hear what it means to be a PhD student in a culturally diverse environment within a Canadian context
- gain valuable tips from PhD students who have completed their first year of studies
- build their support networks for the PhD journey

Survey results point to the success of the pilot:

- 100% felt better prepared—"I feel less alone" was a frequent sentiment expressed in the comment section of the feedback survey.
- 69% chose the cross-cultural session as either their most or second-most valued session.
- 62% chose "How to Talk to Your Supervisor" as either the most or second-most valued session.
- 100% saw value in meeting other newly admitted PhDs from across campus.

The faculty also invited newly admitted PhDs to a welcome reception in late September to deliver this success message to a broader audience while introducing the faculty’s support services. Invitations were sent to 419 newly admitted PhDs and 142 students RSVP’d citing the desire to meet other students as their primary motivation in accepting. International students dominated the attendee list at 91 per cent. Through a feedback survey, 76 per cent agreed the reception helped them feel more confident and ready for Year 1 of their PhD program.
Strategies to Maintain Momentum

FGSR will host two PhD Onboarding Seminars this year to better prepare 100 newly admitted doctoral students. A second pilot will provide further insight into the best way to scale this initiative, from offering multiple sessions to introducing a mandatory for-credit course.

The PhD Career Preparation and Outcomes Study

The Career Preparation and Outcomes Study stemmed from a motivation to examine the many different ways U of A PhDs are contributing to society and to quantify the demand for U of A PhD alumni. In keeping with similar studies conducted by the universities of Toronto and British Columbia, in spring 2018 the faculty hired a research consultant to connect with the university’s 5,125 PhD alumni who graduated between 2005 and 2017. The goal was to help the university better understand the PhD experience post-graduation and provide insight into how to better support current and future PhD students.

An overarching goal of the study was to establish a quantitative picture of jobs obtained by PhDs who graduated from the U of A within the past 15 years by systematically collecting publicly available job information through an online tracking process. Online tracking of the career outcomes of PhD graduates enabled the compilation of current job information for 4,365 U of A PhD graduates, representing 85 per cent of the total population who graduated between 2005 and 2017. By also surveying graduates, the study provides further evidence-based information about their job experiences and helps identify opportunities for more sectors to leverage the talents of this highly knowledgeable and skilled workforce. The survey captured the views of 1,532 PhD alumni for a response rate of 32 per cent.

Study results showcase an overall PhD success story. Our alumni are researchers, innovators and leaders who are contributing their talents and skills in many ways. They’re full-time professors, they manage not-for-profits. They’re governmental department directors and CEOs of startups. (See appendix 4B for a high-level summary report of study results.)

Major Findings

- The value and demand for PhDs is validated and quantified by study results. Graduate employment rates by sector are influenced by area of study. Engineering graduates are most likely to be found in private industry.

Our PhDs are Contributing to All Sectors

WHERE ARE OUR 4,365 FOUND PhD ALUMNI WORKING?

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-Secondary Sector</td>
<td>56%</td>
</tr>
<tr>
<td>Private Sector</td>
<td>29%</td>
</tr>
<tr>
<td>Public Sector</td>
<td>12%</td>
</tr>
<tr>
<td>Not-for-Profit Sector</td>
<td>2%</td>
</tr>
<tr>
<td>Not Working</td>
<td>1%</td>
</tr>
</tbody>
</table>

*The one per cent of found PhD alumni who are not working includes 20 retirees, 17 current students, and 29 graduates who were found to be unemployed. The 66 individuals not working are excluded from the data analysis of industry sector employment and job categories.*
• At 26 per cent, tenure track faculty comprises the largest job category of PhD graduates.
• 24 per cent of our PhD alumni are working outside of the post-secondary sector as professionals.\(^{22}\)
• 14 per cent of our PhD graduates are researchers and scientists working outside of the post-secondary sector.
• 71 per cent of our PhDs are working in Canada.
• Alberta’s economic and social sectors in particular are benefiting from this talented workforce, with 46 per cent remaining in the province.
• International students have contributed a net brain gain of 831 PhDs for the province and the nation, which is equivalent to a 38-per-cent net population gain.
• Our graduates are contributing to the global political, social, and economic spheres. Of our found PhD graduates, almost one-third are working outside Canada.

22 For the purposes of job groups, professionals included 14 sub-categories: Engineering Professionals, Senior Managing Professionals, Medical Professionals, ICT Professionals, Community and Government Services Professionals, Education Professionals, Business Professionals, Arts & Culture Professionals, Other Professionals, Other Research-Based Occupations, Semi-Professionals, Middle-Managers/Supervisors, Independents and Other Occupations.
Strategies to Maintain Momentum

FGSR is committed to further analysis of the data with the intent of identifying opportunities to better support current and future PhD students. Given 56 per cent of found PhDs are working in the post-secondary sector, there is an opportunity for more sectors to leverage the research, innovation and leadership skills of this workforce.

- There is an opportunity to market the results of the study to a variety of audiences to increase receptor uptake of our PhDs.
- There’s value in increasing our efforts to further connect our PhD students with alumni and employers in the public, private and not-for-profit sectors.
- Study results have been shared with our PhD alumni and they have been asked to participate in career panels and in the Graduate Student Career Mentoring Program. We’ve already seen a healthy response rate to these requests to give back and support current students.
- Survey results tell us that our PhDs are using a wide range of hard and soft skills in all work environments, which suggests they are meeting the demands of an evolving workplace. Further analysis will help FGSR’s PD team anticipate skills gaps as our graduates prepare for what many are calling the “age of disruption.”
- Focus groups with underemployed PhDs—those in term positions such as sessional teaching jobs—will help us better understand the needs of these alumni.
- Study results will be used to support student recruiting efforts and engagement with potential GSIP employers.

23 Humans Wanted, a cross-country research report released by RBC in 2018.
Curricular Change

To inspire overt incorporation of transferable skills into programs, FGSR has emphasized the value of curricular change and continues to highlight interesting curricular developments at meetings of FGSR Council, the faculty’s main governing body. Over the past year, the design of clearly articulated learning outcomes for research-based master’s and PhD degrees has been a primary area of discussion and effort.

Student learning outcomes are statements of ‘knowledge, skills, attitudes, competencies and habits of mind’\(^24\) that students are expected to demonstrate at the end of a course or program. In other words, what can a degree candidate expect to know and do as a result of a particular course of study?\(^25\)

– Council of Graduate Schools

Articulating Research-Based Degree Learning Outcomes

Having already made headway in socializing the concept that overtly defined learning outcomes empower students with a vocabulary to convey their transferable skills to potential employers, this year was about translating the concept into sustainable action.

In conjunction with adopting the newly released Alberta Credential Framework, FGSR engaged a student and cross-faculty working group to define institution-wide, degree-level learning outcomes. The working group focused on research-based degrees because in such programs much of the learning happens outside the classroom, creating a greater degree of ambiguity for students.

After reviewing current practice at the U of A, relevant literature and practices at other institutions, the working group generated a set of learning outcomes for research-based PhD and master’s degrees. The outcomes align closely with the Alberta Credential Framework, capture the current state while also providing optional progressive suggestions for inspiration and are designed to make explicit to students the expectations that in many cases are currently implicit. These institution-wide outcomes define the minimum standard to which research-based master’s and PhD programs should adhere and provide programs with the freedom to elaborate with their own specific outcomes and methods of assessment.

To aid integrating programs in developing and articulating program-specific learning outcomes in their planning and operations, the working group, in collaboration with FGSR Council, the Graduate Student Association (GSA) Council and other university governance bodies, generated the following artifacts:

- a calendar entry defining the institution-wide requirements and outcomes for research-based master’s and PhD programs
- templates and examples that programs can use to create and share their program-specific learning outcomes
- a how-to guide to support program leaders through the process of defining and articulating learning outcomes

\(^{24}\) Lesch, 2012 as cited in the National Institute for Learning Outcomes Assessment (2012)

\(^{25}\) Council of Graduate Schools – Articulating Learning Outcomes in Doctoral Education (2017)
Curricular Change Key Learnings

- Engagement: Engaging input from faculty members from a diverse set of disciplines, the student government and students at large was critical to generating a robust set of institution-wide, research-based program learning outcomes.
- Integration: Embedding the tools into the program development and quality assurance processes will enable programs to make use of them at the point of work.
- Tailoring: To be meaningful to students and useful to program leaders, programs will need to manage the tension between using very specific descriptions of outcomes and methods of assessment and retaining the ambiguity and diversity of the individual student’s degree experience, especially for the PhD.

Maintaining Momentum

With the first phase of this work near completion, the following next steps have been defined:

- explore the build or procurement of an online tool that would improve ease of use of the template and generate a streamlined and visually appealing student-facing version of program learning outcomes
- develop a calendar entry for course-based master’s programs that defines the program elements and graduate competencies in a format similar to the one for research-based programs
- integrate learning-outcomes language into program marketing, recruitment, new-student orientation and ongoing assessment

Conclusion: Sustaining the Momentum

Over the past year, FGSR has focused its energies on project completion and legacy building. The demonstration and quantification of the potential of graduate students to contribute to the province’s economic and social prosperity have been at the core of all areas of grant investment. Graduate students are in a unique position to drive innovation and research while creating economic and social value for all Albertans.

The U of A is grateful for the no-cost extension of the GOA grant funds and we anticipate sustained growth of the projects and programs that have benefited from grant funds. In addition, we are committed to the continued development of new initiatives to achieve the longer-term goal of curricular change within the context of a knowledge economy and global uncertainty.
APPENDICES

Contents

Appendix 1: Graduate Student Internship Program (GSIP) ................................................................. 29
Appendix 1A: GSIP Employers ........................................................................................................... 30
Appendix 1B: Performance Indicators and Metrics .............................................................................. 33
Appendix 2: Professional Skills ........................................................................................................... 34
Appendix 2A: Invest In Your Future 2018 (Program) ......................................................................... 35
Appendix 2B: PD Days 2018 .............................................................................................................. 42
Appendix 2C: CAGS Award Submission .............................................................................................. 53
Appendix 3: Entrepreneurship and Mentorship .................................................................................... 60
Appendix 3A: Celebrate Mentorship 2019 Posters ............................................................................ 61
Appendix 3B: Entrepreneurial Mindset and Innovation course survey ............................................. 65
Appendix 3C: Innovator’s Handbook .................................................................................................. 68
Appendix 3D: PhD Flash Team: Livable Economy ............................................................................. 121
Appendix 4: PhDiversification ............................................................................................................. 127
Appendix 4A: Influences on PhD Employment ..................................................................................... 128
Appendix 4B: PhD Preparation and Outcomes Study ......................................................................... 129
Appendix 5: Curricular Change ......................................................................................................... 141
Appendix 5A: PhDiversification and Learning Outcomes .................................................................. 142
Appendix 1

Graduate Student Internship Program (GSIP)
## Appendix 1A

### GSIP Employers

<table>
<thead>
<tr>
<th>Organization</th>
<th>City of Edmonton</th>
<th>Epcor</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACAMP</td>
<td>• Office of the City Manager</td>
<td>Ever Active Schools</td>
</tr>
<tr>
<td>Action on Smoking and Health [ASH]</td>
<td>• Citizen Services</td>
<td>Famous Toys</td>
</tr>
<tr>
<td>Alberta AdaptAbilities</td>
<td>• City Operations</td>
<td>Fitset</td>
</tr>
<tr>
<td>Alberta Biodiversity Monitoring</td>
<td>• Communications &amp; Engagement</td>
<td>FREN</td>
</tr>
<tr>
<td>Company Name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISL Engineering and Land Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jet Label</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior Achievement of Northern Alberta &amp; Northwest Territories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kids Uncomplicated Inc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klohn Crippen Berger Ltd.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lafarge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latium Fleet Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lenica Research Group Inc.</td>
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<td>Mazankowski Alberta Heart Institute</td>
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<td>Radco Group</td>
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<td>RC Strategies + PERC</td>
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<td>Management Inc.</td>
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<td>Trustply Tech Inc.</td>
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<td>Two Small Men with Big Hearts Moving Co.</td>
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<td>University of Calgary</td>
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<td>Valente Design and Engineering</td>
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<td>vrCave</td>
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<td>Willowglen Systems Inc.</td>
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<td>Women &amp; Children’s Health Research Institute (WCHRI)</td>
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<td>Playwrights’ Theatre</td>
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<td>YWCA</td>
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</tbody>
</table>
UNIVERSITY OF ALBERTA GSIP EMPLOYERS

Alumni Relations, Office of Alumni Relations (OAR)
Audit & Analysis, Office of the Vice-President
Finance & Administration
CANHelp
eHUB
Faculty of Arts, Arts Collaboration Enterprise
Faculty of Arts, Community Service Learning (CSL)
Faculty of Arts, Interdisciplinary Studies
Faculty of Arts, Department of Political Science
Faculty of Arts, University Relations
Faculty of Education
Faculty of Engineering
Faculty of Engineering, Department of Mechanical Engineering
Faculty of Extension
Faculty of Nursing
Faculty of Kinesiology, Sport, and Recreation
Faculty of Kinesiology, Sport, and Recreation, Campus Community & Recreation
Faculty of Kinesiology, Sport, and Recreation, International & Community Education Office
Faculty of Kinesiology, Sport, and Recreation, Human Neurophysiology Lab
Faculty of Kinesiology, Sport, and Recreation, Work Physiology Lab
Faculty of Kinesiology, Sport, and Recreation, Sport & Health Assessment Centre (SHAC)
Faculty of Medicine & Dentistry, School of Dentistry
Faculty of Medicine & Dentistry, Department of Pediatrics
Faculty of Science, Department of Earth & Atmospheric Sciences, Urban Planning
Faculty of Graduate Studies & Research
Office of Sustainability
Office of the University Architect, Facilities & Operations
School of Business
School of Public Health
School of Public Health, Alberta PROMs and EQ-5D Research and Support Unit (APERSU)
School of Retailing
Office of the Dean of Students
Office of the Dean of Students, Office of the Student Ombuds
Office of the Dean of Students, Sexual Assault Centre
Office of the Dean of Students, University Health Centre
Office of the Dean of Students, WISEST
The Steward Centre
UAAlberta Libraries
UAAlberta North
University of Alberta Botanic Garden
University of Alberta Environment, Health & Safety (EHS)
Performance Indicators and Metrics: Internship Placements

Internship Placement Cumulative Growth

2 76 101 181 226 475 410

*One intern was hired fall 2015 before the program adviser was hired and the program was officially launched January 2016.

**This number includes 24 internship positions that are fully-funded by employers.

Estimated Growth

Breakdown of Graduate Student Participation

<table>
<thead>
<tr>
<th>Stratification of Graduate Student Participation</th>
<th>GSIP Positions Created January 2016 – March 31, 2017 (Year One + Year Two)</th>
<th>Net New GSIP Positions Created April 1, 2017 – March 31, 2018 (Year Three)</th>
<th>Net New GSIP Positions Created April 1, 2018 – March 31, 2019 (Year Four)</th>
<th>Cumulative Total to March 31, 2019(^{26}) (Since official program launch January 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master’s students</td>
<td>80</td>
<td>109</td>
<td>154</td>
<td>343</td>
</tr>
<tr>
<td>PhDs</td>
<td>43</td>
<td>36</td>
<td>53</td>
<td>132</td>
</tr>
<tr>
<td>All Graduate Students</td>
<td>123</td>
<td>145</td>
<td>207</td>
<td>475</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>International Student Participation Rate as per GSIP Population</th>
<th>January 2016 – March 31, 2017 (Year One + Year Two)</th>
<th>April 1, 2017 – March 31, 2018 (Year Three)</th>
<th>April 1, 2018 – March 31, 2019 (Year Four)</th>
<th>Cumulative Total to March 31, 2019(^{26}) (Since official program launch January 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Students(^{27}) (Master’s and PhD combined)</td>
<td>64 interns (out of a total of 123) [52% of GSIP population are international students)</td>
<td>71 interns (out of a total of 145) [49% of GSIP population are international students)</td>
<td>100 interns (out of a total of 207) [48% of GSIP population are international students)</td>
<td>235 interns (out of a total of 475) [49% of GSIP population are international students)</td>
</tr>
</tbody>
</table>

\(^{26}\) The number of master’s students and PhD students participating in GSIP is reflective of their respective proportions of the graduate student population.

\(^{27}\) International students are those students who are enrolled at the university on a study permit or who hold permanent residency. Domestic students are Canadian citizens.
Appendix 2

Professional Skills
## Invest In Your Future participation chart by program of study - Master’s, PhD, Postdoc and citizenships status - international vs. domestic

<table>
<thead>
<tr>
<th>Total Number of Participants</th>
<th>Master’s Students</th>
<th>Doctoral</th>
<th>International</th>
<th>Domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>147</td>
<td>82</td>
<td>118</td>
<td>118</td>
</tr>
<tr>
<td></td>
<td>*62% of total</td>
<td>*34% of total</td>
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</tbody>
</table>

* 2 individuals whose citizenship status is unknown
Invest In Your Future 2018 Program

INVEST IN YOUR FUTURE

A Career Exploration Symposium for Graduate Students

November 15-16, 2018
uab.ca/gradpd #gradfuture18

Made possible by funding from the Government of Alberta
### DAY ONE: **THURSDAY, NOVEMBER 15, 2018**  
**LISTER CENTRE, MAPLE LEAF ROOM**

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 - 9:30 AM</td>
<td>Registration, Light Breakfast, Professional Photos</td>
<td>Reception area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maple Leaf Room</td>
</tr>
</tbody>
</table>
| 9:30 - 10:30 AM | **LIVE STREAMED**  
**Opening Keynote:**  
Think “Different”: Why Using a New Lens to Take Stock of Your Skills Will Make the World a Better Place  
**Presenter:**  
Curtis Clarke, PhD | Maple Leaf Room |
| 10:30 - 10:45 AM | COFFEE BREAK                                                          | Reception area            |
| 10:45 AM - 12:15 PM | **PD CREDIT [1.5 hours]**  
**Interactive Workshop:**  
Designing Your Grad Experience to be Career-Ready  
**Presenter:**  
Nana Lee, PhD | Maple Leaf Room |
| 12:30 - 1:15 PM | LUNCH BREAK                                                            | Reception area            |
| 1:15 - 2:45 PM | **Session:**  
Growing, Using, and Sustaining Your Professional Network  
**Presenter:**  
Anne Krook, PhD | Maple Leaf Room |
| 2:45 - 3:00 PM | COFFEE BREAK                                                          | Reception area            |
| 3:00 - 4:00 PM | **Master’s Alumni Career Panel**                                      | Glacier Room              |
| 3:00 - 4:00 PM | **PhD Alumni Career Panel**                                           | Prairie Room              |
| 4:00 - 4:45 PM | **MIXER**  
Enjoy beverages and hot appetizers at this informal networking opportunity with career panel guests and other participants. | Reception area            |
|               |                                                                         | Maple Leaf Room           |
## DAY TWO: FRIDAY, NOVEMBER 16, 2018

**LISTER CENTRE, MAPLE LEAF ROOM**

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 - 10:00 AM</td>
<td>Registration, Light Breakfast, Professional Photos, Rapid Resume and LinkedIn Review, Information Booths</td>
<td>Reception area Maple Leaf Room</td>
</tr>
</tbody>
</table>
| 10:00 AM - 12:15 PM | **Interactive Workshop:** The Value of Storytelling: How to Showcase What Counts For You  
**Presenters:** Elaine Broe, MA  
Kelly Wood, MA | Maple Leaf Room |
| 12:15 - 1:15 PM | LUNCH BREAK                             | Reception area Maple Leaf Room |
| 1:15 - 2:45 PM   | **Interactive Workshop:** How to Develop an Entrepreneurial and Innovation Mindset: Skills Employers Want  
**Presenter:** Evan Hu, M. Eng | Maple Leaf Room |
| 2:45 - 3:00 PM   | COFFEE BREAK                             | Reception area Maple Leaf Room |
| 3:00 - 4:15 PM   | **Closing Keynote:** The Best Career Advice I Ever Got: “Say Yes”  
**Presenter:** Kory Mathewson, PhD Candidate | Maple Leaf Room |
Keynotes and Sessions

THURSDAY, NOVEMBER 15, 2018

9:30 AM Opening Keynote
LIVE STREAMED

DR. CURTIS CLARKE
Think “Different”: Why Using a New Lens to Take Stock of Your Skills Will Make the World a Better Place

Join Dr. Curtis Clarke, Deputy Minister of Alberta Education as he shares his journey from post-grad to public service. Find out why today’s post-grads have the skills, knowledge and abilities to be the movers and shakers of the future. You will walk away from this keynote with a different perspective of your potential.

About Curtis Clarke, PhD
Curtis Clarke is the Deputy Minister of Education for the Government of Alberta. Before joining the Government of Alberta public service, Dr. Clarke was an associate professor and coordinator of the criminal justice program at Athabasca University.

He was also president of the Canadian Association of Police Educators, board member of the National Police Sector Council and a founding member of the INTERPOL Group of Experts in Training. Dr. Clarke holds a Bachelor of Arts and a Masters (Sociology) from Queen’s University and a PhD (Sociology) from York University. He has recently completed a certificate program in High Intensity Leadership from Cornell University and an Executive Program from the Harvard Kennedy School (Applying Behavioural Insights to the Design of Public Policy).

10:45 AM Interactive Workshop
PD CREDIT (1.5 HOURS)

DR. NANA LEE
Designing Your Grad Experience to be Career-Ready

Dr. Nana Lee, academic and former industry scientist, will help you optimize your graduate experience using design thinking principles. This interactive workshop, based on Stanford University’s Design Your Life Lab and book written by Bill Burnett and Dave Evans, will empower you to be career-ready by building a skills development action plan.

Note: In advance of the workshop, please use UAlberta’s Individual Development Plan (IDP) Workbook to identity two to three skills you would like to strengthen.

This workshop may be used towards the Professional Development (PD) Requirement. To record your PD credit please bring your ONEcard or have an FGSR representative sign your record of PD activities at the workshop. All professional development sessions or activities must be approved by your department.

About Nana Lee, PhD
Dr. Nana Lee holds a PhD in Biochemistry and she’s an Assistant Professor (Teaching Stream) at the University of Toronto for the departments of biochemistry and immunology. She is also the Director of Mentorship and Graduate Professional Development (GPD) for Graduate Life & Science Education (GLSE), Faculty of Medicine. She instructs five to six sessions of GPD per academic year. She has presented to over 1000 audience members from high school, undergraduates, graduate students, postdoctoral fellows, faculty and professionals throughout the USA and Canada.

She was a visiting PhD scholar at the Massachusetts Institute of Technology, and a postdoctoral fellow at the University of Michigan. She also held a positions as Senior Research Scientist for Ellipsis Biotherapeutics in Toronto and Senior Research Scientist, Product Manager and Director of Application Science for DNA Software in Ann Arbor, Michigan.
1:15 PM Session

**DR. ANNE KROOK**

Growing, Using, and Sustaining Your Professional Network

This session teaches you how to think about, develop, use, and sustain your professional network for maximum flexibility and usefulness throughout your career. You will learn whom to engage and why, how to engage them at various points in your job search, and how to leverage their skills and expertise as you search for your next good job. It will also teach you how to be a good citizen in your network, returning the help that others give you when you are in a position to do so.

**About Anne Krook, PhD**

As a former academic who transitioned successfully to the corporate and non-profit workplaces, Dr. Anne Krook helps graduate students and postdoctoral fellows transition to non-academic workplaces. A leader in workplace transition, this popular speaker draws from her experience as an assistant professor in English Language and Literature at the University of Michigan for seven years, her 13 years at amazon.com and her VP of Operations roles at startups.

FRIDAY, NOVEMBER 16, 2018

3:00 PM Alumni Career Panels

We will be holding two concurrent advice panel sessions featuring UAlberta Alumni - one for a Master’s career path and one for PhD. Come and hear how UAlberta Alumni have navigated a diversity of careers and challenges to use their degree to contribute their talents to economic and social prosperity of a city, province, and nation.

**Master’s Alumni Career Panel - in Glacier Room**

**PhD Alumni Career Panel - in Prairie Room**

4:00 PM Mixer

Enjoy beverages and hot appetizers at this informal networking opportunity with career panel guests and other participants.

FRIDAY, NOVEMBER 16, 2018

8:30 AM Rapid Resume Review, Professional Photos and Information Booths

The early bird gets the career advice. Bring a printed copy of your resume, CV or LinkedIn profile for a brief review, courtesy of the U of A Career Centre team, first come, first served.

Take this opportunity to get a professional photograph taken for your LinkedIn profile or website. Photographs will also offered on day one of conference.

Check out career and professional development related information booths. Meet representatives from Mitacs, Government of Alberta, City of Edmonton, WISER, eHUB, EPL, TEC Edmonton, and more!

10:00 AM Interactive Workshop

**PD CREDIT (2 HOURS)**

**ELAINE BROE and KELLY WOOD**

The Value of Storytelling: How to Showcase What Counts For You

This interactive and hands-on session with Elaine Broe and Kelly Wood will have you talking about what matters most to you in a way that engages future employers and communicates your unique life and academic experience.

- Increase your self-awareness and ability to communicate
- Identify values that reflect your unique identity
- Discover personal stories that demonstrate your values
- Practice effective storytelling for informational and job interviews as well as networking opportunities

This workshop may be used towards the Professional Development (PD) Requirement. To record your PD credit please bring your ONEcard or have an FGSR representative sign your record of PD activities at the workshop. All professional development sessions or activities must be approved by your department.
About Elaine Broe, MA
Elaine holds a Master’s degree in Leadership with a focus on employee creativity and change within organizational culture. As a faculty member with global institutes such as Banff Centre, Up2You Coaching, THNK School of Creativity, Elaine loves collaborating with people to support goals and move ideas forward. She is a certified PCC level coach, who works with emerging leaders to define career paths and coaches established leaders in transition as they build their legacy.

About Kelly Wood, MA
Kelly Wood is a strengths- and solutions-based life coach and facilitator with a Master’s degree in Leadership. She is faculty at Banff Centre’s Leadership Institute and coaches and facilitates with businesses and individuals through her own business. Her clients have included Mount Royal University, the Northern Institute of Technology, as well as startups such as SoulFood and the Happy Healthy Women Network.

1:15 PM Interactive Workshop
PD CREDIT (1.5 HOURS)

EVAN HU
How to Develop an Entrepreneurial and Innovation Mindset: Skills Employers Want

Learn why the entrepreneurial and innovation mindset is key to current and future success. This hands-on workshop will give you the five habits to support an entrepreneurial mindset and connect innovation skills with the ability to learn through experimentation.

This workshop may be used towards the Professional Development (PD) Requirement. To record your PD credit please bring your ONEcard or have an FGSR representative sign your record of PD activities at the workshop. All professional development sessions or activities must be approved by your department.

About Evan Hu, M. Eng,
Evan is an UAlberta alumnus and a serial entrepreneur and executive coach. He was the founder of several successful startups including OmniLogic, MapleMusic and Ideaca. A Rainforest AB fellow and a member of the A100 and

3:00 PM Closing Keynote
LIVE STREAMED

KORY MATHEWSON
The Best Career Advice I Ever Got; “Say Yes”

Improv comedy isn’t just about laughs. In fact, if you take a closer look, there are valuable lessons to be learned about — wait for it — leadership. [Yes, really!] Let Rapid Fire Theatre funnyman Kory Mathewson show you how the fundamentals of improv acting — such as being a good listener and “saying yes” — can help you achieve your career goals. Whether you want to gain confidence in your interview skills, be a networking pro, or get comfortable presenting your ideas, this session will help you improve your leadership skills and advance your career.

About Kory Mathewson, PhD Candidate
Kory Mathewson is a PhD candidate in Reinforcement Learning at the University of Alberta with the Alberta Machine Intelligence Institute. His research interests include interactive machine learning, human-in-the-loop deep reinforcement learning, human–robot interfaces (prosthetic robotics), and conversational dialog systems.

Before his PhD, he completed his Bachelor’s degree in Electrical Engineering and his Master’s degree in Biomedical Engineering. Kory has interned at Twitter Cortex, at Google Brain Magenta, and at Apple Special Projects Group. His PhD research is funded by the National Science and Engineering Research Council. He is a Lab Scientist (Machine Learning) at the Creative Destruction Lab at the University of Toronto. Kory is also an accomplished improvisational theatre performance artist. He is currently fusing his interests by developing an artificial intelligence to perform comedy alongside.
# PD Days (Net New): Breakdown of Participation

<table>
<thead>
<tr>
<th>PD Days</th>
<th>Total Number of &quot;unique&quot; participants</th>
<th>Master's Students</th>
<th>PhD Students</th>
<th>Post-Docs</th>
<th>International Students</th>
<th>Domestic Students</th>
<th>Total Number of Seats Filled</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>180</td>
<td>122 *68% of total</td>
<td>51 *28% of total</td>
<td>7 *4% of total</td>
<td>119 Includes students on a study permit and permanent residents</td>
<td>52* As defined by Canadian Citizenship status</td>
<td>331</td>
</tr>
<tr>
<td>2019</td>
<td>250</td>
<td>179</td>
<td>71</td>
<td>0</td>
<td>178</td>
<td>72</td>
<td>583</td>
</tr>
<tr>
<td>Cumulative Total</td>
<td>430</td>
<td>301</td>
<td>122</td>
<td>7</td>
<td>297</td>
<td>124 (+9)</td>
<td>914</td>
</tr>
</tbody>
</table>

# PD Days May 2018: Workshop Details

**Butterflies in Formation: Performance Under Pressure**

**Date:** Tuesday, May 1, 2018  
**Time:** 8:45 am - 10:45 am

**IDP Competencies:** Confidence/Communication/Creativity

**Description:** Whether you are at a research conference, in the classroom, or in the boardroom, how you use your body is crucial if your ideas are to be communicated effectively and persuasively. Unfortunately, for many of us, nerves can sabotage our effectiveness as presenters, leaving our audience bewildered and unconvinced of our credibility. You will leave this session equipped with tools to manage your nerves and strategies to put into practice, which will allow you to look and sound like a pro. This session is interactive, and will provide the opportunity for participants to receive feedback on their presentation skills. Participants of this session are asked to prepare a one minute talk on any topic (e.g. your elevator pitch, your favorite joke, a microtalk on an interest topic in your field).

**Facilitator: Stephen Leppard, PhD**

Whether functioning as a teacher, administrator, university instructor, Doctoral researcher, U of A Senator or public speaker, Stephen Leppard has invested considerable energy creating interactive and informative environments while speaking to audiences large and small. Stephen understands that professional development sessions should both examine - and demystify - many of the verbal and non-verbal strategies employed by the best teachers, lecturers and presenters.
Effective Communication in the Diverse Workplace

Date: Tuesday, May 1, 2018  
Time: 11 am - 12:30 pm

**IDP Competencies:** Collaboration/Communication/Critical Thinking/Ethical Responsibility  
**Description:** In a multicultural province such as Alberta, a diverse workplace is inevitable. Communication skills that are important in any workplace become crucial when your colleagues are from different cultures, backgrounds, and have multiple perspectives. Often mistaken as a skill only necessary for international students or immigrants, understanding how culture influences communication in the workplace is equally important for those who are Canadian-born and raised. In this interactive session, you will learn about two styles of communication, and the influences of culture on communication skills in the workplace.

**Facilitator:** Jill Chelsey  
Jill Chesley is the Senior Diversity and Inclusion Consultant with the City of Edmonton. She brings over 20 years of domestic and international experience in the non-profit, private, and public sectors, including in the USA, Japan, Trinidad and Tobago, Sri Lanka, and South Africa. Jill has developed in-depth knowledge within the fields of intercultural communication, equity, and diversity and inclusion, particularly in large, complex organizations. Jill has a MA in Intercultural Relations, and is the Coordinator of the Summer Institute for Intercultural Communication Fellows Program in Portland, Oregon, as well as the founding and current Chair of the Edmonton Business Diversity Network.

Leveling UP: Multiplying Your Potential with Collaborative Intelligence

Date: Tuesday, May 1, 2018  
Time: 12:45 pm - 2:15 pm

**IDP Competencies:** Collaboration/Communication/Critical Thinking/Ethical Responsibility  
**Description:** Thriving in the world beyond university means honing an additional set of essential skills. Developing your collaborative intelligence (CQ) multiplies your own ability to problem solve, while also intensifying highly sought-after teamwork and leadership skills. This session will explain the foundational concepts of CQ and point you toward understanding your own mind pattern, while also encouraging you to develop discernment skills that allow you to cultivate strong collaborative relationships with others.

**Facilitator:** Heather Gautreau  
Heather Gautreau is completing her PhD in Educational Psychology at the University of Alberta. She is a sessional instructor in undergraduate psychology at an Edmonton university, and she teaches for the Government of Alberta. During her professional career, she has presented over 500 sessions. Heather began studying Collaborative Thinking during a research internship with Dr. John Nychka, and she has experienced first-hand the powerful benefits of applying CQ to her graduate studies and to her professional life.
CliftonStrengths® Leveraging Your Strengths for Professional Success

Date: Tuesday, May 1, 2018  
Time: 2:30 pm - 4:30 pm  
REPEAT: Date: Wednesday, May 2, 2018  
Time: 9 am - 11 am

IDP Competencies: Communication/Confidence/Ethical Responsibility

Description: Knowing your strengths and how to apply them is one of the ways that you can create a successful graduate student experience and in addition prepare you to use your strengths beyond graduation. This session will focus on helping you increase your self-awareness, and provide valuable tips in how to build an effective and rewarding teamwork experience. Please bring your Strengths Signature Theme Report to the workshop. *If you have not completed a CliftonStrengths® assessment, you may purchase a student discounted code for $10 when registering. Please choose the workshop *with an Access Code. If you have already completed your CliftonStrengths® assessment and would like to attend the workshop, please contact us for at ticket at czakert@ualberta.ca.

About CliftonStrengths®:
CliftonStrengths® is based on positive psychology and focuses solely on your unique strengths, and in particular your “Top 5” themes of talent. It helps to identify the sources of your strengths, to understand behaviours and to consider how your strengths contribute to your personal brand. It also gives the opportunity to build on your greatest talents, and develop an individualized plan to discover and develop strengths for your academics, career and beyond.

Facilitators:
Mathew Geddes, MSC  
Matthew Geddes has been a Career Development Specialist for over seven years at the University of Calgary where he is passionate about helping individuals create careers that align with their values, skills, and interests. He supports Master and Ph.D. students in achieving their career aspirations through individual supportive consultations and engaging workshops. Matthew is certified in the Myers-Briggs Type Indicator® and the Strong Interest Inventory® as well as interprets CliftonStrengths® with students.

Stephanie Warner, PhD  
Stephanie completed her PhD in Experimental Medicine at the University of British Columbia in 2014, followed by a postdoctoral fellowship at the University of Calgary. Since June 2016, she has been working as the PhD Career Development Specialist in Career Services at University of Calgary. In this role, she provides individualized career coaching to PhD students, as well as creating and delivering group workshops for graduate students. Stephanie is certified in the Strong Interest Inventory®, Myers-Briggs Type Indicator®, and interprets CliftonStrengths® with students.
NEW Workshop added: The Power of Social Networks

Date: Wednesday, May 2, 2018  
Time: 11:15 am - 12:45 pm  

IDP Competencies: Communication/Creavity/Critical Thinking  

Description: This workshop will entail a process-based view of networks based on social science research; what they are, how they are useful, and how we can build and maintain them. We will cover a practical perspective on social networks. Instead of focusing exclusively on the activity of "networking" (networking as a verb), you have to first understand what networks are: as assets, resources, and sources of information (network as a noun).

Facilitator: Tim Hannigan, PhD  
Tim Hannigan is Assistant Professor in Organization theory and Entrepreneurship at the Alberta School of Business, University of Alberta, Canada. He previously held a post as Postdoctoral Research Fellow at the Centre for Corporate Reputation in the Saïd Business School, University of Oxford. His research is at the intersection of social networks, scandal and reputation dynamics, innovation, and meanings & markets. His research helps to explain how reputations are built up and situated in audiences, and how they can be affected by shocks such as scandals. He also studies open innovation in organizations and ways that information flows across boundaries.

Building Your Professional Brand

Date: Wednesday, May 2, 2018  
Time: 1:30 pm - 4:30 pm  

IDP Competencies: Communication/Confidence  

Description: As a student or researcher, you are often asked to explain your work, summarize your interests, and chart your career path. These conversations can be challenging, particularly in high-pressure contexts like job interviews and with audiences outside your academic discipline. This workshop will take you through the process of building and communicating your professional brand - a powerful tool for sharing your story in a range of contexts and with a variety of audiences. You will examine how to communicate your brand through multiple channels, from resumes and cover letters to social media and blogging.

Facilitators:  
Alan Shapiro  
Alan Shapiro is a communication specialist and environmental professional with over five years of communication training, improvisation, and public speaking experience. Through his work with LitScientist, he provides communication training services for universities, research institutes, and technical firms. Alan is co-founder of Science Slam Canada, a non-profit organization that gives science students, researchers, educators, and communicators across Canada the opportunity to share their science with a general audience. Alan also works on environmental projects across Canada and is particularly interested in how environmental knowledge can be communicated effectively.

Nikki Berreth  
Nikki Berreth is a science communicator and educator living in Vancouver. With a background in science and fine arts and formal training in Science Communication, she’s always looking for new ways to relay both scientific and technical knowledge to her intended audience. She aspires to help others reach their full communication potential and has co-founded several organizations that do just that! In the upcoming year, she is looking forward to establishing Science Slam Canada as a national platform for STEM communication, growing LitScientist and breathing life into a new Adult Science adventure. In her free time, you will find her reading crime fiction, playing the ukulele on the beach or writing poetry on the bus.
APPENDIX 2B

PD Days May 2019: Workshop Details

Professional Development Days are offered as part of a suite of programming supporting career management and professional development for graduate students and postdoctoral fellows. The sessions will help you recognize your talents, pursue your interests, learn professional skills, and make interdisciplinary connections that will help you excel in your chosen field.

Learning Outcomes:

- Reflect upon and evaluate your skills and competencies in the areas of creativity, communication, confidence, scholarship, ethical responsibility, critical thinking, and collaboration;
- Reflect on your career options based on your interests, skills, and values; and
- Acquire new, or enhance existing skills and competencies in areas related to professional behaviors, the workplace, and career management.

Please register early for these workshops as seats are limited.

Be sure to contact your department BEFORE registering. Your department may be using other courses or workshops to meet the Professional Development Requirement.

Please bring your ONEcard to check-in and note that latecomers will not be admitted as these sessions may also count towards your Professional Development Requirement.

Who Needs You? Networking According to Your Strengths

Date: Wednesday, May 1, 2019
Time: 9:00 am - 11:00 am (PD Credit: 2 hours)
Location: SUB-045

IDP Competencies: Creativity, Communication, Confidence

Description: When networking seems selfish, it is awful for everyone. But what if there is a way to network without being self-promotional? What if you could make all the connections you need for a flourishing career and social life without ever having to feel like a pushy, self-promotional jerk? Good news, you can. In fact, you should. In this session, we will explore how you can use your natural talents and the skills you have developed over years of academic accomplishment to build a strong, supportive network. When we are done, you will have a simple plan to start connecting with the right people and groups by using your existing strengths.

Session Learning Outcomes:

- Identify real-world applications for their skills and talents;
- Identify three hubs for connection; and
- Identify connection strategies for each hub.

Facilitator: Nadine Riopel, BA Honours

Nadine Riopel is a superconnector who really, really, wants you to be all you can be. That is why she is fired up about helping people develop their social networks. Everyone is capable of so much with the right support. She offers online courses, training sessions, speaking, and facilitation services to help everyone find their people and develop relationships. To accomplish this mission, she uses a wealth of experience from a background in high-end hospitality, professional fundraising, and sales.

Website: http://www.nadineriopel.com/
The Magic Behind Reference Letters

Date: Wednesday, May 1, 2019  
Time: 11:15 am - 12:15 pm (PD Credit: 1 hour)  
Location: SUB -045

IDP Competencies: Creativity, Communication, Confidence, Critical Thinking

Description: At some point, we all need reference letters - whether for employment purposes, fellowships, or scholarships. The magic behind crafting great letters comes from knowing the candidate and understanding the criteria of how candidates will be judged. Join this session to get an idea of how you can prepare your referees to write better letters or how you can best deliver on a reference in a North American context. Please bring a pen or pencil to this session.

Session Learning Outcomes:
- Describe the elements that make an effective reference letter;  
- Identify the materials needed to be provided to the referee; and  
- Discuss the impact of an effective referee.

Facilitator: Renee Polziehn, PhD
Renee Polziehn is the Professional Development Director for the Faculty of Graduate Studies and Research (FGSR). Following 19 years developing the Community Volunteer Program, the Graduate Teaching and Learning (GTL) Program, and Professional Development programming for the Faculty of Graduate Studies and Research and the Postdoctoral Fellows Office, writing reference letters have been one of many tasks that crossed her desk. As an adjudicator for several scholarships, she has had access to seeing both well-written and poorly crafted letters. Renee has also had the opportunity to consult with many academics over their reference writing practices.

Career Pathing: Finding Purpose and Choice

Date: Wednesday, May 1, 2019  
Time: 1:00 pm - 3:00 pm (PD Credit: 2 hours)  
Location: SUB-045

IDP Competencies: Critical Thinking, Confidence, Creativity, Communication

Description: This session will guide participants through the process of identifying their core career purpose, and removing barriers that keep them locked into a tenure-track-or-bust mentality. By shifting the goal from “landing that perfect job” to “setting yourself up for choice”, this workshop concludes with advice on how to make difficult decisions about your career path.

Session Learning Outcomes:
- Explore the core components of your own career purpose; and  
- Describe the decision-making strategies for career choices.

Facilitator: Jared Wesley, PhD
Jared Wesley is a pracademic - a practicing political scientist whose career path has taken him to government boardrooms and university classrooms across Western Canada. He is currently an Associate Professor of Political Science at the University of Alberta, with previous experience in various central agencies within the Government of Alberta.
Applying Design Thinking to the Career Management Process

Date: Wednesday, May 1, 2019  
Time: 3:15 pm - 4:45 pm (PD Credit: 1.5 hours)  
Location: SUB-045  

IDP Competencies: Creativity, Communication, Confidence

Description: Are you seeking a sense of direction while navigating your career? Are you wanting to reference a framework to make the career management process more manageable? This presentation highlights concepts and strategies for applying design thinking to career exploration and development. Design thinking includes exploratory phases—that happen in a cynical and iterative fashion—including definition, research, ideation, prototyping, implementation, and evaluation. What makes design thinking unique is its use of creative methods, including needs-finding, visualization, mapping, synectics, ethnography, among others.

Session Learning Outcomes:

- List at least three approaches to career management that are current and contemporary;
- Summarize key characteristics of design thinking and a design process;
- Explain how design thinking can be applied to career management by way of various phases including definition, research, ideation, prototyping, implementation, and evaluation; and
- Discover new and unique methods for generating career ideas (ideation).

Facilitator: Justin Pritchard, MDes

Justin Pritchard has been working at the U of A Career Centre since 2011 in various roles—including Graduate Career Advisor, Graphic Designer, Program Team Lead, and Career Coach. He completed a Master of Design (MDes) degree, and merged his areas of interest by specializing in design thinking and career journeying at the centre. As a parallel career, he teaches design studies in the Faculty of Arts at the U of A.

Cultivating New Innovation Habits

Date: Thursday, May 2, 2019  
Time: 9:00 am - 1:00 pm (PD Credit: 4 hours)  
Location: SUB-045  

IDP Competencies: Creativity, Communication, Confidence

Description: This workshop will introduce graduate students to the five habits that support innovation-thinking skills. Interactive exercises will help participants identify opportunities to practice these habits within the context of their respective academic programs and personal goals.

Session Learning Outcomes:

- Explain what it means to innovate;
- Describe the five habits that support innovation;
- Develop an action plan to incorporate one or more habit into your daily life; and
- Explore what it means to “try things” and “prototype” within the context of your own academic program.
Facilitator: Evan Hu, MEng, Engineering Management
Evan is an UAlberta alumnus and a serial entrepreneur and executive coach. He was the founder of several successful startups including OmniLogic, MapleMusic and Ideaca. A Rainforest AB fellow and a member of the A100 and Engineer Change Lab, he is active in the Canadian startup community as an angel investor, educator and volunteer. He is the Chair of Calgary Technologies Inc. and is a Founding Partner and G7 Associate at Creative Destruction Lab.

Note: Participants will receive a copy of The Innovator’s Handbook: A Guide for Graduate Students. In order to receive PD credit, participants are expected to stay for the duration of the workshop.

Receiving Disclosures in the Workplace
Date: Thursday, May 2, 2019
Time: 2:00 pm - 4:00 pm (PD Credit: 2 hours)
Location: SUB-045

IDP Competencies: Communication, Confidence, Critical Thinking, Ethical Responsibility

Description: In this two-hour session, participants will further their interpersonal skills in the workplace by learning how to support colleagues around the issue of sexual assault. In any work environment—we use interpersonal skills every day when we communicate and interact with other people, both individually and in groups. People with strong interpersonal skills are often more successful in both their professional and personal lives. Interpersonal skills include a wide variety of skills, though many are centred on communication, such as listening, understanding body language, or being able to understand others’ emotions. All of which are important skills in responding to disclosures of sexual violence.

This session will focus on support skills specific to working with survivors of sexual assault and will better prepare participants to receive disclosures from and provide referrals to, survivors on campus. To better illustrate this supportive relationship, we will practice these skills by working through different examples. Finally, participants will have the opportunity to learn more about the services offered by the Sexual Assault Centre

Session Learning Outcomes:
• Explain the steps involved in responding to disclosures of sexual violence;
• Provide resources and referrals on campus; and
• Demonstrate interpersonal skills and communication skills through practice scenarios.

Facilitator: Sherani Sivakumar, BA
Sherani Sivakumar is an Education Program Coordinator at the University of Alberta Sexual Assault Centre. Much of her role involves facilitating anti-sexual violence education workshops to the campus community, providing crisis intervention support, and supervising a team of peer educators. Sherani has been in her role for over a year but her involvement in the Centre has extended back to 2015 when she became a volunteer during her undergraduate degree. The Centre has always been a place of community for her. She is very grateful to be a part of a team that is so passionate and driven in working towards a community free of sexual violence.
Sharing Your Skills with Employers: The Craft of Resume Writing

Date: Friday, May 3, 2019
Time: 9:00 am - 10:30 am (PD Credit: 1.5 hours)
Location: SUB-045

IDP Competencies: Creativity, Communication, Confidence, Critical Thinking

Description: This session will focus on helping graduate students translate their experience and transferable skills into language that employers understand, and examine what hiring managers look for in a resume. Practical tips about layout and presentation will be shared.

Session Learning Outcomes:

- Explain the importance of targeting your resume; and
- Describe strategies for representing transferable skills gained through post-secondary education.

Facilitator: Tyree McCrackin, BA, BEd
Tyree works directly with graduate students and post-doctoral fellows at the University of Alberta’s Career Centre. Before coming to the University of Alberta, Tyree worked in human resources in various oil and gas related industries. His first role with the University of Alberta was Graduate Student Internship Program (GSIP) Career Advisor responsible for supporting GSIP applicants and interns. He now works as a Career Advisor, helping current graduate students, postdoctoral fellows, and alumni with work search documents, interview preparation, and career management strategies. Tyree has a BA and BEd, and is also enrolled in graduate studies at the University of Alberta.

Effective Communication in the Diverse Workplace

Date: Friday, May 3, 2019
Time: 10:45 am - 12:15 pm (PD Credit: 1.5 hours)
Location: SUB-045

IDP Competencies: Communication, Collaboration, Ethical Responsibility

Description: In a multicultural province such as Alberta, a diverse workplace is inevitable. Communication skills that are important in any workplace become crucial when your colleagues are from different cultures, backgrounds, and have multiple perspectives. Often mistaken as a skill only necessary for international students or immigrants, understanding how culture influences communication in the workplace is equally important for those who are Canadian-born and raised. In this interactive session, you will learn about two styles of communication, and the influences of culture on communication skills in the workplace.

Session Learning Outcomes:

- Explain the importance of intercultural competence in the workplace;
- Define culture;
- Explain at least one dimension of culture;
- Describe two communication styles; and
- Identify your preferred communication style.
Facilitator: Charlene Ball, MA
Charlene Ball has 30+ years of working intercultural, including several years of working abroad in India, Colombia and Poland. She has worked with not-for-profit organizations, international NGOs, and municipal government. She has experience working with Indigenous organizations, and working to support the integration of newcomers to Canada. Charlene has a B.A. in Anthropology and Native Studies and an M.A. in Intercultural Relations. She currently works for the City of Edmonton as an Intercultural Liaison, developing and facilitating intercultural competence training for City of Edmonton employees to build their capacity to better serve diverse community members, as well as supporting her department’s internal equity, diversity and inclusion work.

Communicating Your Research through Many Forms and Forums!

Date: Friday, May 3, 2019  
Time: 1:00 pm - 2:00 pm (PD Credit: 1 hour)  
Location: SUB 045  

IDP Competencies: Creativity, Communication, Critical Thinking, Scholarship

Description: Effectively communicating your research to diverse audiences outside your area of specialization can be an intimidating and extremely challenging process, and yet, increasingly there is an expectation that researchers are equipped with this skill. What if you knew the precise area of your research to highlight and how best to communicate that information? Confused? Help is on the way! In this workshop, you will learn how to communicate the heart of your research for the purposes of different forms of public engagement, including tactile research presentations, public lectures, elevator pitches, and visual representations of your work.

Session Learning Outcomes:

- Communicate your research to a group of interdisciplinary peers;
- Document one to two sentences defining the ‘heart’ of your research; and
- Discover new knowledge-sharing opportunities on and off campus.

Facilitator: Charity Slobod, MA
Charity Slobod is the Community Volunteer Lead and Professional Development Coordinator for the Faculty of Graduate Studies and Research (FGSR). For more than seven years, she has worked in the field of community outreach and engagement with a particular focus on supporting graduate students in developing effective strategies for sharing their research with non-specialist audiences. Charity supports this work by leading several key initiatives that provide opportunities for graduate students to share their research with different audiences and across multiple modalities, including: Three Minute Thesis (3MT) Written Three Minute Thesis (W3MT), Images of Research, Research in a Suitcase, Telus World of Science Showcase, and On the Edge: EPL Speaker Series.
Unconscious Bias in the Workplace: What Is It and What Can You Do About It?

Date: Friday, May 3, 2019  
Time: 2:15 pm -3:45 pm (PD Credit: 1.5 hours)  
Location: SUB-045

IDP Competencies: Communication, Critical Thinking, Ethical Responsibility

Description: We all have a worldview that is created through our identities and our experiences. That worldview, and the dominant cultures that we live in, create biases about which we are often not aware. These unconscious biases can create inequities in the work that we do. This session will explore worldview, how it creates unconscious bias and what can be done to mitigate bias in our workplace.

Session Learning Outcomes:

- Reflect on your social location and how it informs your worldview;
- Explain what unconscious bias is and how it may affect your work; and
- Describe how to mitigate unconscious bias to make workplaces more inclusive.

Facilitator: Barb McLean, MA

Barb McLean is the owner of Collective Insight Consulting and is an equity specialist. She has been working in the field of equity, diversity, and inclusion for many years including work in government, post-secondary and various communities across Alberta. She has a B.A (Honours) in Women’s Studies/Political Science and an MA in Political Science with a focus on race and gender. Barb is passionate about helping workplaces be more inclusive and respectful.
Dear Awards Committee,

The future job market – inside and outside of academia - is often described as uncertain, competitive and constantly changing. This new reality has placed additional stress and pressure on our graduate students as they are expected to communicate, collaborate, innovate and problem-solve at an advanced level while taking ownership of their own career paths. The University of Alberta has boldly addressed the issue of “uncertainty” by better preparing our students through the introduction of a Professional Development (PD) degree requirement, which applies to all graduate students, with the potential of impacting a talent pool of almost 8,000 students every year.

UAAlberta’s PD Requirement is the first of its kind in Canada, and it is comprised of two key elements: the completion of an Individual Development Plan (IDP) and eight hours of PD activity. The Faculty of Graduate Studies and Research (FGSR) Council passed the requirement in 2015 with the support of the Graduate Student Association and through a cross-campus consultation process, which included stakeholders on and off campus, as well as employers representing the province’s economic and social sectors. Since implementation in Fall 2016, the fulfillment of the requirement has been student-driven with the support and input from supervisors/advisors, departments (73), faculties (18), career development officers at the UAlberta Career Centre, and FGSR’s own PD team.

A four-year Government of Alberta grant – “A Vision for Innovation in Alberta: Excellence and Transformative Talent” – accelerated our ability to leverage the PD requirement to increase student competencies in areas that are most desired by academic and non-academic employers alike. It also allowed us to achieve a 39% increase in graduate student participation rates across all FGSR’s PD programming. Finally, it created capacity for the faculty’s PD team to meet graduate student career needs through a framework of continuous improvement, data-driven decision making, partnerships, and innovation.

This application lays out how graduate students are benefiting from the PD requirement by sharing the how, what, and whys of our innovation journey. Of the many innovations we have underway, this one was deemed most suitable to nominate because of its pioneering nature within Canada; because it is creating a consistent graduate student experience across the institution; and because it meets a fundamental student need - reducing the stress of an uncertain future to support strong mental health.

Thank you for considering this application. We look forward to hearing from you.

Regards,

Debby Burshtyn
Interim Vice-Provost and Dean
Faculty of Graduate Studies & Research
Professor, Dept. Medical Microbiology and Immunology
University of Alberta
The University of Alberta’s Professional Development Requirement

Why make professional development a degree requirement?

Graduate students told us through surveys, through one-one-one meetings, through supervisors and advisors, and through the University of Alberta’s Graduate Student Association, that they were feeling the stress and the pressure of an uncertain employment future. Further consultation with stakeholders and employers on and off campus representing the full diversity of the province’s economic and social sectors repeatedly told us our students were Alberta’s future talent pool and that they needed active, consistent support to develop transferrable skills and competencies. Consultation and collaboration led to an institutional acknowledgement that academic degree programming alone was not fully preparing our graduate students to design and take ownership of their careers inside and outside of the academy. This two-year period of data analysis, and recommendations developed by interdisciplinary working-groups resulted in decisive action and innovation.

What is the Professional Development (PD) Requirement?

In 2015, FGSR’s governing body (FGSR Council) supported the implementation of a PD Requirement for all incoming graduate students beginning Fall 2016, and it was subsequently endorsed by UAlberta’s Dean’s Council and the Board of Governors. All three governance steps were achieved in less than six months, and this positioned UAlberta as the first post-secondary institution in Canada to formalize professional skills and competencies training to meet student demand. This degree requirement embodies two parts: the completion of eight hours of PD activity and the completion of a graduate student Individual Development Plan (IDP). Both requisites were purposefully designed to formally include graduate student supervisors/advisors and departments in the approval process. In addition, by giving departments and faculties the final authority on what specific activities fulfil the requirement, FGSR is rearticulating its continued commitment to respecting the unique needs of disciplines, programs and graduate students.

¹ To the best of our knowledge, we remain the only university in the U15 to have implemented this degree requirement which follows in the footsteps of Ivy League institutions south of the border.
The Individual Development Plan (IDP): Placing Students in the Driver’s Seat

The IDP process was piloted with graduate students before its official launch Fall 2016. The process guides students through a well-defined series of steps to support career exploration, skills and competencies self-assessment, and the production of an academic and a PD road map (action plan). Here are some details about the process and how it was rolled out:

- The IDP process includes a student workbook which steers the student through a self-assessment of performance proficiency across seven competencies which were identified at the institutional level in collaboration with employers, faculty members, students and UAlberta’s career development professionals. These seven competencies deliver what is needed for career and personal success in both academic and non-academic environments (see appendix for details) and align with similar findings by Tri-Council, the Canadian Association of Graduate Studies and other national bodies.
- In the first year of implementation, FGSR’s IDP project lead introduced the IDP process and the PD requirement to almost 3000 students, supervisors/advisors and program administrators through in-person presentations and face-to-face meetings.
- The development of a series of workshops for supervisors and students about the IDP tool and process (levels one, two and three) accelerated the learning process for all by creating on-going opportunities for formal training, guidance and support.
- The IDP is signed off by each student's supervisor/advisor to set a high standard of quality for the IDP results, while keeping the student accountable for his or her professional and personal development. This sign-off also formally underscores the mentorship role supervisors/advisors often play in the professional and personal growth of their students.

Eight Hours of PD Activity: Students Developing Transferrable Skills and Competencies

FGSR has set the bar high for what constitutes formal PD training. Within the context of fulfilling the eight hour PD Requirement, the following three conditions for the learning opportunity or PD offering must be satisfied:

- Comprises formal training or active learning with an assessment component (self-assessment, reflection, quiz, write-pair-share, evidence of knowledge application)
- Falls outside of research methods training, capstone project, thesis or equivalent, and required practicum
- Supports the career goals and/or seven skills/competencies identified in the individual development plan

FGSR’s PD Offerings: A Provincial Grant Upped Our Game

Since 2005, the Faculty of Graduate Studies and Research has supported the professional development of its diverse graduate student population through three key programs: 2

- The Graduate Teaching and Learning Program
- Professional Development workshops
- A Community Volunteer Program which connects graduate student research activities with the broader community

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2 The CAGS Phase 1 Report (Graduate Professional Development: Towards a National Strategy) placed UAlberta in Category 1 for its PD activity.
In 2015, FGSR received a three year Government of Alberta (GOA) grant – *A Vision for Innovation in Alberta: Excellence and Transformative Talent* of over six-million dollars. The heady combination of the GOA funds and the implementation of the PD requirement resulted in accelerating FGSR’s ability to create innovative PD workshops and programs to better meet student demand for relevant competency training and development to satisfy the newly introduced eight hours of PD activity.

Highlights of new offerings:

- Graduate students could earn valuable work experience and eight hours of PD credit through the launch of the *Graduate Student Internship Program* (GSIP) 2016. Graduate students had asked for this program through the Graduate Student Association. Since the program’s launch, more than 530 graduate students have benefitted from paid, meaningful internship positions inside and outside of the academy while meeting the PD requirement. Those positions have connected our students with more than 200 employers and reflect 255,542 hours of graduate student contribution to Alberta’s economic and social sectors. The impact of the PD Requirement is evidenced by the GSIP student survey where 94% of respondents believe their participation in the program strengthened their competencies. In a post-post survey (six months after the completion of the GSIP program), 73% of students surveyed said the GSIP experience helped them secure their current employment.

- FGSR also created a flagship PD event to reinforce the importance of professional development as a degree requirement and a life-long endeavor. The annual *Invest In Your Future* symposium inspires graduate students to imagine their futures by delivering impactful keynotes, and high quality hands-on workshops covering topics such as entrepreneurship, innovation, consulting, networking, career design and the art of communicating personal value to academic and non-academic employers alike. Conference attendance has more than doubled in a three year period, and the live-streaming of keynotes garnered more than 2,000 views.

The Impact of the PD Requirement: Expanding Skills, Knowledge and Mindset

*I keep coming back to my IDP because I learn something new about myself every time.*

- Graduate Student

*Reviewing students’ IDPs helps me be a better mentor.*

- Graduate Student Supervisor

Formal (student feedback surveys) and informal comments made to PD team reinforce the PD Requirement is supporting graduate students as they navigate their academic journey within the context of fulfilling their full potential upon convocation. In a recent survey of the largest population of our graduate students, namely the faculties of Arts, Engineering, Science and Medicine and Dentistry, the following results validate the strength of this degree requirement (n=868, represents a 17.5% response rate):

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3 The grant spend was extended by an additional year due to senior leadership changes at the University of Alberta which delayed the start of grant-funded activity until January 2016.

4 The Graduate Student Internship Program is based on a wage-subsidy model where employers can hire graduate students for up to 640 hours of work ($8,000) based on a minimum hourly rate of $25. The program is flexible to meet both student and employer needs which means the internship duration is flexible as well as is the number of hours the student works per week (i.e., part-time or full time). This program was GOA grant supported and it will continue past the end of grant funds March 31, 2019.
• 75% of graduate students reported never having completed an IDP before being introduced to the PD requirement. Individual Development Plans are quickly becoming the national career development tool of choice to increase career success. This is evident by the recent website launch by the Canadian Institute of Health Research and the University of Toronto.

• More than 55% of graduate students reported improving the skill they had identified through the IDP process as needing the most development (communication).

• 77.3% of survey respondents agreed they had enough access to PD sessions related to their specific discipline.

The current IDP student work book is being revised based on learnings and feedback, and a stand-alone interactive online platform that is presently under development will increase student engagement with the IDP process.

**Why We Nominated the PD Requirement:**

We see this initiative as both pace-setting within Canada and very effective with helping students recognize and articulate their talents, pursue their interests, learn professional skills and competencies, and make the connections that will help them excel in their chosen field.

UAlberta has firmly planted the roots for an institutional-wide strategy of ensuring the professional development of our graduate students remain a clear priority rather than a “nice to have.” This aligns with UAlberta’s strategic plan – “For the Public Good.” FGSR is playing a leadership role in keeping the momentum going by continuously celebrating successes; offering workshops to supervisors and students alike who need additional support and “convincing”; through the practice of continuous improvement and innovation; and through a marketing campaign that frames PD as a lifelong endeavor.²

We hope that sharing this innovative approach with other institutions will support the Canadian PD dialogue and further efforts towards a national strategy.

And most importantly, informal and formal student feedback enables FGSR to evolve our approach to the PD requirement and IDP tool and process. The combination of the PD Requirement and IDP is helping graduate students feel more confident about an “uncertain” future by encouraging and empowering them to design and take ownership of their career. We have given our graduate students unique incentive to engage in goal setting and professional development activities, and to proactively develop a network to provide both intellectual and emotional career support as they move through their degree. The PD Requirement is innovative, in that it is helping FGSR support the career outcomes and mental health of our students in a very real, visible way that augments existing student supports.

² See appendix for more detail
Appendix:

Success Indicators and Metrics (measured per fiscal year)

<table>
<thead>
<tr>
<th>IDP Workshop</th>
<th>Graduate Student Attendance</th>
<th>Master's Student Participation Rate</th>
<th>PhD Student Participation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note: net new activity inspired by the introduction of the PD Requirement</td>
<td>Note: net new from April 1, 2017 to March 31, 2018</td>
<td>(% of graduate student attendance)</td>
<td>(% of graduate student attendance)</td>
</tr>
<tr>
<td>IDP Part 1 (orientation)</td>
<td>1,497</td>
<td>73%</td>
<td>27%</td>
</tr>
<tr>
<td>IDP Part 2 (getting the IDP started)</td>
<td>487</td>
<td>69%</td>
<td>31%</td>
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<tr>
<td>IDP online workshop</td>
<td>640</td>
<td>72%</td>
<td>28%</td>
</tr>
<tr>
<td>IDP Part 3 (next steps)</td>
<td>246</td>
<td>76%</td>
<td>23%</td>
</tr>
<tr>
<td>Total</td>
<td>2,897</td>
<td>73%</td>
<td>27%</td>
</tr>
</tbody>
</table>

Growth in Non-Disciplinary Skills and Competencies

FGSR exceeded its target of 20% growth for graduate student participation in net-new, non-disciplinary skills and competencies workshops and sessions, and the combined total of “seats filled” and graduate student participation numbers represent an increase of 39% compared to the overall performance indicators and metrics of 2016-2019.

Success Indicators and Metrics

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<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of seats filled for PD (general support skill development) activities supported by FGSR</td>
<td>1,645</td>
<td>2,624</td>
<td>2,933</td>
</tr>
<tr>
<td>Number of graduate students participating in net new PD (general support skill development) activities supported by the GOA grant &amp; FGSR</td>
<td></td>
<td>370</td>
<td>625</td>
</tr>
<tr>
<td>Net new number of graduate students and post-doctoral fellows accessing online professional development sessions through MyGradSkills.ca</td>
<td>280</td>
<td>352</td>
<td>1,102</td>
</tr>
<tr>
<td>Number of courses (net new) completed on MyGradSkills.ca</td>
<td>165</td>
<td>450</td>
<td>1,187</td>
</tr>
</tbody>
</table>
Statements from Conference Participants: How *Invest In Your Future Symposium* Impacted Student Career Planning

I really enjoy the keynote speakers and it *MOTIVATED ME TO FOLLOW MY OWN DREAM.*

I found the symposium very well balanced in terms of the different approaches, from the professional options to the exploration of our preferences and talents. The selected speakers were high quality.

In my area (rehabilitation science) options other than clinician or academia are not very common.

It was very plainly laid out how I could look for other opportunities, and how to set myself up for success regardless of what I pursue.

I *REALLY THINK I LEARNED USEFUL INFORMATION* (sometimes just looking at things from a new perspective).
Appendix 3
Entrepreneurship and Mentorship
"My experience in the mentoring program has been immensely positive. My mentor approached our relationship as one of mutual benefit, and me, as a colleague. She has been willing to model and share her professional experience through open and honest conversation and with genuine enthusiasm. I have felt my mentor to be dedicated to my sense of success and confidence as a blossoming young professional. She has gone above and beyond to enrich our time together by sending me relevant articles, connecting me with her co-workers and collaborators, and providing me with real-time feedback on my projects or challenges."

Dr. Rebeccah Marsh  
Director of Evaluation, Research, & Innovation  
CASA Child, Adolescent and Family Mental Health

"I would tell future mentors to try to find the time and space to participate in the program. You will be surprised at how much experience and expertise you have gathered over time that young professionals can find useful for informing their own journeys. And none of us is ever done learning - so take the opportunity to make a new connection and see things from a fresh perspective."

Ashley Radomski  
PhD Candidate  
Department of Pediatrics

"Celebrate Mentorship! 2019 Posters"
The Journey as a mentor or a mentee

Jingjing Yi1, Hossein Shahandeh2, Dinuka Gunaratne3
Department of Chemical & Materials Engineering, University of Alberta, Alberta Machine Intelligence Institute, “Career Center, University of Alberta

APPENDIX 3A

Introduction

Why choose Career Mentor Program?

Mentor:
1. Being international makes my past study and life experience hard.
2. Helps someone who faces the same challenges as I did before.
3. Being a PhD makes me overqualified and lack normal communication skills.
4. Be able to communicate in an efficient way to non-technical background people
5. See the mentor’s improvement through the process.

Mentee:
1. Eager to get connected with the professional in the field of data science & machine learning and learn what they are doing.
2. Feel lonely as an international student and want to get support from people around me.
3. Not confident and hope to share my questions to people who have gone through these.
4. Get feedback for my papers from the professionals so that I make progress.

Approach for the mentorship

The mentor builds the relationship:

1. The mentor experiences how to manage a relationship in a professional environment.
2. The mentor can focus on needed mentors who really want to improve their skills.
3. The mentor can limit the only on professional challenges. The mentor also offers advice for personal ones.

Activities

Various activities are employed to facilitate the relationship:

1. Organize monthly meeting and email summary for the meeting.
2. Attend Lunchalytics or meetups together.
3. Advice for CV & Cover letter
4. Facilitate mentors’ interviews.

Activities

What the mentor has learned:

1. Follow my dreams and find my motivation
2. Maintain a close relationship with friends and working relationship with colleagues
3. Care about people around me
4. Learn how to do a job shadow and job search skills
5. Practice how to present myself and do cross culture communication
6. Understand the business dress code
7. Go over the networking skills and references
8. Produced CV and Cover letter writing skills

Future

The mentor wanted to know when he started his career:

1. Six years of ongoing movements in his domain of interest (funding, investments, etc.)
2. Know more about the job field

Next step for the mentor:
1. Reach out to different people
2. Explore more possibilities of the

Acknowledgment

Thank you for all the people and organizations on the journey.
Thanks for the time and effort that Hossein and Dinuka put into this program! Without your care and support, I would not be able to grow so fast professionally and personally.

Thank you for the funding and efforts that Government of Alberta and University of Alberta has invested in this program.

Mentee: Julia Kurzawa, Masters in Public Health (Health Promotion)
Mentor: Liz O’Neill, Executive Director, Big Brothers Big Sisters of Edmonton

What was your overall experience of the Graduate Student Mentoring Program?

Liz: “Great experience with a great student who was engaged and wanted to connect and learn and be involved in the process and worked hard and wanted to do the work. Thank you for allowing me to be a part of this”

Julia: “This experience was immensely helpful in preparing me for my re-entry to the workforce. The career goals action plan really helped to direct our time during meetings. As a result of this opportunity, I have a clearer sense of my desired career path and steps to take to reach this. I was able to connect with others in the field and broaden my professional network. My mentor went above and beyond by connecting me with an amazing “co-mentor” in Ottawa, as I plan to move to Ottawa in a few months”

<table>
<thead>
<tr>
<th>SOCIAL GOALS</th>
<th>ACTIVITIES</th>
<th>OUTCOME</th>
<th>TIMELINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify the primary and secondary goals that will form the personal and professional development strategies</td>
<td>Develop and professional career goals, understanding their respective learning opportunities</td>
<td>Enhanced awareness of each field learning opportunities</td>
<td>Jan 2019</td>
</tr>
<tr>
<td>Create a timeline and set realistic objectives and expectations for each goal</td>
<td>Develop an assessment of each field learning opportunities</td>
<td>Enhanced awareness of each field learning opportunities</td>
<td>Jan 2019</td>
</tr>
<tr>
<td>Communicate the profession and industry knowledge and expand to leadership</td>
<td>Develop an understanding of leadership skills and career development assumptions</td>
<td>Enhanced awareness of each field learning opportunities</td>
<td>Jan 2019</td>
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<td>Develop an understanding of leadership skills and career development assumptions</td>
<td>Enhanced awareness of each field learning opportunities</td>
<td>Jan 2019</td>
</tr>
</tbody>
</table>

Purpose

Process

Goals

Relationship

Roles

CELEBRATE MENTORSHIP!
THE MENTOR AND MENTEE JOURNEY THROUGH THE CAREER MENTORING PROGRAM

CAREER MENTORING

WHAT IS CAREER MENTORSHIP?
- Formal or informal relationship between mentor and mentee
- Aim to facilitate personal and professional growth, and reaching career goals for mentee
- Mentor is eager to develop skills, gain knowledge, and expand network with mentor's help
- Mentor provides vision, challenge, and support

WHY IS CAREER MENTORSHIP IMPORTANT?
- Get information, advice, and guidance from someone with professional experience
- Receive nonjudgmental feedback on and practice in developing workplace skills
- Discover new contacts and community connections
- Mentors find hard information about career paths, jobs, industries, and work settings
- Help and support
- To help the mentee develop a sense of competence and probing

MENTORSHIP ACTIVITIES

- Work-related
- Professional\n- Personal\n- Networking events
- Conferences
- Work-related meetings
- Career Goals
- Professional development
- Mentees

PROGRESS

- Established mentor-mentee relationship and mentees from various fields including surgery, medicine, political science, writing studies, and career development.
- Attended numerous meetings with mentors to discuss career goals, interpersonal development, opportunities and resources, skills and knowledge in the field.
- Shadowed mentors, patient rounds, and ward-related meetings.
- Attended career-related events, conferences, and networking events.
- Extensively practiced writing skills under supervision of my mentors to think more deeply and communicate more clearly.
- Did various “homework” assignments under supervision of my mentors to educate myself to broaden my thinking, and develop new perspectives.

FUTURE

- Stay connected with my mentors and learn more about their own experiences.
- Participate in more networking events and conferences.
- Do more learning activities.
- Expand my network.
- Give back by helping other people in need.

JOURNEY AS A MENTOR OR A MENTEE

*VIRAJ SINGH* | DR. RAM MEHTA | DINUKA GUNARATNE
*AGRICULTURAL, FOOD & NUTRITIONAL, PBR LABORIES INC, EDMONTON, CANADA, CAREER CENTER, UNIVERSITY OF ALBERTA

What is mentorship
- Off-line help by one person to another in making significant transitions in knowledge work or thinking (Chatterjee 1990)
- To help and support people to manage their own learning in order to maximise their potential, develop their skills, improve their performance and become the person they want to be (Parson, 1992)

Why mentor is necessary

Career Functions
- Help the mentee learn the ropes and prepares for career advancement
- Coaching
- Challenging assignments
- Exposure and visibility

Psychosocial Functions
- Help the mentee develop a sense of competence and clarity of identity
- Role-Modeling
- Acceptance and confirmation
- Counseling and Friendship

Approach driven by the mentorship

Mentoring is a positive developmental partnership, which is driven primarily by the mentor: The mentor help to accommodate himself and make a relationship in a professional environment. The mentor can review relationship regularly focus on the relationship, other's expectations of mentoring, and develop relationship for moving towards successful people. The mentor helps develop the relationship, and the feedback and suggestions are given to the mentor.

Outcome from mentorship program

- What the mentor has learned from mentorship program:
  - Avoid procrastination, find my motivation and follow my dream.
  - Learn how to build relationships with colleagues and feel part of the community.
  - Manage the integration of job, career and personal goals.
  - Learn how to do a job shadow and job search skills

Benefit from mentorship program

- The difference after joining the mentorship program?
  - Know how present myself and how to reach out to different people
  - Become more confident about myself.
  - Go over the networking skills and references
  - Make progress both professionally and personally

Acknowledgment

Dinuka Gunaratne B.Sc.
Faculty of Graduate Studies & Research
PBR Laboratories Inc.

Ram D. Mehta, Ph.D. P.Eng
President/CEO
PBR Laboratories Inc.

CONTACT ME

hojanepe@ualberta.ca
780.224.6000

Sincerely,
Osman Hojanepe

VIJAY SINGH, DR. RAM MEHTA, DINUKA GUNARATNE
*CAREER CENTER, UNIVERSITY OF ALBERTA*
At face value, our mentorship was simply two guys meeting up once per month in downtown Edmonton. Usually, it was a chat over coffee, one time we met for breakfast. What Sean was really doing was cultivating the mind of a young PhD student; the student was well-meaning, but afraid to act on his ideas. Pairing a science-based PhD student with an entrepreneur may seem strange, but the areas that this PhD student wanted to improve on don’t necessarily have to do with science.

Most Valuable Lessons:

My career is about me. If there is something I want it is me who needs to pursue it.
“Stop asking permission and start doing! Assume nobody will ask you to do something that you already want to do.”

It’s not about the certifications or experience I have. It’s what I do with them.
“How do the things that you can do fit into a big picture and give you leverage?”
“Terrapin *does* what others talk about doing. That’s part of our value.”

Be an instant expert. Fill the gaps in my and my organization’s knowledge base.
“Advancement should never be about swindling people. Use your position and knowledge to make deals and provide value. Find out what isn’t happening and make it happen!”

As a person with a well-rounded set of skills, the thing that resonates with me, especially in terms of my future career, is my ability to make myself indispensable. If I really want something from someone I have to make them an offer they can’t refuse; show them why not having me, or turning down my offer doesn’t make sense.
Entrepreneurial Mindset and Innovation course survey

We invite you to provide feedback on the Entrepreneurial Mindset and Innovation course for graduate students. Responses to this survey are anonymous. Aggregate results will be used for reporting purposes and program improvement, and long form answers may be used anonymously to promote future sessions of this course. Any identifying material will be removed to ensure anonymity of survey participants.

I can immediately apply the knowledge I gained from this course.

1 2 3 4 5
strongly disagree strongly agree

I am more confident that I can take an entrepreneurial or innovative approach to my research or area of study.

1 2 3 4 5
strongly disagree strongly agree

I can apply the knowledge I gained from this course to current and future employment opportunities.

1 2 3 4 5
strongly disagree strongly agree

Why?

I learned from other students in the class.

1 2 3 4 5
strongly disagree strongly agree
The interdisciplinary nature of the course - having students enrolled from a diversity of programs and areas of study - added value.

1 2 3 4 5  
strongly disagree  ○  ○  ○  ○  ○  strongly agree

Please expand on your answer from above.

The student participation form added value to my learning experience.

1 2 3 4 5  
strongly disagree  ○  ○  ○  ○  ○  strongly agree

Please explain.

I found the guest speakers in the course to be valuable and relevant to the class material.

1 2 3 4 5  
strongly disagree  ○  ○  ○  ○  ○  strongly agree

I found the visit to the Advanced Technology Centre expanded my knowledge of Edmonton’s entrepreneurial ecosystem.

1 2 3 4 5  
strongly disagree  ○  ○  ○  ○  ○  strongly agree

I found the guest speakers on the visit to the Advanced Technology Centre provided good illustrations of course concepts.

1 2 3 4 5  
strongly disagree  ○  ○  ○  ○  ○  strongly agree

Since taking the course, I am interested in getting more involved in the U of A entrepreneurial activities and support programs.

1 2 3 4 5  
strongly disagree  ○  ○  ○  ○  ○  strongly agree

Why?
Since taking the course, I am interested in getting involved in the Edmonton entrepreneurial ecosystem.

Why?

I am interested in learning more about entrepreneurship and innovation.

I am confident I have learned basic business skills from this course

How would you rate this course overall?

How likely are you to recommend this course to other graduate students?

Why?

What is the most important thing we could have done to improve this course?

This form was created inside of University of Alberta.
Acknowledgements

The Faculty of Graduate Studies and Research (FGSR) would like to thank the following for their hard work, guidance, and assistance in developing this handbook:

- Patrick Wu, who developed, wrote, and designed the Innovator's Handbook with guidance, input, and support from campus and off-campus partners
- Office of the Vice-President (Research)
- TEC Edmonton
- Alberta School of Business
- Faculty of Engineering
- Faculty of Science
- Faculty of Medicine & Dentistry
- University of Alberta Venture Mentoring Service
- Social Innovation Institute at MacEwan University
- All the current and alumni graduate students who shared their innovation stories

This project was made possible through the Government of Alberta grant "A Vision for Innovation in Alberta: Excellence and Transformative Talent."

Photos courtesy of: University of Alberta, Jeanette Sesay, Richard Siemens, and Stantec Consulting Ltd.

QUESTIONS? CONTACT US!

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Killam Centre for Advanced Studies
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General inquiries: grad.mall@ualberta.ca
Innovation for Everyone

What is Innovation, Anyway? 6
How Do I Use This Book? 7

Intellectual Property

What is Intellectual Property? 10
Why Are the IP Policies Important? 10
What is TEC Edmonton? 11
What Do All These Words Mean? 12
What Are the Differences Between Revenue, Royalties, and Equity? 13

Net Revenue Sharing Model 14
What’s a Spinoff Company? 15
I Made an Invention! Now What? 16
How Does Licensing Work? 16

Licensing Through the University 17
Licensing Independently 18

How Does a Spinoff Company Work? 19
Spinoffs Through the University and TEC Edmonton 20
Commercializing Independently 21

The Choice is Yours 23
Innovation for Everyone

There are countless stories about organizations that change the world through revolutionary, out-of-the-box thinking. But does everybody have what it takes to be that kind of visionary? Don’t the leaders of innovative organizations possess special qualities?

Here’s a secret: Everybody can be an innovator. It doesn’t matter what your degree is in or what you’re working on. You can be an innovator because the fundamental concept behind innovation is quite simple.
What is Innovation, Anyway?

Innovation is simply **doing something that is new or better than what already exists**. It’s a broad definition for good reason, as innovation can be found in many forms, including:

- **Product** (such as new inventions, drugs, software, or artwork)
- **Policy** (such as new regulations or rules in an organization)
- **Process** (such as new strategies or protocols)
- **Practice** (such as new business models, collaborations, or ways to interact with the community)

Innovation doesn’t necessarily mean patents or inventions—an artist may be interested in a new method for selling their artwork, for example. And it isn’t necessarily commercial, either—a student may develop a new way to take and sort notes for their dissertation.

Innovation is not solely the domain of engineers and scientists. Multidisciplinary collaborations are inherently innovative. For example, a business student may help a computer scientist develop a plan to commercialize a new app. An economist can help a doctor understand the economics behind a possible new drug. A musician might work with an engineer to improve acoustics in a space.

The possibilities for innovation are limitless. The problem is that not everybody knows how to get started.
How Do I Use This Book?

There is no one right way to innovate. Innovation will be a different process for everybody. This handbook is a starting point, not a complete how-to guide.

The book is divided into sections that cover common questions students might have about innovation. We explain the University of Alberta’s intellectual property framework, where to find helpful resources in the community, and what kinds of questions you should ask your mentors and supervisors.

The purpose of this book is not to encourage you to get more patents. Nor is it meant to encourage you to commercialize something. The goal is simply to show you that everybody—regardless of their degree—can be an innovator, and to empower you to make informed decisions about what to do with your ideas.

CAMPUS INNOVATOR: FUTURE FIELDS

Matthew Anderson-Baron obtained his PhD in cell biology at the U of A. During his graduate studies, he fell in love with the concept of cellular agriculture. The idea of cultivating meat without the need to farm animals was particularly exciting to him, as it would be a novel application of the techniques and skills that he acquired during his PhD studies. Shortly after he graduated, Matthew co-founded Future Fields, a research-and-development cellular agriculture company aiming to commercialize cultured meat in Canada.
Intellectual Property

At some point, you might create something innovative, but you might not be sure how to protect the idea.

This is why it is important to understand how the university’s intellectual property and commercialization policies affect you as a student.

What is intellectual property? Why is it important? How does the university work with innovators and their intellectual property? This section aims to demystify some of those questions.
What is Intellectual Property?

During your studies as a graduate student, you will likely create intellectual property (IP). IP is the product of intellectual activity that can be protected to some extent by law. This includes inventions, software, trademarks, and creative works.

If you thought it (and you created it), it’s IP.

Why Are the IP Policies Important?

As a potential creator of new IP, and as somebody who may decide to commercialize it, you should understand how the IP policies at the U of A affect you and your research.

These university documents specifically apply to IP in a graduate-study setting:

- Patent Policy
- Commercialization of Patentable Intellectual Property Procedure
- Intellectual Property Guidelines for Graduate Students and Supervisors
- TEC Edmonton’s Introduction to Creating a University of Alberta Spin-Off Company

These policies can be found online through the University of Alberta Policies and Procedures Online Database (UAPPOL) and through the Graduate Program Manual on the Faculty of Graduate Studies and Research website. The Introduction to Creating a University of Alberta Spin-Off Company can be found on TEC Edmonton’s website.

This section breaks down the most important parts of these documents to help you understand how the policies might affect you and your research.

---

What is TEC Edmonton?

As a joint venture between the U of A and Edmonton Economic Development Corporation (EEDC), TEC Edmonton serves two primary functions:

1. **Technology transfer office** for the U of A, handling agreements between the inventor and the university, and between the university and companies/licensees. They can help you understand IP policies, formulate an IP strategy, secure IP protection, negotiate IP-related agreements, and create a spinoff company (if you so choose).

2. **Business accelerator** for technology-based companies, providing mentorship, business development services, networking, and connections to potential investors. TEC serves a diverse community of researchers, entrepreneurs, early-stage technology companies, and the innovation community.

TEC Edmonton is the recommended resource for any IP matters arising from your studies or your employment at the university. You can find their main offices at Enterprise Square in downtown Edmonton.

**IMPORTANT NOTE**

This chapter seeks to interpret the IP policies at the university but does not supersede them. The university’s policies and procedures are not permanent and may change in the future.

The guidance and suggestions in this chapter are based on the policies published at the time of writing. If there are conflicts or contradictions between the policies and what’s written in this book, the policies and procedures in the UAPPOL will be deemed correct.
What Do All These Words Mean?

The following definitions will help you understand IP policies and related matters:

**Assignment** of IP: As the owner of the IP, you may choose to transfer IP rights to another party. The party that is assigned the IP becomes its new owner.

**Commercialization:** The process of making and/or taking a product or service to the market for profit.

**Copyright:** The exclusive right of the creator (or whoever holds the copyright) to reproduce a work. It does not protect an idea, but rather how the idea is *expressed.* Researchers and students usually hold the copyright to their own publications. However, if you are conducting research as an employee of the university (such as a research associate, research assistant, or lab technician), copyright usually goes to the university.²

**Equity:** In this context, stocks or other securities that represent ownership interest, generally in a company.

**Patentable invention:** Something that is new, useful, and not obvious for somebody with a similar skill set to develop. Inventions include many things, from new devices to new chemical compounds, new uses or processes, and even new life forms.

**Inventors:** Individuals who create inventions. As a student, you may be looking to publish something related to your invention, but not all authors who are listed as contributors to academic publications may be inventors. The university’s Report of Invention (ROI) form can help you sort out who the inventors are.

**Patents:** These protect inventions—things that are new, useful, and not obvious. They give the inventor the exclusive right to make, use, or sell the patented invention for 20 years from the date of issue and allow the inventor to sue those who infringe on those rights.

**License:** This extends the IP rights to another party, giving them the ability to also make, use, or sell the IP.

² Intellectual Property Guidelines for Graduate Students and Supervisors, p. 8
What Are the Differences Between Revenue, Royalties, and Equity?

The meanings of these terms can conflate different concepts that are related but not quite the same.

It may help to understand the relationship between revenue and royalties. The term *revenue* generally refers to money that comes to any entity through sales, fees, and similar avenues. For a company or licensor, *gross revenue* consists of all the money that comes in from sales and licensing fees. Companies may have more than one product or service from which revenue is generated.

When a university-created technology is licensed to a private company, the university may collect a *royalty*, which is a percentage of the gross revenue (negotiated between the company/licensor and TEC Edmonton). Royalties are calculated from the gross revenue generated with the *licensed technology*, not the overall revenue of the company.

*Net revenue*, when referred to in the Patent Policy, is money collected by the university or inventors from the company/licensee. In other words, it is the royalty the company/licensee pays to the university, minus the cost of IP protection and licensing (such as filing patents or out-of-pocket costs of granting or enforcing a licence). As per the Patent Policy, this net revenue is shared between the university and the inventor(s): one-third to the university, one-third to the inventor(s), and one-third to the one responsible for commercializing the invention (the *commercializing lead*).
As you can see, most of the money generated by the company or licensor is retained; only the royalties paid to the university are shared through the three-thirds scheme outlined in the Patent Policy. The portion of the net revenue shared with the inventor(s) is usually divided among all inventors.
If you are planning to create a spinoff company, you should also consider how equity (ownership of the company) is shared. Equity is different from revenue and is an important consideration when raising capital from investors in the future. Equity influences how much each shareholder receives when the company is sold, as well as how much say they have in the direction of the company as it is growing.

What’s a Spinoff Company?

Spinoff companies are legal entities that are separate from the university. They meet three key criteria:

1. A significant portion of their commercial activities (e.g. sales) will come from the invention, be it an application or a business model surrounding it.
2. They are not controlled by the university. The university may, however, have a non-controlling equity or royalty stake in the company.
3. They have signed a relationship agreement with the university to address potential conflicts of interest if university staff are involved with the spinoff.

You may choose to create a spinoff company instead of a licensing agreement with an existing company, to commercialize your invention.

CAMPUS INNOVATOR: ROSHAN WATER SOLUTIONS

Roshan Water Solutions is a startup committed to assuring the safety of drinking water while protecting the environment. It was founded in 2017 by U of A alumni Parmiss Mojir Shaibani and Amirreza Sohrabi. Their innovation is a field sensor that detects E. coli in water. The idea originated during Parmiss’ PhD project, which involved water management in rural areas in India and Canada. When the project showed potential for use outside the lab, the team took the idea to the next level by creating this startup company.
I Made an Invention! Now What?

First off, congratulations! There are a few options to consider, depending on what you hope to do with your invention.

The first step, no matter what, is to report the technology to the university. To do so, you must submit a fully signed Report of Invention (ROI) form to TEC Edmonton.

It is highly recommended that you report a potentially patentable invention as early as possible, even before you submit a proposed publication or an abstract to a conference for consideration.

The university’s policies on patentable IP are inventor-centric. As the inventor, you—and your co-inventors—own the invention and get to choose what you want to do with the new IP (certain exceptions apply, as noted in the Patent Policy). You must decide:

1. Do you want to license the technology, or create a spinoff company to commercialize it?
2. Do you want to assign ownership of the IP to the university for commercialization, or do you want to keep ownership of the IP?

Each option has its own considerations to keep in mind as you move forward with commercializing your idea.

How Does Licensing Work?

Licensing means that the invention is commercialized by giving third parties the rights to make, use, and sell it. The licensee (the one who gets the license) pays a royalty fee to the licensor (the one who gives the license).
Licensing can either be done independently (where the IP is retained by the inventors) or assigned to the university, which will conduct licensing activities on the inventors' behalf. The Patent Policy commits a third of the royalties to the commercializing lead. This means whoever leads the licensing (be it you or the university) will be the one who receives the remaining third of the royalties.3

**LICENSING THROUGH THE UNIVERSITY**

<table>
<thead>
<tr>
<th>Licensing Through the University</th>
<th>Inventor</th>
<th>University</th>
<th>Licensee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receives commercialization rights under license</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Responsible for commercialization</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Responsible for licensing, liability, patent application, etc.</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Responsible for negotiating with licensees</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owns IP</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royalties shared</td>
<td>33%</td>
<td>67%</td>
<td></td>
</tr>
</tbody>
</table>

LICENSING INDEPENDENTLY

<table>
<thead>
<tr>
<th>Licensing Independently</th>
<th>Inventor</th>
<th>University</th>
<th>Licensee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receives commercialization rights under license</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Responsible for commercialization</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
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<td>Responsible for licensing, liability, patent application, etc.</td>
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</tr>
<tr>
<td>Royalties shared</td>
<td>67%</td>
<td>33%</td>
<td></td>
</tr>
</tbody>
</table>
How Does a Spinoff Company Work?

You may decide that the invention has more value as part of a spinoff company than through licensing to an existing entity. Although a spinoff is legally separate from the university and the inventor, the inventor generally stays with the spinoff as a founder.

You may choose to transfer your IP to the spinoff independently (where IP is retained by the inventors) or assign it to the university. This allows TEC Edmonton to protect the IP and assist with the initial spinoff startup.

Regardless of which option you choose, spinoff companies (and the inventors who founded them) are still responsible for the following:

- Submitting a completed Report of Invention (ROI) to TEC Edmonton
- Submitting a business model summary of the spinoff, including a description of potential products, possible market opportunities, and who the founder(s) are from the university
- Incorporating the company—ideally with legal, accounting, and insurance advice
- Paying for all IP and commercialization expenses (unless you assign to the university, in which case TEC will cover the cost for the first patent application)
- Fulfilling financial reporting requirements to the university through TEC Edmonton

---

If you choose to assign the IP to the university and form a spinoff, TEC Edmonton can assist with licensing the technology into the spinoff and spinoff business development. By going with this route, TEC Edmonton will complete a patentability assessment, file a patent application, and pay for the initial filing fee. They will also draft a term sheet and license, shareholders’, and relationship agreements.\(^5\)

As part of the deal structure you negotiate with TEC Edmonton, the university may take a non-controlling equity stake in the company. This means the inventors keep most of their shares and remain in control of the company.

The university may also take a small royalty, as described earlier in this chapter. After the cost of IP protection and licensing is deducted from the royalty, the remaining net revenue is divided as per the Patent Policy. Since the university is leading most of the commercialization activities, they receive the third of the net revenue dedicated to the commercializing lead.\(^6\) The inventors can reinvest their portion of the net revenue back into the spinoff company if they wish.

As of the date of this document, TEC Edmonton is piloting an Express Deal program, which has standardized terms to help reduce the time, complexity, and cost of negotiating deal terms. Express spinoff deal structures offer inventors the choice of compensating the university through either royalties or equity. TEC Edmonton’s technology management team can provide more information on the Express Deal program.

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6. Patent Policy, § 9
### Spinoffs Through the University

<table>
<thead>
<tr>
<th></th>
<th>Inventor</th>
<th>University</th>
<th>Spinoff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsible for commercialization</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Receives commercialization rights under license</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Owns IP</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Equity shared (dilutive)</td>
<td>Negotiable</td>
<td>Negotiable</td>
<td>Negotiable</td>
</tr>
<tr>
<td>Royalty paid by spinoff to university</td>
<td>Negotiable</td>
<td>Negotiable</td>
<td>Negotiable</td>
</tr>
<tr>
<td>Royalty shared (depending on inventors’ choice of deal structure)</td>
<td>33%</td>
<td>67%</td>
<td></td>
</tr>
</tbody>
</table>

### COMMERCIALIZING INDEPENDENTLY

![Diagram showing the flow of sales or gross revenue, spinoff, and revenue remaining with spinoff]

You may choose to **keep ownership of your IP** (as allowed under the Patent Policy). The inventor may choose to license to an existing entity or assign their IP to the spinoff company for commercialization. Through TEC Edmonton, the university must approve of the transfer, and you must still negotiate how the revenues, royalties, and shares are structured.
Even if you choose to go the independent route, you have the same obligations to the university, as outlined earlier in this section. As an independent, the spinoff is also responsible for all patenting costs, including the initial patent-application filing.

Because the university is not representing the inventors for an independent technology, it captures only the institutional return as a royalty and/or equity. For this reason, the royalty is lower but is not shared with the inventors of an independent spinoff.

<table>
<thead>
<tr>
<th>Spinoffs Independently</th>
<th>Inventor</th>
<th>University</th>
<th>Spinoff</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Royalty shared (depending on inventors’ choice of deal structure)</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

**BUT IT’S MY INVENTION!**

It may seem strange that the university takes a portion of the net revenue or spinoff equity no matter what you do. Keep in mind, however, that the university also invested in the creation of the IP by providing space, resources, equipment, and money (such as salary or stipends) to the inventors as they were working on the invention.

The invention was also likely funded with public grants. The university is mandated to ensure a portion of commercial proceeds from this investment is reinvested into further research and commercialization.
The Choice is Yours

As you can see, there are many choices you can make with new patentable IP. What’s next is up to you! Depending on how much you want to get involved in commercializing your new invention, one of these routes may appeal more to you. If you’re not sure, you should speak with TEC Edmonton to discuss your options.
It Takes a Village

Very rarely does groundbreaking innovation happen from the work of a single person. Ideas flourish when you connect with the community to gather feedback and identify problems early on.

So if you have an idea, who should you talk to? What do you need to succeed? And where can you find funding to kick-start your idea? Fortunately, many resources are available right here on campus to help you out.
What Do I Need?

What do you need to turn your idea into reality? The two main things that help entrepreneurs kick-start their ideas are funding and space.

FUNDING

There are a number of avenues where you can find funding. There are two types of funding to keep in mind:

1. Non-dilutive funding typically does not involve giving up shares or ownership of the company. This category includes government grants, tax credits and prizes from events such as pitch competitions. Many organizations offer programs and grants for researchers and early-stage startups. These programs change frequently, so stay up to date on the ones that could be relevant to you.

2. Dilutive funding includes investments from private capital, such as angel investors and venture capitalists. Companies will typically trade shares in the company for funding from private capital, effectively “diluting” their ownership. “Dilution” continues as new investors come in and the percentage of the company owned by earlier investors decreases. Dilutive funding is important once the company grows to the point that it can no longer be sustained by grants alone.
SPACE
Where will you work? You may need space where you can do research or business development.

If you need office space or a desk, consider renting from a local coworking space. You can also look at groups on campus who might be able to offer coworking arrangements to new startups.

If your idea requires more specialized space, such as a lab or a kitchen, consider accelerator or incubator programs. These programs often provide specialized space, such as engineering fabrication space, kitchens, or lab space for biology or chemistry work.

WHERE WILL I FIND FUNDING?
Many grants and programs are managed by government organizations or other public sector agencies. Consider programs run by organizations such as:

- Alberta Innovates
- Canadian Institutes of Health Research (CIHR)
- Genome Alberta
- Government of Alberta
- Government of Canada
- National Research Council of Canada (NRC)
- Natural Sciences and Engineering Research Council of Canada (NSERC)
- Western Economic Diversification Canada (WID)

Not all programs and grants last forever, and not all of them are appropriate for every idea. We recommend you take a look at what you need and do some research on what programs these organizations might be able to offer you. We also recommend you start with some of the databases outlined in the Starting Points section later in this chapter.
Starting Points

Since every idea is different, not all resources will be useful for everybody. Your skills as a researcher will help you determine the resources that best suit your needs. Here are a few starting points for your research. Many of these resources are compiled into databases online, which can be filtered down and searched through depending on your needs. As you find and connect with more people in the ecosystem, you will learn more about other programs and services that can help you.

START ALBERTA
Start Alberta is an Alberta-focused online community of startups and startup-support organizations. These include service providers, investors, government agencies, and individuals in the community who can provide support and mentorship for your idea. Companies can add their own profiles to Start Alberta’s ever-growing database.

Learn more: https://startalberta.com/

INNOVATION CANADA
Innovation Canada is an initiative from Innovation, Science and Economic Development Canada (ISED). This database is a collection of grants, programs, and support organizations that help entrepreneurs and innovators. Users can answer a short questionnaire that will help filter down the pool of programs to those that are most relevant to them.

Learn more: http://innovation.canada.ca/
ALBERTA INNOVATES TECHNOLOGY DEVELOPMENT ADVISORS

Alberta Innovates is a public agency that provides services to entrepreneurs, researchers, investors, and small-to-medium enterprises (SMEs). Its Technology Development Advisor (TDA) program provides business development and coaching to SMEs in knowledge-based industries. TDAs are well connected to Alberta’s innovation ecosystem and can offer pointers and introductions for companies.

Contact intake@albertainnovates.ca to connect with a TDA in your area.

CONNECTICA

Connectica is a free service that connects users with Alberta’s ever-expanding research and innovation network. Connectica facilitates introductions between stakeholders, researchers, and entrepreneurs, and helps to bridge the gap between Alberta’s research organizations, universities, and publicly funded innovation-support services.

If you’re an innovator looking to create a prototype, you need professional expertise to help test your product or require financing but don’t know where to go, Connectica has helpful information. Its searchable database makes connections quick and easy, with several search options and intelligent filters that help you narrow your search.

Learn more: https://www.connectica.ca/i3/

BUSINESS LINK ALBERTA

Business Link is Alberta’s entrepreneurial hub, helping people navigate the steps towards starting their own businesses. They provide one-on-one support and guidance, market research, access to experts, training, networking opportunities, and specialized support for Indigenous entrepreneurs.

Business Link’s services are completely free of charge for entrepreneurs of all stages. Whether you are just thinking of an idea or you are looking to take your business to the next level, Business Link can help you.

Learn more: https://businesslink.ca/
You don’t have to look far to find resources. Mentorship services, accelerators, and even coworking spaces are available right on campus. Here are just a few examples:

**TEC EDMONTON**

TEC Edmonton serves two major purposes for innovators at the university: technology management and business development.

Technology management handles agreements between the inventor and the university. They can help you understand the IP policies, negotiate IP-related agreements (including patent applications), and create a spinoff company if you so choose. If you want to commercialize something, you must go through the technology-management side of TEC Edmonton.

The business development side is an optional additional service from TEC Edmonton. They provide mentorship, business development services, networking, and even connections to potential investors. These services may involve additional fees.

TEC Edmonton is also home to a number of accelerator programs for spinoff companies, including the Merck Invention Accelerator and TEC Health Accelerator.

Learn more: [https://www.tecedmonton.com/](https://www.tecedmonton.com/)
**EHUB**

eHUB is the U of A’s entrepreneurship centre, at 9007 HUB Mall. Offering resources, networking opportunities, and funding, eHUB gives members the unique opportunity to explore ideas that will transform into projects, initiatives, and ventures. Joining eHUB gives students access to the U of A’s vibrant entrepreneurial community.

The eHUB space is ideal for prospective entrepreneurs to work, collaborate, and connect with others.

Learn more: [https://www.ehub.ualberta.ca/](https://www.ehub.ualberta.ca/)

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**THE ELKO ENGINEERING GARAGE**

The Elko Engineering Garage is located on Level 2 of the Engineering Teaching and Learning Centre (ETLC). It serves as a makerspace and machine shop for students interested in pursuing projects outside their regular studies. Separated into “clean” and “dirty” work zones, the Garage gives students access to a large suite of tools for wood, metal, plastic, electronics, and 3-D printing work. Offering hands-on training and peer mentorship, the Garage is an ideal space for students interested in doing prototyping for their side projects.

Learn more: [https://garage.ualberta.ca/](https://garage.ualberta.ca/)

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**THE POD**

Located on the sixth floor of the Electrical and Computer Engineering Research Facility (ECERF), the Pod is a maker community for students. Students who join the Pod are given access to lab and prototyping space, mentorship, support, workshops, and events. The space contains a variety of machining and electronics development tools for prototype development.

In the Pod, graduate students can gain mentorship experience by helping other students work on their projects. As part of this peer-to-peer network, graduate students can share insights and experiences that support up-and-coming innovators in the university community. Access to the space is limited and projects must be approved through an online application process.

Contact: [info@pod-innovation.ca](mailto:info@pod-innovation.ca)
THE SHACK (SCIENCE HARDWARE MAKERSPACE)
A student-driven group located in the Centennial Centre for Interdisciplinary Science (CCIS), the Shack offers 3-D printing and computer numerical controlled (CNC) milling equipment access. The Shack also hosts public outreach events, including summer camps for junior high and high school students. Students can book the equipment online.

Contact: theshack@ualberta.ca

THE STUDENT INNOVATION CENTRE (SIC)
The Student Innovation Centre (SIC) is located in the Centennial Centre for Interdisciplinary Science (CCIS), between the Biological Sciences Building and the CCIS North Lecture Theatres. The SIC is a 5,000-plus-square-foot space for extracurricular science and technology-based competitions, maker projects and undergraduate student-led ventures. The SIC is designed to empower students to think creatively outside the classroom, providing support from early ideation through entrepreneurship.

The space’s resources include bookable project rooms, conferencing capabilities, and equipment such as 3-D printers, microscopes, and high-spec computers for machine learning, virtual reality (VR), augmented reality (AR), and graphics processing. The SIC also hosts frequent workshops, seminars, and events to help students hone their soft skills.

Contact: student.innovation@ualberta.ca

SOCIAL INNOVATION INSTITUTE
Social innovation involves strengthening the greater community, sustainability, and social good, usually focusing on education, community development, health, or underprivileged individuals. The Social Innovation Institute at MacEwan University connects people with mentors and experts who can help support students’ commitment to social change. The institute is open to anybody with a socially conscious idea.

Learn more: https://www.macewan.ca/wcm/SocialInnovationInstitute/
Location: Roundhouse, Allard Hall, MacEwan University
UNIVERSITY OF ALBERTA HEALTH ACCELERATOR AT TEC EDMONTON

Operated by the Faculty of Medicine & Dentistry, the UAlberta Health Accelerator delivers mentoring, programming and access to laboratory and office space at Enterprise Square. The facility supports and inspires health-science innovators with a specific stream dedicated to students. The trainee stream provides professional development, business, and entrepreneurship training to graduate and post-graduate students.

Learn more: https://www.ualberta.ca/medicine/innovation/accelerator

UALBERTA VENTURE MENTORING SERVICE (VMS)

Modelled after a program at the Massachusetts Institute of Technology (MIT), the U of A’s Venture Mentoring Service (UAlberta VMS) develops, inspires and empowers alumni entrepreneurs by engaging them with teams of experienced mentors. This mentorship program is meant to support entrepreneurs who are running scalable ventures that are growing.

VMS places entrepreneurs with a team of three to five volunteer mentors from the business community, who provide ongoing guidance through structured meetings. There is no term limit and ventures are welcome to stay in the program as long as they are operating and getting value from their mentors. There are usually two to three intake periods each year and applications are accepted on a rolling basis.

Learn more at: https://www.ualberta.ca/VMS/

CAMPUS INNOVATOR: SCIENCE TO BUSINESS NETWORK (S2BN)

What options are available for graduate students who don’t want to pursue academia? This is what the Edmonton chapter of the Science to Business Network (S2BN) hopes to address. S2BN is a peer-to-peer network that connects students to industries with events and workshops that show students opportunities beyond the lab.

Quinn Strozynsky, a PhD candidate in oncology at the Faculty of Medicine & Dentistry, is part of the executive team at the S2BN. Quinn is particularly interested in exploring options beyond traditional academia and wants to help his peers develop the soft skills to succeed in whatever career they choose.
Other Resources for Entrepreneurs

It’s hard to be an innovator alone, so reach out to the community for help! There is a vibrant entrepreneurial support network beyond the university that can help you take your idea to the next level.

Here is a list of resource types and some examples. There are also some suggestions about when to reach out to the organizations listed. These are not rules; they are general guidelines only. Because many organizations support innovators at all stages, it’s a good idea to familiarize yourself with those that may help you now as well as in the future.

CAMPUS INNOVATORS: SPEAR

The Space Exploration Alberta Robotics (SPEAR) team is a U of A undergraduate student group designing and building robotics to support space missions. The team’s flagship project is a remote-controlled rover with a variety of tools designed to support colony operations on Mars. In 2018, the SPEAR team represented the U of A for the first time in the Canadian International Rover Challenge (CIRC), a competition that brought universities from around the world to test their technical skills and teamwork as they deployed their rovers in Drumheller, Alberta.
# Funding Opportunities

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Stage</th>
<th>Description</th>
<th>Example Organizations</th>
</tr>
</thead>
</table>
| Public Research Grant Organizations | Early  | Government departments and public sector organizations offer various research grants for scientists and students. Grants are sometimes tied to a specific industry. | • Alberta Innovates (Program Managers)  
• Canadian Institutes of Health Research (CIHR)  
• Genome Alberta  
• Government of Alberta  
• Government of Canada  
• Natural Sciences and Engineering Research Council (NSERC)  
• Western Economic Diversification Canada (WED) |
| Private Research Partnership Grants | Early  | Private industries can partner with funding agencies and researchers to support research in topics of interest. | • Alberta/Novartis Translational Research Fund  
• Alberta/Pfizer Translational Research Fund  
• Bayer Open Innovation  
• Canada’s Oil Sands Innovation Alliance (COSIA)  
• Novartis Canada |
| Foundations and Charities | Early  | Charities and non-profit organizations can provide research funding to support specific causes, such as disease research or social innovation. | • Alberta Cancer Foundation  
• Branch Out Neurological Foundation  
• Heart and Stroke Foundation of Canada  
• Kidney Foundation of Canada  
• University Hospital Foundation |
<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Stage</th>
<th>Description</th>
<th>Example Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Sector Grants</td>
<td>Early/Mid</td>
<td>Grants and programs are available specifically for incorporated small businesses looking to commercialize their products in early research and development (R&amp;D). Some programs also help recruit new employees as part of a subsidized wage program.</td>
<td>• Alberta Innovates&lt;br&gt;• Agriculture and Agri-Food Canada (AAFC)&lt;br&gt;• BioTalent Canada&lt;br&gt;• Innovation, Science, and Economic Development Canada (ISED)&lt;br&gt;• Mitacs&lt;br&gt;• National Research Council Industrial Research Assistance Program (NRC-IRAP)&lt;br&gt;• Sustainable Development Technology Canada (SDTC)&lt;br&gt;• TECTERRA</td>
</tr>
<tr>
<td>Angel Investment Networks</td>
<td>Early/Mid</td>
<td>Angel investors are usually independent wealthy individuals who make investments into companies. They usually have some experience working in a specific industry and may be part of a larger angel network.</td>
<td>• Accelerate Funds I and II&lt;br&gt;• Brass Dome Ventures Ltd.&lt;br&gt;• Valhalla Angels</td>
</tr>
<tr>
<td>Small-Business Loans</td>
<td>Early/Mid</td>
<td>Some organizations offer small-business loans geared specifically to tech entrepreneurs and their unique challenges.</td>
<td>• Business Development Bank of Canada (BDC)&lt;br&gt;• Futurpreneur Canada&lt;br&gt;• RBC Generator</td>
</tr>
<tr>
<td>Resource Type</td>
<td>Stage</td>
<td>Description</td>
<td>Example Organizations</td>
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<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------</td>
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<tr>
<td>Private Partnerships</td>
<td>Mid/Late</td>
<td>Private corporations may partner with small companies to help the growth and commercialization of new technology. This may involve licensing or selling the technology.</td>
<td>• Pharmaceutical multinationals</td>
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<td></td>
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<td>• Medical device multinationals</td>
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<td>• Software multinationals</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Other startups</td>
</tr>
<tr>
<td>Venture Capital</td>
<td>Mid/Late</td>
<td>Venture capitalists (VCs) invest funds, mentorship, and industry support to help accelerate the growth of companies. VCs search for companies that match their portfolio and are not necessarily restricted to geographic locations.</td>
<td>• 32 Degrees Capital</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Though VCs typically invest in late-stage companies, many are investing in seed rounds early in the life cycle of a company.</td>
<td>• Accelerate Funds I and II</td>
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<td></td>
<td></td>
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<td>• Alberta Enterprise Corporation (invests in other funds)</td>
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<td></td>
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<td>• Avrio Capital</td>
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<td></td>
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<td>• Builders VC</td>
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<td>• CDRI Ventures</td>
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<td></td>
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<td>• MaRS Ventures</td>
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<td></td>
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<td>• McRock Capital</td>
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<td></td>
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<td>• Panache Ventures</td>
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<td></td>
<td>• Yaletown</td>
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<tr>
<td>Commercial Bank Loans</td>
<td>Late</td>
<td>Banks and credit unions can offer larger loans for scaling up a business. These plans may charge interest on repayment. Some banks have specialized programs for high-tech or knowledge-based industries.</td>
<td>• Alberta Treasury Branches (ATB Financial)</td>
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<td></td>
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<td>• Business Development Bank of Canada (BDC)</td>
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<td>• Major banks and credit unions</td>
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</table>
## Networking Opportunities

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Stage</th>
<th>Description</th>
<th>Example Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Networks and Centres of Excellence</td>
<td>Early/Mid</td>
<td>Researchers collaborate in pan-provincial or pan-Canadian networks in specific fields. Alberta also has centres of excellence in specific disciplines.</td>
<td>• Alberta Machine Intelligence Institute (Amii)</td>
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<td></td>
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<td>• Campus Alberta Neuroscience (CAN)</td>
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<td>• GlycoNet</td>
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<td></td>
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<td></td>
<td>• National Research Council (NRC) Nanotechnology Research Centre</td>
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<tr>
<td>Community Organizations</td>
<td>All</td>
<td>Non-profit organizations offer a wide variety of services and community networks. Reaching out to the local community helps connect you to other entrepreneurs and innovators. These organizations may also run educational workshops and events.</td>
<td>• The A100</td>
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<td>• The C100</td>
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<td></td>
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<td>• Edmonton Health City</td>
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<td>• eHUB</td>
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<td>• Hunter Hub for Entrepreneurial Thinking</td>
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<td>• TEC Edmonton</td>
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<td>• Rainforest Alberta</td>
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<td></td>
<td>• Startup Edmonton</td>
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<tr>
<td>Recurring Events</td>
<td>All</td>
<td>Some events happen weekly or monthly, offering education and frequent networking with the local community.</td>
<td>• AccelerateAB</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Banff Venture Forum</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• ATB Entrepreneur Centre</td>
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<td></td>
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<td>• INVENTURE$</td>
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<tr>
<td></td>
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<td></td>
<td>• Lunchalytics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• PROPEL Energy Tech Forum</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Rainforest Alberta</td>
</tr>
<tr>
<td>Resource Type</td>
<td>Stage</td>
<td>Description</td>
<td>Example Organizations</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Social Media Networks | All   | Social media and websites are excellent arenas to learn about events in your community. Following organizations that are helpful to you will keep you in touch with current events. | • Eventbrite  
• LinkedIn  
• Meetup  
• Twitter |
| Industry Associations | All   | Industry associations are usually member-driven organizations with shared interests. They champion and advocate for the interests of industry to all levels of government. Many industries are represented by an industry association. | • Alberta Clean Technology Industry Alliance (ACTia)  
• Alberta Machine Intelligence Institute (Amii)  
• BioAlberta  
• Canadian Entrepreneurs in Life Science (CELS)  
• Canadian Entrepreneurs in New England (CENE)  
• Venture Capital Association of Alberta |

**CAMPUS INNOVATOR: LEVEL UP HACKATHON**

Kalvin Eng is currently working towards his MSc in computing science and is also a teaching assistant for a software process and product development course. In January 2019, he and three co-organizers ran the first Level Up Hackathon under the Faculty of Science, in cooperation with the Student Innovation Centre. More than 80 students collaborated over a weekend to build web applications for cultural analytics. Kalvin’s involvement stemmed from an interest in giving other students the opportunity to gain hands-on learning experience through workshops and apply their skills to real-world applications. He hopes that the Level Up Hackathon will grow to two hackathons per year as a Faculty of Science initiative.
## SUPPORT PROGRAMS AND SERVICES

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Stage</th>
<th>Description</th>
<th>Example Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research/ Business Pitch</td>
<td>Early</td>
<td>Organizations occasionally run research challenges, business pitch competitions, or hackathons. These allow innovators to experiment, prototype, and share their ideas with the community. Some competitions may provide financial prizes to winners.</td>
<td>Alberta-Germany Collaboration Fund, Falling Walls, Innovation 4 Health, Level Up Hackathon, Microsoft Imagine Cup, NRG COSIA Carbon XPRIZE, NSERC i2I, TENET i2c</td>
</tr>
<tr>
<td>Competitions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incubators/ Co-Working Spaces</td>
<td>Early/Mid</td>
<td>These organizations offer rental space, equipment, and mentorship to help early-stage innovators create proofs of concept. Incubator environments allow inventors to experiment and test their product ideas. These include makerspaces and coworking spaces.</td>
<td>Elko Engineering Garage, The Pod, Student Innovation Centre, TEC Edmonton/Enterprise Square, Advanced Technology Centre (ATC), Edmonton Public Library Makerspace, Northern Alberta Business Incubator (NABI)</td>
</tr>
<tr>
<td>Industry-Specific Incubators</td>
<td>Early/Mid</td>
<td>Some incubators and coworking spaces are more tailored to established companies. They may provide access to specialized equipment for specific industries.</td>
<td>Biotechnology Business Development Centre (BBDC), Centre for Drug Research and Development (CDRD), Kinetica Innovation Centre at SAIT (KICS), Startup Edmonton, Ward of the 21st Century (W21C)</td>
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<tr>
<td></td>
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<tr>
<td>Resource Type</td>
<td>Stage</td>
<td>Description</td>
<td>Example Organizations</td>
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<tr>
<td>Accelerators</td>
<td>Early/Mid</td>
<td>These short-term programs connect companies to mentorship and resources to help them grow faster. Accelerator programs may provide space for their participants, but usually not permanently. These programs usually have a competitive intake process for their cohorts.</td>
<td>• Canadian Technology Accelerator&lt;br&gt;• Creative Destruction Lab (CDL) – Rockies&lt;br&gt;• District Ventures and IBM Innovation Space&lt;br&gt;• DynaLIFE Accelerator&lt;br&gt;• Merck Invention Accelerator&lt;br&gt;• RBC Social Enterprise Accelerator (SEA)&lt;br&gt;• TEC Health Accelerator&lt;br&gt;• TELUS T-Squared Accelerator&lt;br&gt;• University of Alberta Health Accelerator</td>
</tr>
<tr>
<td>Trade and Export Programs</td>
<td>All</td>
<td>Trade and export programs help companies navigate new markets. Some may offer funding or other support for trade missions.</td>
<td>• Alberta Economic Development and Trade&lt;br&gt;• Canadian Trade Commissioner Service&lt;br&gt;• Edmonton Economic Development Corporation (EEDC)&lt;br&gt;• Export Development Canada (EDC)&lt;br&gt;• Global Affairs Canada&lt;br&gt;• Western Economic Diversification Canada</td>
</tr>
<tr>
<td>Support Services</td>
<td>All</td>
<td>These organizations offer specific services that may be beneficial to product development or company growth. They may charge fees for their services.</td>
<td>• 321 Growth Academy&lt;br&gt;• ACAMP&lt;br&gt;• Business Link&lt;br&gt;• InnoTech Alberta&lt;br&gt;• TEC Edmonton&lt;br&gt;• University of Alberta Venture Mentoring Service (UAlberta VMS)&lt;br&gt;• Venture Mentoring Service of Alberta (VMSA)</td>
</tr>
</tbody>
</table>
What's Next?

With new knowledge of the university's IP policy and ideas about who to reach out to in the community, you might be ready to take your new idea to the next level.

But where to start? What do you need to ask? What else should you keep in mind on your innovation journey? To help you, there are a few tips you might want to consider along the way.
What Should I Be Asking?

As an innovator who is just starting out, sometimes you don’t know what you don’t know. That’s perfectly normal! This section should get you thinking about some questions to consider as you embark on your innovation journey.

Keep in mind that although many of these questions are common for most innovators and aspiring entrepreneurs, not all of them may apply to your particular idea. Similarly, these lists are not exhaustive in their scope. The mentors and networks you foster will be able to guide you with more questions specific to your idea.

IF YOU’RE WORKING ON AN IDEA...

- **Have you talked to your supervisor?** Your supervisor might have suggestions about how to move forward.
- **Have you researched the industry?** It’s important to learn about not only the field you’re working in, but also the industry your target market is in. Minimize assumptions about your target industry by researching as much as you can.
- **Have you researched other industries?** Consider if there are ways that your idea can be used in other industries or to solve other problems. Be creative! Perhaps if you make a few tweaks your idea could be applied elsewhere.
- **Are you targeting a real problem?** Many times, inventors create solutions to a problem that doesn’t exist. Compare your idea to existing solutions and find out what makes yours better. Ask potential customers how much the problem you identified matters to them. This will help narrow down your unique value proposition: the thing that sets your idea apart from others.
• **Are existing solutions good enough?** Sometimes a solution already exists that doesn't need improvement. If you are not addressing the real pain points of your target audience, they might not be able to justify adopting your solution.

• **Have you talked to potential customers?** One way to understand your target market is to interview people who work in it. Talking to professors is a good start, but you can also reach out to industry networks, associations, and even friends and family members who work in your target industry every day. They might be able to identify problems that you haven't considered.

• **Have you gathered feedback?** Customer interviews aren't the only way to gather feedback about your idea. Consider attending pitch competitions, Meetups, and local networking events to share your idea with as many people as possible.

• **Have you iterated on the design based on feedback?** As an innovator, it's crucial to be able to change your idea based on feedback from your potential customers. Use the feedback you gather from your research to refine your idea, then gather more feedback until you find a real pain point to address.

• **Who do you need on your team?** Find people who complement your skills and personality. Having people from different backgrounds and skill sets will help you better identify potential pitfalls early on.

• **Have you created other problems?** If you create more problems than you solve, it is unlikely that your customer will buy into the idea. Consider the trade-offs your end user might have to make to adopt your idea.

• **Have you thought of a business model?** Tools such as the Lean Canvas or Business Model Canvas can help you structure your idea and address critical questions. Using a canvas is highly recommended to help you consider who your target customer is, how you plan to generate revenue and how you plan to meet customer needs. You can make your own canvases using free online tools such as Canvanizer. Workshops are also available in the community to guide you through the process.
IF YOU’RE CONSIDERING A PATENT...

- **Is your idea patentable?** To get a patent, your idea must be new, useful, and non-obvious. A quick search online will show you if an idea like yours already exists.

- **Who owns the intellectual property?** Intellectual property generally remains with the inventor(s), regardless of their status as students. If you are an employee (such as a research assistant or lab technician), consult your employment contract to see if you retain the IP created during the course of your duties with the university.

- **Do you have obligations to the university or grants?** Some grants and programs have stipulations that may affect your IP or your funding. TEC Edmonton may be able to help you identify any potential encumbrances to your idea before you start.

- **Have you published the invention?** If you’re looking to patent, it is best to file a patent prior to publishing your findings in a thesis, paper, or presentation. If you have already published, speak with TEC Edmonton as soon as possible to find out if you can still file a patent in time.

- **Do you want to license the invention or create a spinoff company?** Consider the pros and cons of each option to decide your best path forward.

- **Are you assigning the IP to yourself or the university?** If you wish to assign the IP to yourself, consider how much time and effort you can commit to the commercialization process.

- **Have you filed a Report of Invention?** As per the Patent Policy, all inventions must be disclosed to the university. The Report of Invention (ROI) outlines how you wish to continue with commercialization.

- **Have you filed a patent?** If the IP is assigned to the university, the university will handle the initial patent filing fee.
IF YOU'RE PLANNING TO START A COMPANY...

- **How much are you willing to commit?** Entrepreneurship isn't easy—you will need to invest energy, time, and money to grow the company. This shows commitment to your vision and idea. After all, if you don't take a risk on your new venture, why should other investors?

- **Who are your co-founders?** Your company's chance of success is substantially higher if you have a co-founding team that complements each other's skill sets. Consider having a mix of technical and business talent on your co-founding team.

- **Who are your mentors?** Mentors are entrepreneurs, colleagues, professors, and friends who are willing to provide advice, support the growth of your idea, and teach you important skills.

- **Do you have legal counsel?** As you scale up your company a lawyer will be helpful, making sure your corporate legal structure is done correctly. Check whether local law clinics offer free services for students interested in incorporating.

- **Will there be regulatory considerations?** Some industries, such as health, agriculture, and environmental sciences, have specific regulatory requirements to keep in mind as you commercialize your technology.

- **What is your share structure?** Who owns how much of the company? Remember that some of your company's equity is shared with the university. Consider whether or not employees will be given stock options as part of their compensation package.

- **Have you incorporated?** According to the Patent Policy, if you assign the IP to yourself, you need to file the paperwork for incorporation of the company. If the IP is assigned to the university, TEC Edmonton can take care of that for you.

- **Are there programs and grants that can help you?** Many programs and community organizations help new entrepreneurs. Reach out to your network and check whether campus resources can connect you to the right people.

- **What is your revenue model?** Even if your idea is not for profit, you need to make money to sustain operations. Find out whether your target customer is willing to pay to use your solution. If not, who can you target instead and what value can you bring?

- **Have you validated these ideas?** One of the biggest pitfalls for a new company is making assumptions about their audience. The best way to reduce that risk is to stay connected with your potential customers and use their feedback to iterate on your idea.
IF YOU ALREADY HAVE A COMPANY...

- **What other sources of funding are available?** Many startup companies start with grants and vouchers, but those will not meet your needs for long. Look to loans, friends-and-family financing, and even business-plan competitions for funding help.

- **Have you talked to angel investors?** Angel investors are wealthy individuals who may invest money in exchange for shares of the company.

- **Who is on your board of directors?** The board of directors holds the CEO accountable for their actions. They should represent a diverse set of skills and backgrounds to ensure the best possible decisions are made. Sometimes, investors will gain a board seat as part of their investment.

- **Who will lead the company?** Co-founders are not always executives in a company. In fact, it is very rare for the technical co-founder to be the CEO of a technology company. Many companies will hire a CEO with the expertise and business acumen to help the company grow faster.

- **What is your exit strategy?** An exit strategy is an entrepreneur’s plan for selling ownership of the company to another party. The sale of a successful company can result in profits for an entrepreneur. It's important to keep this in mind when building your company.

- **Do you have a growth and marketing strategy?** Consider not only what the strategy may be, but also the timeline for implementation.

- **Do you have a budget?** Figure out how much runway you have (how long your company can sustain its current operations with the finances you have) and whether or not you need to either find new sources of funding or cut back on expenses.
Where Will Your Path Take You?

The University of Alberta is a world-class research institution, and your innovations deserve to be shared with the world!

What you have learned from this handbook is just the start. There is a diverse and supportive community both on and off the campus, waiting to help you take your idea to the next level.

You’ll never know where your innovation journey will take you unless you try. So dream big, stay curious, and reach out!
PhD Flash Team: Livable Economy

THE CONCEPT

• Empower PhD students to solve problems outside of their disciplines
• Validate transferrable skills
• Boost student confidence
• Connect PhDs with external organizations to create shared value
Key Ingredients

• An interdisciplinary team of motivated students
• A client group with a problem
• Advance knowledge transfer
• A day to brainstorm ideas, refine & present
• Follow up

Client Group: February 9th
A VISION FOR A LIVABLE ECONOMY

CLIENT GROUP SHARED THE FACTS
IDEA GENERATION

Refinement of Ideas
We envision Alberta as a community where individuals are able to focus on growth and opportunity as opposed to necessity and survival.
STUDENT COMMENTS

“Interesting day – forced myself to move away from complaining about government, and see things from the government’s perspective

“Amazed how quickly we got agreement on certain things even though the participants were from different areas

“Came from a school that when you say the wrong thing and you get yelled at – so really appreciate this opportunity
Appendix 4
PhDiversification
Influences on PhD Employment Success

**Relevant Factors**
- PhD credential (U of A)
- Market connectivity
- Career coaching/mentoring
- Time to complete PhD
- PhD area of study

**Important Factors**
- Transferable skills
- Work experience
- Professional development/entrepreneurial

**Key Drivers**
- Demand
- PhD perceived value to employers
- Formal process to employability
How are PhD alumni from the University of Alberta contributing to Alberta’s and Canada’s economic and social sectors?

To answer this question, the U of A’s Faculty of Graduate Studies and Research (FGSR) embarked on the Career Preparation and Outcomes Study. We systematically collected publicly available career information to get a picture of employment outcomes for PhDs who graduated between 2005 and 2017. The study successfully and reliably secured career outcomes for 85 per cent of this population, a total of 4,365 U of A PhD graduates.

And the research didn’t end there. We conducted a followup survey of this diverse talent pool (32-per-cent response rate) to capture information on:

- graduates’ career satisfaction rates
- top skills and competencies they regularly use

Our PhDs are contributing in academic, industry, government, and not-for-profit sectors.

The result? A significant “brain gain” for both the province and the nation.

Context

When it comes to the number of PhDs per 100,000 people, in the past Canada lagged behind its Organization for Economic Co-Operation and Development (OECD) counterparts.

According to the 2012 State of the Nation Report from the Science, Technology and Innovation Council, Canada’s doctoral graduate production in 2010 totalled 15.9 persons for every 100,000 people. This put Canada 21st among OECD countries with comparable data.¹

That trend appears to be improving.

A top-five Canadian university and one of the top 150 universities in the world, the U of A has seen a significant increase in doctoral admissions to our 300-plus research areas over the past 12 years. Annual U of A PhD graduate convocations increased by 50 per cent between 2005 and 2017, which supports the national strategy of improving Canada’s OECD ranking.

The importance of this increase cannot be overstated. Research shows the number of PhDs per 100,000 population is a powerful indicator of a country’s ability to innovate.

Employment trends

**Our PhDs are in Demand**

Most of our study results validate and quantify the value of a PhD in today’s complex global job market. Our PhDs are contributing their talents in diverse ways in Alberta, Canada, and beyond.

In fact, survey results² tell us that four in five U of A PhDs secured employment before graduating. Less than 30 per cent of graduates found the transition from degree to employment difficult. This suggests the resiliency of the PhD credential, especially when taking into consideration the 2008 recession and recent economic trends.

**Our PhDs are Contributing to All Sectors**

WHERE ARE OUR 4,365 FOUND PhD ALUMNI WORKING?³

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Post-Secondary Sector</td>
<td>56%</td>
</tr>
<tr>
<td>Private Sector</td>
<td>29%</td>
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<tr>
<td>Public Sector</td>
<td>12%</td>
</tr>
<tr>
<td>Not-for-Profit Sector</td>
<td>2%</td>
</tr>
<tr>
<td>Not Working</td>
<td>1%</td>
</tr>
</tbody>
</table>

² The survey passed a review by the Research Ethics Board at the University of Alberta, and it was distributed to 4,838 PhD alumni through email. It garnered 1,532 responses (32-per-cent response rate). The online tracking process of career outcomes from public sources received approval from the university’s Information and Privacy Office.

³ The one per cent of found PhD alumni who are not working includes 20 retirees, 17 current students, and 29 graduates who were found to be unemployed. The 66 individuals not working are excluded from the data analysis of industry sector employment and job categories.
DISTRIBUTION OF PhD ALUMNI ACROSS SECTORS (BY FACULTY OF STUDY):

- Post-Secondary
- Private
- Public / Not-for-Profit

**Business**
- Post-Secondary: 91%
- Private: 6%
- Public / Not-for-Profit: 3%

**Physical Education**
- Post-Secondary: 87%
- Private: 8%
- Public / Not-for-Profit: 5%

**Nursing**
- Post-Secondary: 87%
- Private: 12%
- Public / Not-for-Profit: 1%

**Arts**
- Post-Secondary: 78%
- Private: 8%
- Public / Not-for-Profit: 10%

**Rehabilitation Medicine**
- Post-Secondary: 77%
- Private: 13%
- Public / Not-for-Profit: 10%

**Law**
- Post-Secondary: 75%
- Private: 25%

**Public Health**
- Post-Secondary: 74%
- Private: 22%
- Public / Not-for-Profit: 4%

**Medicine & Dentistry**
- Post-Secondary: 68%
- Private: 16%
- Public / Not-for-Profit: 16%

**Science**
- Post-Secondary: 52%
- Private: 35%
- Public / Not-for-Profit: 22%

**Education**
- Post-Secondary: 54%
- Private: 22%
- Public / Not-for-Profit: 24%

**Pharmacy and Pharmaceutical Sciences**
- Post-Secondary: 55%
- Private: 22%
- Public / Not-for-Profit: 15%

**Agriculture, Life & Environmental Sciences**
- Post-Secondary: 49%
- Private: 29%
- Public / Not-for-Profit: 7%

**Engineering**
- Post-Secondary: 35%
- Private: 58%
- Public / Not-for-Profit: 13%
A closer look

Our PhDs are obtaining positions that reinforce the value of their degrees.

Together, tenure track faculty, professionals, and researchers/scientists account for nearly two-thirds of all found PhD graduates’ employment outcomes.

At 26 per cent, tenure track faculty comprises the largest job category of PhD graduates.

This is followed closely by professionals working outside of the post-secondary sector (24 per cent), a group refined by 14 sub-categories.

Fourteen per cent of our PhD graduates are researchers and scientists working outside of the post-secondary sector.

The diversity of job titles held by our PhD alumni in the public, private, and not-for-profit sectors is impressive. Here’s just a handful:

- arctic ecologist
- CEO and founder
- director of business development
- principal geotechnical engineer
- chief scientist
- personal patient navigator
- research officer (aerospace)
- digital humanities specialist
- instructional designer
- project manager
- policy analyst
- vice-president, research

4 A nine-page codebook was developed for the public sourcing of current job titles and corresponding definitions were developed to safeguard consistent application. “Tenure track faculty” is defined as professors, associate professors, and assistant professors (and lecturers in the United Kingdom and Australia) who are employed in full-time and permanent positions in universities that employ tenure track faculty.

5 For the purposes of the job groups, professionals included 14 sub-categories: Engineering Professionals, Senior Managing Professionals, Medical Professionals, ICT Professionals, Community and Government Services Professionals, Education Professionals, Business Professionals, Arts & Culture Professionals, Other Professionals, Other Research-Based Occupations, Semi-Professionals, Middle-Managers/Supervisors, Independents and Other Occupations.
Our PhD alumni are bringing their advanced skills and talents to a large number of industry sub-sectors. The largest percentages of these fall within research and development (R&D) and other research, energy, health-care services, and social and government services.

Earning potential

From survey results, we know that the largest group of our alumni (41 per cent) report annual gross earnings of over $100,000. When career history is factored in, this percentage increases to 64 among those PhD alumni who have accumulated at least 10 years of work experience since graduation.
Where are they now?

The Nation Enjoys a Net Brain Gain

U of A’s PhD programs and top researchers attract talent from around the globe. Ultimately, the admission of international PhD students has resulted in a net brain gain for Canada.

Between 2005 and 2017, the U of A was the destination of choice for more than 2,000 international students. Post-convocation, 1,220 of these PhD graduates remained in Canada. This has resulted in a net gain of 831 PhDs (equivalent to a 38-per-cent net population gain)\(^6\).

In terms of total numbers, of all found graduates, 71 per cent are employed in Canada.

Our PhDs Strengthen the Local and Provincial Workforces

Alberta’s economic and social sectors in particular are benefiting from this talented workforce, with 46 per cent remaining here in the province.

To narrow the focus further, 34 per cent are working in Edmonton and 16 per cent are right here at the U of A.

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\(^6\) This net gain of 831 takes into consideration the number of domestic students (nearly 400) who pursued work opportunities outside of Canada. In addition, this net brain gain may in fact be higher, given that international graduates were slightly underrepresented in the public sourcing of career outcomes. Citizenship is captured at time of convocation, and some international students transition to Canadian status during the course of their studies.
Our graduates are contributing to the global political, social, and economic spheres. Of our found PhD graduates, almost one-third are working outside Canada.
Benefits of a PhD

PhDs Deliver Career Fulfilment

Results from our online survey suggest that most of the U of A’s PhD alumni feel good about their careers. When asked about satisfaction levels with “overall career progression since graduating,” fully 73 per cent of the survey sample indicated that they were “satisfied” or “very satisfied.”

The majority of found PhDs—59 per cent—were also working in positions that formally required a PhD.

Those who were in positions without that formal requirement were more likely to consider themselves overqualified.

Despite at times feeling overqualified, nearly four in five survey respondents (79 per cent) indicated their job fulfils their career ambitions to a moderate or great extent.

PhDs Leveraging Teamwork and Leadership Skills

The importance of soft skills has been broadly accepted by employers in all sectors. According to a LinkedIn survey of 2,000 employers in 2018, the soft skills they value the most are leadership, communication, and collaboration. The Conference Board of Canada Centre for Skills and Post-Secondary Education identified that Alberta employers are prioritizing “creative problem-solving and critical thinking skills, international collaboration and social/human skills,” just to name a few.

Survey results tell us that our PhDs are using a wide range of hard and soft skills in all work environments, which suggests they are meeting the demands of an evolving workplace.

IN-DEMAND SKILLS (per cent using skill to a moderate / great extent):

91% Writing
88% Presentation
87% Teamwork
83% Leadership
78% Research
78% Project Management
76% People
72% Subject-Matter Knowledge
62% Conflict Management
58% Teaching
31% Business

7 Building Skills Connections Series: Alberta in a Nutshell
U of A PhDs are contributing their talents and skills in many ways. They’re full-time professors, they manage not-for-profits. They’re governmental department directors and CEOs of startups.

These alumni are finding their way through a complex period that many have identified as the “age of disruption.”

FGSR sees an opportunity for more sectors to leverage the talents of this highly knowledgeable and skilled workforce, and sees the value in further connecting our PhD students with alumni, government, profit, and not-for-profit organizations. The faculty anticipates further analysis of data results to better support current and future students who are motivated and driven to pursue a doctoral degree.

8 Humans Wanted, a cross-country research report released by RBC in 2018.
Acknowledgements

The U of A is grateful for the funding it received from the Government of Alberta to support current and future graduate students through the grant “A Vision for Innovation in Alberta: Excellence and Transformative Talent.” Funds from this grant accelerated the progress of the PhD Career Preparation and Outcomes Study.

Special thanks are extended to Marianne Sorensen (PhD), research director of Tandem Social Research Consulting. Marianne led the two phases of the U of A PhD Career Preparation and Outcomes Study, and her commitment and dedication to this research project were unrelenting.

Marianne’s efforts were supported by members of the governing body of the FGSR. The FGSR Council includes representatives from the faculties of Arts, Engineering, Medicine & Dentistry, Science, Pharmacy and Pharmaceutical Sciences; the Graduate Students Association; Alumni Relations; and the university’s Strategic Analysis and Data Warehousing.

Representation from FGSR included Vice-Dean Bryan Hogeveen (also principal investigator) and Andrea Graham, director of PhDiversity, Innovation and Partnerships.

Appreciation is also extended to the dedicated team of research assistants who spent over six months collecting job information for thousands of PhD graduates. Especially instrumental to this endeavour were Jaqueline Romero, Ben Murray, and Lorne MacDonald.

The study would not have been possible without the willing participation of the many U of A PhD graduates who took the time to complete our survey. The U of A is greatly indebted to these survey respondents.

For more information please contact FGSR: graddean@ualberta.ca
Appendix 5
Curricular Change
Consider This: Can We Diversify Doctoral Training Through the Lens of Developing Learning Outcomes?

In 1995, my Bubby came to me and asked, “my arm is sore, can you help me? No? Then why do they call you a ‘doctor’?” For those who haven’t met me, my area of expertise is in Medical Microbiology & Immunology; I am a doctor, but not the kind of doctor that my Bubby had in mind when asking me about her sore arm. In that moment, what
could I have said to help this keenly intelligent woman understand what doctoral training in immunology meant that I knew and was able to do.

This is a question that I’m sure all academics—regardless of discipline—face at one point or another: how can I best describe my graduate degree and its employability? Discussions around this very question have permeated my time as a student, a postdoctoral fellow, and as the coordinator of a graduate program in the life sciences field. And today, I find myself still engaged in these discussions, but now they involve two U of A efforts that are being developed to make the conversation around graduate degrees and employability easier for the next generation. These programs are PhDiversification project, run through the Faculty of Graduate Studies & Research, and the Learning Outcomes Initiative that’s been spearheaded by the Office of the Provost. And the question I want you to consider is: should we bring these two separate initiatives together in a purposeful and deliberate way?

Two years ago, the University of Alberta was awarded a grant from the Government of Alberta to improve employment outcomes for graduate students. The Faculty of Graduate Studies and Research (FGSR) was given the responsibility to manage the funds. This gave FGSR an opportunity to explore the PhD journey through a different lens—the diversification of the credential. The PhDiversification project (as it was named) is focused on a rethink of how we prepare doctoral students in their programs for future employment in the broadest sense. And the Learning Outcomes Initiative involves engaging our community to discuss and implement learning outcomes for courses and programs.

In my time working with them, I’ve found that “Diversifying the PhD” and “Learning Outcomes” can raise some discomfort members of our faculty. Perhaps it feels threatening to our sense of self-worth as highly independent and intrinsically motivated individuals to think the traditional PhD is not “the be all and end all” of an educational experience. Are we overwhelmed by the idea of training in areas we were never trained in?

Challenged by various stakeholders of postsecondary education to justify the value of graduate degrees, having tangible learning outcomes that enable graduates to translate the experience and development from their program into the skills and attributes to put on a resume seems like a no brainer. Why not at the same time consider diversifying and reimagining doctoral training through the lens of learning outcomes?
After all, learning outcomes are simple statements of what the learner knows and is able to do following a lesson, course, training activity or program. I am something of a zealot on the topic of articulating learning outcomes for thesis-based programs to bridge graduate education to the wider world. I also see them as being a necessary part of any healthy learning environment. Especially at the doctoral level where most—and sometimes all—of the formative activity occurs outside the traditional or even virtual classroom. After all, how can one not appreciate the value of clear and transparent statements of what someone knows and is able to do upon completion of program X compared to program Y? As pet peeves go, one very near the top of my list is happens when someone says something along the lines of “well, we all agreed after the Candidacy exam the candidate is just not performing at a PhD level, but we have no concerns with them completing a master’s.” And when asked to define what the difference is, the response is “come on, we all know what we mean by that?” Do we? All of us? Even the students?

My own first encounter with learning outcomes was as an external reviewer for a thesis-based graduate program in an Ontario university. Ontario’s quality assurance system had just mandated the requirement for statements of program level learning outcomes. The self-study documents included a lucid table mapping the elements of the program to the [Canadian Degree Qualifications Framework](https://www.ontario.ca/page/ontario-degrees-what-do-they-mean). I was struck by how much it assisted me as a reviewer. Not long after, I was tasked with writing a self-study for our graduate program. I wondered if mapping our master’s and PhD program onto the credential framework would be useful for our reviewers. I sensed we had them, we had just not written them down. I expected heated debate when I presented my draft of learning outcomes to my department, but oddly the response I received was a simple “looks good.” BUT in my mind the learning outcomes were remarkably narrow in scope and perhaps even dated. No overt project management, no collaboration, no teamwork, no leadership, no systems level analysis, no communication to a lay audience. Moreover, they contained no sufficient clarity on how we assessed student abilities and had no mechanism to determine if our methods were the best to achieve the outcomes we stated. Adding in more specific learning outcomes could only improve a burgeoning academic’s ability to better articulate their skills, thereby making it easier for them to explain what they do. And that would have to make it easier for them to describe their own employability to others.

So what would I say to my Bubby? “Well, Bubby, I can’t write you a prescription, but I do know why your arm is sore. You just had your flu shot and the soreness means your body is responding properly to the vaccine. Do you want me to explain more?”
As part of the continued efforts to support work around learning outcomes, you are invited to attend a presentation by Dr. Brenda Brouwer, Vice-Provost and Dean of the School of Graduate Studies at Queen’s University. Dr. Brouwer promotes and supports the graduate mission of Queen’s University providing both academic and administrative leadership. She has been instrumental in the expansion of graduate credentials and the establishment of policies and best practices that support graduate students. Dr. Brouwer’s presentation will focus on learning outcomes within the context of graduate-level studies.

Friday, March 16 | 9:30–10:50 a.m. | L1–190 Edmonton Clinic Health Academy (ECHA)

RSVP Online

Debby Burshtyn—Vice Dean, Faculty of Graduate Studies & Research

Since July 2016, Debby Burshtyn has been Vice Dean FGSR overseeing new program development, policy and governance and leads the FGSR’s efforts on Learning Outcomes. She is a Professor of Medical Microbiology and Immunology and former CIHR—Lougheed Fellow and AHFMR Senior Scholar.