GRADUATE STUDENTS' ASSOCIATION
UNIVERSITY OF CALGARY

THE GRADUATE STUDENT LINKAGE

UCGSA Submission to the Standing Committee on Science and Research's study on Private Sector Investment in Research and Development

November 5th, 2025

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Introduction:

The University of Calgary Graduate Students' Association (UCGSA) thanks the Standing Committee on Science and Research (SRSR) for the opportunity to comment on private sector investment in research and development in Canada. We represent approximately 7,700 students—domestic and international, thesis and course-based—in a wide variety of disciplines and fields. While our members have varying focuses and backgrounds, they are nonetheless united in wishing to emphasize the vital role their research and labour plays in the future of Canada's research and innovation ecosystem. It is for this reason that we are writing to you today.

The importance of increasing private sector investment in R&D cannot be understated, especially as trade disruptions, geopolitical instability, and chronically low productivity threaten to weaken Canadian's quality of life. Innovation drives economic growth, and research drives innovation. Consequently, Canadian policymakers need to be aware of all possible avenues for expanding commercialization opportunities and crowding-in long-term private sector investment.

Graduate students are one such avenue. Indeed, as this brief will show, not only are they an underutilized means of increasing technology transfers between universities and private industry, but they may be *the* most impactful linkage. Federal programs that financially support graduate student research will therefore pay major dividends for Canada's economy by increasing the level of cooperation between the private sector and universities. And because graduate students are so tightly integrated into the core operations of universities, this support does not need to come at the expense of other university stakeholders.

Our brief is structured as follows. We begin by highlighting the research that shows how graduate students are an essential linkage between the private sector and universities, and how increased financial support leads to increased technology transfers. We then outline our recommendations, which are:

1. Increasing the number of Tri-Council scholarships;
    a. Consider, if costs become too great, of adding a second tier of scholarships that focus on commercialization potential of student research projects;
2. Earmark a portion of federal funding dollars to a "Graduate Trainee Allocation Fund" to support graduate student research outside of the Canadian Graduate Scholarship competition;
3. Including graduate student research assistantships (RAs) as an administrative cost, so they are partially supported by the Research Support Fund (RSF);
4. Increasing financial support for Mitacs, to:
    a. Support a greater number of Mitacs fellowships; and
    b. Expand the number of placements in Mitac's training courses, so graduate students can gain skills to better commercialize their research;

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5. The implementation of a comprehensive program, in partnership with U15 and Universities Canada, to provide paid employment opportunities for graduate students in each institution's Technology Transfers Office (TTO), including course-based students; and
6. Ensuring both the investigative flexibility and political neutrality of graduate student research by refraining from using the government to solve culture war grievances.

Our brief concludes with an explanation of why government support for these programs is necessary, using insights from endogenous growth theory, the leading explanation for how economies grow.

Graduate Students and Technology Transfers:

Studies from multiple countries have shown that graduate students play an outsized role in connecting universities to the private sector. This causal connection between graduate students and university-industry collaborations also means that as more graduate students are financially supported in their research, the greater the number of collaborations.

One study from the United States, for instance, found that *all* university-industry interactions—whether that is technology transfers, joint publications, consultancy, or sales of intellectual property—increased when grants for graduate students increased.[1] The study additionally found that grant support for graduate students increases the probability that university professors will become owners, partners, or employees of private firms who cooperate with universities.[2] One of the main mechanisms underlying this relationship are that graduate student research forms a large part of a university's research output, and this research tends to be more in line with the needs of businesses.[3] A study from the United Kingdom reached similar conclusions, stating that graduate students were key "knowledge providers" for the private sector.[4] Here too, an increase in financial support to graduate students in the form of grants led to an increase in technology transfers, which translated to greater start-up creation and technology licencing.[5] Finally, a study of doctoral students in Portugal reached the same conclusion as the other studies: that graduate students drive technology transfers and foster closer university-industry cooperation.[6] The Portuguese government created internships designed to increase the number of doctoral students embedded within private companies, and from 2006 and 2013, a substantial

[1] Boardman, P.C. and Ponomariov, B.L. 2009. "University researchers working with private companies," *Technovation* 29(2): 142-153.
[2] *Ibid*.
[3] *Ibid*.
[4] Radko, N., Belitski, M., and Kalyuzhnova, Y. 2022. "Conceptualizing the entrepreneurial university: the stakeholder approach," *The Journal of Technology Transfer* 48(1): 955-1044
[5] *Ibid*.
[6] Santos, P., Veloso, L., and Urze, P. 2020. "Students matter: the role of doctoral students in university-industry collaborations," *Higher Education Research & Development* 40(7): 1530-1545.

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amount of data was collected that showed doctoral students were major bridge-builders, knowledge producers, and sources of connection between faculty members and private companies.[7]

Evidence from Canada seems to tell the same story. A 2017 study by Standing Committee on Industry, Science, and Technology had numerous testimonials from business-sector leaders stating that students—whether they be graduate or undergraduate—play an essential role in the development of innovative IP.[8] One witness stated students were "twice as likely to as their professors to create spin-off companies," while another added that "[t]he largest intellectual property and technology transfers from academia to Canadian companies occur when one of these innovative companies hires technically well-trained graduating students," which requires integrating students "into the broader innovation ecosystem in order to do design work, proof of concept and prototyping."[9]

Increasing support for graduate students will therefore increase the level of commercialization undertaken by universities, and the number of collaborations undertaken by universities and private business. Increasing collaboration also means that any public dollars spent on graduate students will crowd in more private investment. Not only is increased private investment the goal of this study, but it also provides a pathway to making financial supports for graduate student's revenue neutral by leveraging private sector dollars to help pay for these programs.

Tri-Council Scholarships and Research Grants:

The Canadian Graduate Scholarships (CGS) administered by the Tri-Council granting agencies are the most prestigious—and lucrative—scholarships available to graduate students. They are also incredibly rare: in 2021-22, only 2.3% to 7.3% of students received a major federal scholarship, depending on the granting agency their research fell under.[10] The numbers had not moved much by 2022/23, with only 1.7% of domestic masters students (on average) and 11.7% of domestic doctoral students (again, on average) receiving a Tri-Council scholarship, based on the quotas available to each institution.[11]

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[7] *Ibid*.
[8] Canada. Parliament. House of Commons. Standing Committee on Industry, Science, and Technology. Intellectual Property and Technology Transfer: Promoting Best Practices. 1st Session, 42nd Parliament, 2017. Report 8. https://www.ourcommons.ca/Content/Committee/421/INDU/Reports/RP9261888/indurp08/indurp08-e.pdf,
[9] *Ibid*.
[10] https://assets.nationbuilder.com/casaacae/pages/4674/attachments/original/1749909677/Investing_in_Innovators_2025.pdf?1749909677
[11] https://gsa.ucalgary.ca/wp-content/uploads/2024/03/A-Meritorious-Alberta-Advantage-UCGSAs-Plan-to-Enhance-the-Competitiveness-of-Albertas-Post-Secondary-Education-System-PDF-FINAL-DRAFT.pdf

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If grants of graduate students expand the number of university-industry interactions, including commercialization, then one way to use universities to enhance private sector investment in R&D is to increase the number of Tri-Council scholarships given to students. *Budget 2024* raised the value of these scholarships,[12] so we recognize that a substantial trade off exists between the number of awards distributed and fiscal sustainability. One alternative, then, would be to create a second tier of scholarships that have a lower monetary value but wider reach. These scholarships could also prioritize the commercialization potential of each research proposal to further integrate graduate students with the private sector. We explored a similar idea in our white paper, *A Meritorious Alberta Advantage*, at the provincial level; that paper could serve as a blueprint for a similar set of awards administered by the federal government.[13] In particular, the penultimate section of that paper details how graduate student scholarships can provide a solution to what the Council of Canadian Innovators calls "Canada's Patent Productivity Paradox," without restoring to protectionist measures.[14,15,16]

CGS are not the only research awards that impact graduate students. The Tri-Council granting agencies administer a multitude of non-scholarship research grants; the Canadian Foundation for Innovation (CFI) is a major funder of Canadian research;[17] and individual federal departments have competitive research granting programs as well. Faculty members who win these grants often employ graduate students to assist with their projects; indeed, the more complex a research project, the more essential graduate student RAs become.

Laura Nilson, Rebecca Maymon, and R. Bruce Lennox, in a *Policy Options* article, highlight that the costs of employing graduate student researchers have to be paid by supervisors from their research grants, meaning that faculty face a trade-off between increasing student stipends or funding other components of their research.[18] The authors propose creating a "Graduate Trainee Allocation Fund," based on the total number of federal research dollars an institution receives and the total enrollment of thesis-based graduate students, as a means of supporting the cost of graduate student labour.[19] Their intention is to increase graduate stipends, in a targeted way, that is cognizant of the budget constraints faced by federal granting agencies.

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[12] https://www.canada.ca/en/innovation-science-economic-development/news/2024/05/government-of-canada-announces-details-of-increase-in-award-values-for-federal-scholarships-and-fellowships.html
[13] https://gsa.ucalgary.ca/wp-content/uploads/2024/03/A-Meritorious-Alberta-Advantage-UCGSAs-Plan-to-Enhance-the-Competitiveness-of-Albertas-Post-Secondary-Education-System-PDF-FINAL-DRAFT.pdf
[14] *Ibid*.
[15] https://www.canadianinnovators.org/content/lets-build-an-innovation-box-policy-ideas-for-ottawas-patent-box-consutlation
[16] https://www.theglobeandmail.com/business/commentary/article-trump-drug-prices-pharmaceutical-companies-universities/
[17] https://www.innovation.ca/
[18] https://policyoptions.irpp.org/2024/11/grad-student-pay/#:~:text=We%20propose%20that%20the%20federal,to%20roughly%2015%20per%20cent.
[19] *Ibid*.

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An alternative—but complementary—option is to include graduate student stipends as an "indirect cost," and earmark a portion of the Research Support Fund (RSF) to covering these costs. The RSF helps institutions pay for the administrative and infrastructural costs of a research project;[20] it also recently received an injection of $482 million "to ensure researchers and institutions across Canada are equipped to address new demands in the current research environment and to compete on a global scale."[21] If graduate stipends were covered at the current rate for publicly funded research projects—25%[22]—then universities could support a far greater number of graduate research assistants. This would not only make faculty members immediately more competitive in creating complex, multi-dimensional research projects, but as established in the previous section, will also draw more private sector partners into their research projects.

As such, the University of Calgary Graduate Students' Association therefore recommends that:

- ***Recommendation 1:*** The federal government increase the number of Tri-Council scholarships;
    - Consider, if costs become too great, of adding a second tier of scholarships that focus on commercialization potential of student research projects;
- ***Recommendation 2:*** The federal government earmark a portion of federal funding dollars to a "Graduate Trainee Allocation Fund" to support graduate student research outside of the Canadian Graduate Scholarship competition;
- ***Recommendation 3:*** The federal government include graduate student research assistantships (RAs) as an administrative cost, so they are partially supported by the Research Support Fund (RSF);

Mitacs:

Mitacs, as a program, is designed to connect students with a wide variety of actors, including governments and businesses. Its student internships have generated $1.42 billion in R&D investment since April 2018,[23] and has led to over 13,000 projects ranging from developing mathematical models of cancer-blocking pharmaceuticals[24] to the development of renewable crude oil products.[25] Industry partners with Mitacs-funded projects see, on average, an 11% increase in productivity, a 9% increase in revenue, and spent nearly twice as much on R&D,[26] with the latter statistic being particularly important in the context of this study.

[20] https://www.rsf-fsr.gc.ca/home-accueil-eng.aspx
[21] https://www.canada.ca/en/research-chairs/news/2025/10/government-of-canada-invests-to-support-research-excellence.html
[22] https://research.ucalgary.ca/research-services/tools-and-resources/2024-Research-Overhead
[23] https://www.mitacs.ca/discover-students/
[24] https://www.mitacs.ca/our-projects/la-modelisation-mathematique-dans-le-developpement-pharmaceutique/
[25] https://www.mitacs.ca/our-projects/upgrading-of-heavy-and-high-contaminant-hydrofaction-renewable-crude-oil-to-transport-fuel-blendstock-2/
[26] https://www.mitacs.ca/economic-impact/

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Given its mandate, and its impact on both Canada's economy and R&D spending by private industry, Mitacs is perhaps the best equipped of any program to take advantage of graduate student's influence on private research investment. However, Mitacs internships are incredibly competitive, and only a select few applicants are successful. Furthermore, Mitacs provides much-needed training for students who are interested in commercializing their research,[27] but again, only so many applicants are successful.

Greater financial support for Mitacs, so that more graduate students can gain internships and training, would have a major impact on Canadian firm's R&D spending. Some provinces, such as Alberta, have already increased their financial support to Mitacs.[28] Given Mitacs' ability to help firms generate additional revenue and productivity, plus the inherent benefits of graduate students for university-industry connections, this investment should generate enough economic activity to at least partially offset its cost, though a more comprehensive analysis is needed to confirm this.

As such, the University of Calgary Graduate Students' Association therefore recommends that:

- ***Recommendation 4:*** The federal government increase financial support for Mitacs, to:
    - Support a greater number of Mitacs fellowships; and
    - Expand the number of placements in Mitac's training courses, so graduate students can gain skills to better commercialize their research;

Technology Transfer Offices:

Technology Transfer Offices (TTOs) are dedicated to administering university IP, whether that is evaluating its commercialization potential, negotiating licenses, or marketing university projects to business partners. Their wide-ranging duties already require them to navigate a great deal of complexity, but as Mark R. Huson and Randall Morck note, the more research a university undertakes, the more support their TTOs will require.[29] If TTOs are too small, this creates substantial bottlenecks in the commercialization process; and if universities continue to expand their research activities, then TTOs that are in a poor position to grow could inadvertently stifle their commercialization potential.

Meanwhile, graduate students are in need of more paid employment opportunities. They also could benefit from as much hands-on training in research commercialization as possible. Indeed, this extends to course-based graduate students as well. While they are not expected to produce a comprehensive research

[27] https://www.mitacs.ca/our-programs/training/
[28] https://www.mitacs.ca/news/government-of-alberta-announces-15m-to-support-economic-growth-and-talent-attraction-through-mitacs/
[29] Huson, M.R. and Morck, R. 2025. "Technology Transfer: The Rise of the Entrepreneurial University," *SPP Research Papers*, University of Calgary School of Public Policy: https://www.policyschool.ca/wp-content/uploads/2024/12/FMK12-TechnTransfer-Final.pdf.

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project at the end of their studies, they are still likely to go on to hold senior decision-making roles in businesses after graduation. While research-based students would benefit from knowing how to best sell their research to private industry, course-based students could use their knowledge of the inner workings of academia, and the skills they gain from working in a TTO, to help improve their future employer's ability to spot local research talent. This idea is explored more in our slide-deck submission to the *Expert Panel on Post-Secondary Funding and Alberta's Competitiveness,* also known as the "Mintz Panel."[30]

As such, the University of Calgary Graduate Students' Association therefore recommends that:

- ***Recommendation 5:*** The federal government implement a comprehensive program, in partnership with U15 and Universities Canada, to provide paid employment opportunities for graduate students in each institution's Technology Transfers Office (TTO), including course-based students.

Research Neutrality:

As UCGSA.04 notes, there has been a growing politicization of Canada's federal research ecosystem.[31] This includes accusations that equity, diversity, inclusion, and accessibility (EDIA) policies are anti-science, that "wokeness" has ruined Canada's post-secondary institutions, and that whole degrees—particularly in the social sciences and humanities—are useless.[32] UCGSA.04 outlines our objections to these arguments and highlights not just the importance of the social sciences and humanities from a knowledge-based perspective, but the growing demand for these degrees in the global labour market due to the shift towards generalist, "soft" skills.[33]

Ultimately, whatever academic debates exist about EDIA policies should be solved by academics themselves, not by the government. We believe that the government should instead focus on the technical aspects of the federal funding ecosystem rather than the cultural aspects.

As such, the University of Calgary Graduate Students' Association therefore recommends that:

- ***Recommendation 6:*** The federal government ensure both the investigative flexibility and political neutrality of graduate student research by refraining from using the government to solve culture war grievances.

Why Must There Be Government Support at All?

[30] https://gsa.ucalgary.ca/wp-content/uploads/2024/03/UCGSA-Presentation-to-the-Mintz-Panel-final-draft-1.pdf
[31] https://gsa.ucalgary.ca/wp-content/uploads/2024/03/UCGSA.04-Equity-Diversity-and-Inclusion-and-the-Value-of-the-Social-Sciences-and-Humanities-PDF.pdf
[32] *Ibid*.
[33] *Ibid*.

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The reason why the federal government has a role to play in the promotion of private investment in R&D is because the market for innovation is incomplete. This means that there are enough inherent market frictions that public dollars are required to fully unlock Canada's innovation potential. This does not mean that the government should take over the funding of R&D in Canada, or that there is no risk that public dollars could crowd *out* private investment. But because of the nature of innovation, private enterprises lack the incentives to invest an optimal amount into R&D, even in an otherwise perfectly competitive market.

The leading explanation for what drives economic growth is called "endogenous growth theory," which has seen contributions from Nobel Prize winners like Kenneth Arrow,[34,35] Robert Lucas,[36] Paul Romer,[37,38,39,40] and Daron Acemoglu.[41,42] The major advance of endogenous growth theory over past theories is that the development of technology is no longer considered "outside" the scope of economics: the forces of supply, demand, and utility maximization are considered to apply to the processes firms use to generate new technologies, rather than it being abstracted away as "animal spirits."

Markets work best when dealing with pure private goods. A pure private good is excludable (you can prevent other people from using it) and rivalrous (more than one person cannot use it at the same time). This lets economic agents internalize all the costs and benefits of that good; consequently, well-defined property rights can ensure that the market functions properly. Two of the main inputs in the innovation process—knowledge and skills—are not pure private goods, however. You can only exclude people from knowledge at a heavy cost, and even then, only to an imperfect amount; while skills can only be prevented from transferring to others if education and interpersonal interactions are severely curtailed. Neither knowledge nor skills are rivalrous; indeed, the modern economy would be impossible if multiple people could not possess the same information and skills. This means that firms cannot internalize both the costs and benefits of innovation. The latter effect—where other firms can benefit from a firm's investment in innovation—means that innovation is

[34] Arrow (1962a): https://www.nber.org/system/files/chapters/c2144/c2144.pdf
[35] Kenneth J. Arrow. "The Economic Implications of Learning by Doing," The Review of Economic Studies, Vol. 29, No. 3 (Jun,1962b): 155-173. https://doi.org/10.2307/2295952
[36] Robert E. Lucas. "On the mechanics of Economic Development," Journal of Monetary Economics 22, no. 1 (1988): 3–42. https://doi:10.1016/0304-3932(88)90168-7.
[37] Paul M. Romer, "Human Capital and Growth: Theory and Evidence," Carnegie-Rochester Conference Series on Public Policy 32 (March 1, 1990): 251–86, https://doi.org/10.1016/0167-2231(90)90028-J
[38] Paul M. Romer, "Endogenous Technological Change," Journal of Political Economy 98, no. 5, Part 2 (October 1, 1990): S71–102, https://doi.org/10.1086/261725
[39] Paul M. Romer, "The Origins of Endogenous Growth," Journal of Economic Perspectives 8, no. 1 (February 1, 1994): 3–22, https://doi.org/10.1257/jep.8.1.3.
[40] Richard R. Nelson and Paul M. Romer, "Science, Economic Growth, and Public Policy," Challenge 39, no. 1 (January 1, 1996): 9–21, https://doi.org/10.1080/05775132.1996.11471873.
[41] Acemoglu, Daron (2009). "Endogenous Technological Change". Introduction to Modern Economic Growth. Princeton University Press. pp. 411–533,
[42] Acemoglu (2009): https://www.nber.org/papers/w32190

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incredibly risky, and the threat of free-riding creates a disincentive for firms to invest in innovation. The end result is a suboptimal level of private investment in R&D. Governments must then step in to provide enough financial security to firms that they will undertake risky innovative behaviour.

This is why governments must play a role in supporting graduate students; and this is why doing so unlocks additional private investment in R&D.

Who We Are:

The University of Calgary Graduate Students' Association (UCGSA) was first established in 1967 and further incorporated by an Order in Council in 1971. As per Sections 94(1) and 95(1-5) of the Post Secondary Learning Act, and 58.4(1)(c) of the Labour Relations Code, we provide the administration of graduate student affairs and are the registered bargaining agent for all academically employed graduate students. In this capacity, we represent the collective voices of approximately 7,700 graduate students to the university and all levels of government, in addition to fostering a collegial graduate student community, administering vital services and programs such as the graduate student health and dental plan, advise students on how to navigate university policy, represent them in academic and employment disputes, negotiate the collective agreement, and other duties as circumscribed by legislation.

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