

SUPPORTING EARLY CAREER RESEARCHERS

Funding for research infrastructure enhances the ability of Canadian academic institutions to attract and retain sought-after researchers at the beginning of their career and helps to position those researchers for success

FOCUS GROUP REPORT
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What is the Canada Foundation for Innovation?

The Canada Foundation for Innovation (CFI) makes financial contributions to Canada's universities, colleges, research hospitals and non-profit research institutions to increase their capability to carry out high-quality research.

Research supported by the CFI is helping build communities across Canada. That's because the CFI gives researchers the tools they need to think big and innovate. And a robust innovation system translates into jobs and new enterprises, better health, cleaner environments and, ultimately, vibrant communities. By investing in state-of-the-art facilities and equipment in Canada's universities, colleges, research hospitals and non-profit research institutions, the CFI also helps to attract and retain the world's top talent, to train the next generation of researchers and to support world-class research that strengthens the economy and improves the quality of life for all Canadians.

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About this report: This report summarizes the information gathered through focus groups with early career researchers leading CFI-funded research projects, as well as discussions with research administrators from select CFI-funded institutions in Canada. Institutional research offices assisted with organizing in-person or virtual discussions that involved early career researchers from different areas of research.

Key findings

CFI investments in research infrastructure help Canadian research institutions to attract and retain highly sought-after researchers at the start of their academic careers and enable these researchers to launch their research programs in Canada. Discussions with early career researchers and research administrators from a sample of universities across Canada confirmed the following:

CFI awards are used by Canadian research institutions to attract and retain early career researchers.

- The availability of CFI funding, in particular from the John R. Evans Leaders Fund (JELF), is instrumental in enabling Canadian research institutions to attract and retain early career researchers.
- The competitiveness of offers made by Canadian institutions to early career researchers, particularly in relation to other offers from outside of Canada, relies heavily on the inclusion of a CFI award component.

CFI-funded research infrastructure helps early career researchers launch their research programs and enables research outcomes.

- Obtaining CFI funding and purchasing state-of-the-art research equipment helps early career researchers to launch, and in some cases, accelerate their research programs and achieve a number of research outcomes including attracting and training students and postdoctoral fellows, producing publications, establishing collaborations, as well as producing patents and spin-off companies.

Introduction

The CFI awards funding to Canada’s universities, colleges, research hospitals and non-profit research institutions for research infrastructure to increase their ability to carry out high-quality research. CFI funding is awarded through a merit-based review process that is independent, rigorous and structured. The CFI receives its funding from the Government of Canada and is expected to achieve certain results through its investments, two of which are to enhance Canadian institutions’ capacity to attract and retain the world’s top researchers and to conduct world class research and technology development.

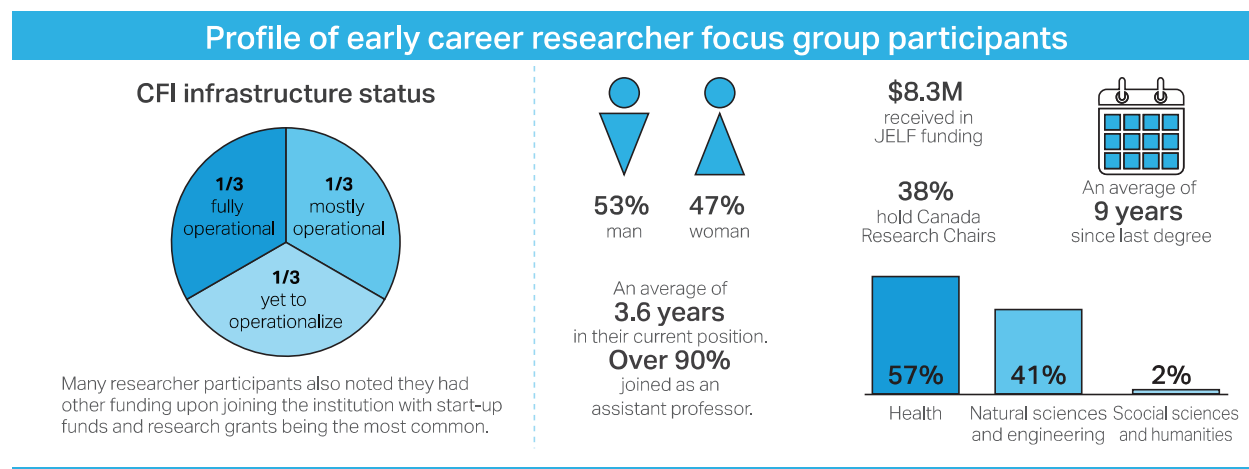
The 2017 [report](#) of the Fundamental Science Review expert panel recommended that federal granting agencies along with the CFI “should examine best practices in supporting early career researchers, augment their support of them consistently across disciplines, and track and report publicly on the outcomes.” In response to the report’s recommendation, as well as to document the progress CFI is making towards achieving two of its objectives, a series of focus groups with early career researchers leading CFI-funded research projects was conducted across the country in 2017–18.

The CFI routinely collects data from its project leaders through project progress reports. Opinions obtained through the focus groups are intended to complement that data and offer insights directly from early career researchers.

Eight in-person or virtual focus groups in English or French were conducted with researchers from nine academic research institutions across Canada (in one instance, a researcher from Polytechnique Montréal participated in a focus group held at the Université de Montréal). CFI staff facilitated the discussions with the aid of a semi-structured discussion guide.

A total of 58 researchers leading projects funded through CFI’s John R. Evans Leaders Fund (JELF) participated. This fund is intended to help institutions attract and retain the best researchers by providing them up to \$800,000 in CFI funding for the purchase of foundational research infrastructure to help them become leaders in their field. Between five and 11 researchers participated in each session and efforts were made to ensure broad and inclusive participation across areas of research. Efforts were also made to seek participation from institutions of varying size, however smaller institutions were unable to identify sufficient numbers of participants required for focus group sessions. As such, the opinions collected are not representative of the experiences at smaller academic institutions.

As CFI funds research institutions rather than researchers directly, an institutional perspective was sought through face-to-face or telephone discussions with 13 research administrators, from four universities across Canada (between two and four people participated in each discussion) who provided their views on how their institutions support researchers at an early career stage, particularly in relation to CFI funding.



Focus group participants by institution			
	Early career researchers	Research administrators	TOTAL
University of Calgary	9	2	11
University of Toronto	8	4	12
University of British Columbia	8	-	8
McMaster University	5	-	5
Université Laval	11	-	11
McGill University	5	-	5
Université de Montréal	5	4	9
Polytechnique Montréal	1	-	1
Dalhousie University	6	3	9
Total	58	13	71

Defining an early career researcher

During the planning phase of each focus group, institutional liaisons were asked by CFI staff to invite up to eight individuals who they considered to be early career researchers. The definition of what constituted an 'early career researcher' was left open so that institutions could apply their own criteria. All but two participants confirmed that they considered themselves early career researchers. Across the four institutions consulted, the most common factor used to define researchers at an early career stage was holding a pre-tenure position. Other factors included being an independent researcher with research funding secured, overseeing students, the amount of time since completing a PhD as well as the number of years spent in an academic research position.

Both researchers and research administrators were asked to provide suggestions for factors that funding agencies such as the CFI should consider when trying to establish what constitutes an 'early career researcher.' The factors they proposed were: years in an academic position (generally up to five years although there's ambiguity about how to classify individuals in situations where it takes more than five years to achieve tenure), being an independent researcher with research funding and student involvement and being pre-tenure. The number of years post-PhD (up to a maximum of ten years) was an important consideration raised by some although others cautioned that there

can be cases where new hires have spent much of that time in a postdoctoral position and not as an independent researcher. Many researchers also pushed for a flexible definition that takes into account individual situations: "If you obtain a doctoral degree and are employed in the private or non-profit sector for example, and you return to academia, you'd be considered a new researcher for some of the things that you do, even though you've been long past your degree-granting date."

Funding for research infrastructure helps institutions attract and retain early career researchers

Research administrators were asked about the approaches their institutions use to recruit and support early career researchers. Representatives from two of the institutions noted their university has an overall strategy while others indicated that strategies and initiatives aimed at supporting early career researchers are implemented at the faculty and departmental levels. Support provided by institutions generally involves start-up funding which includes the opportunity to apply for a JELF award as well as other institutional funding opportunities such as conference grants.



Sample of equipment acquired through CFI funding by participants

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> • Fluorescence and spinning disk confocal microscopes • Electrophysiology and cellular imaging system • Microscale thermophoresis | <ul style="list-style-type: none"> • Histopathology slide scanner • Mass spectrometer • Spectrofluorometer • Lung perfusion system • Porosimeter | <ul style="list-style-type: none"> • Laser scanning confocal microscope • Computerized dynamic posturography • Silicon photonic chip testbed |
|---|---|---|

Several of the research administrators interviewed noted that the management of JELF award allocations¹ is delegated to faculties. Across the institutions consulted, JELF awards are prioritized to new hires or early career researchers and participants reported that there can be differences across faculties or departments in terms of the internal processes used. One research administrator noted that faculties at their institution will manage the JELF award strategically, sometimes leveraging it with other available funding opportunities.

Many research administrators stressed the importance of the award in helping their institution attract and retain researchers at an early career stage: "JELF has been essential for us to attract and retain top talent within the faculties." It was also noted that JELF helped them improve their competitiveness in recruiting international researchers: "The fact that we have the CFI and have this ability to generate money for infrastructure is a huge advantage for us, especially when we're competing internationally. When new recruits come in from the U.S., we have the CFI to pay for things that we otherwise couldn't purchase and that's a really big advantage for us."

Many research administrators also mentioned that they provide support beyond funding to new recruits including an inventory of available infrastructure, the establishment of core facilities (infrastructure on campus that is maintained

by trained experts and made available to anyone needing access) and mentoring such as orientation sessions that include guidance on submitting proposals for funding: "Support is provided at the faculty level and from central research services. We have staff that are assigned to walk applicants through their application process. We support their budget preparation and assist them in getting quotes for infrastructure. We have a committee of academics that reviews their proposals to help them convey the excellence of the research in their proposal."

An analysis of early career researcher focus group participant CV's revealed that approximately 60 percent were recruited by their current institution from outside Canada (the majority of those coming from the United States) and a little over half of all participants were in a postdoctoral position when recruited. And indeed, a common theme identified across focus groups was that a majority of researchers were living abroad and fielding several academic appointment offers when deciding where to pursue employment.

Many participants noted that the opportunity to apply for CFI funding was used as a component of start-up offers from Canadian institutions, which made them more competitive with international offers and greatly influenced their decision to choose Canada²: "I'm Canadian and worked as a researcher in the United States having done my

¹ Eligible institutions receive a dedicated funding allocation for JELF for a period of three years and then that institution determines the proposals to submit within their allocation.

² Institutions offer an opportunity for researchers to submit a JELF proposal and the consistently high success rate per competition (approximately 80 percent) ensures a high probability of receiving funding, which is why a JELF proposal can be used as an incentive for attraction or retention.

education and post-doctorate there. I received a few offers for academic positions in the U.S. and Canada, and without CFI funding, I would not have returned to Canada, because the offers are not comparable. Starter packages range anywhere from \$300,000 to \$600,000 in the U.S. so by tacking on my CFI allocation³, I had a comparable offer from a Canadian institution.”

Research administrators also noted that using CFI funding as part of start-up packages can improve their ability to financially support the best early career researchers, particularly those with higher than average start-up package requests: “The range for start-up packages in my department could go from \$200,000 to \$1.2 million. If a new recruit comes in with a start-up request of \$150,000 to \$200,000, we can afford that ourselves. However, if their start-up is approaching a million dollars, then we need to include funding from multiple sources and CFI awards end up becoming a big part of that.” Another research administrator noted the irreplaceable value of CFI awards in their recruitment efforts: “The deans are always trying to attract the best people to the faculty, and they realize they have to get them set up with the proper tools and space to do their research. We do not have a significant amount of money being channeled into the faculty and we just don’t have a way to replace the CFI funding.”

Since the majority of focus group participants had only recently joined their institution, it is not surprising that most mentioned CFI funding as an incentive for recruitment rather than retention. Participants reported a number of factors that influenced them to come to, or remain in, Canada, including the opportunity to use available institutional research infrastructure, the reputation of the university and department, a Canada Research Chair (CRC) nomination and lack of teaching requirements. However, the availability of CFI funding was the most frequently mentioned factor across focus group sessions. One participant claimed that “CFI funding was a big part of my decision to come here. Especially when you compare start-up funds from the States, where I also had a position that I was considering.” Another researcher said “CFI funding was definitely instrumental in my coming back to Canada, because without the CFI-funded equipment that I have in my lab, it really would be difficult to do the work I’m doing currently.” Another said “CFI

funding was an incentive to attract me to move from the U.S. to Canada. I’m very grateful for the CFI for providing this infrastructure so that I can continue my research that I started in the U.S. in Canada.”

The majority of participants learned about the CFI prior to accepting their academic position. Of those, about half learned before applying to their current institution, mainly through their undergraduate, graduate or postdoctoral training, while the other half learned about CFI during interviews as part of the recruitment phase at that institution. Many participants indicated that their department had promised them an opportunity to lead a JELF proposal during the recruitment process or as part of a start-up package. On the other hand, some participants obtained an allocation from their institution after being hired, while others submitted a proposal in response to an internal faculty/department call for proposals.

The majority of participants noted a number of benefits of submitting a CFI proposal after joining the institution. These included feeling better prepared to submit a proposal (due in part to having a better sense of what infrastructure to request in light of available equipment on campus) and having support in the application process at the level of the institution, the faculty or the department. The major drawback of applying for funding after being hired is the extra delay in having access to operational infrastructure. Conversely, the possibility of deploying the infrastructure earlier was the sole benefit mentioned of submitting a proposal to the CFI before joining an institution.

When asked to reflect on any challenges related to being an early career researcher or their infrastructure, focus group participants most frequently mentioned the lack of funding available to support trainees and research staff in the operations and maintenance of their equipment or facilities. Other challenges included the amount of time between when a proposal is submitted and when CFI funds are available to purchase infrastructure, a lack of opportunities to request funding for basic infrastructure and issues related to in-kind support. It should be noted that the challenges raised by participants in these focus groups are not unique to individuals at this career stage and apply to researchers leading projects funded by the CFI in general.

³ “CFI allocation” refers to the participant’s agreement with their institution regarding the amount of CFI funding they would request through a proposal.

State-of-the-art infrastructure enables early career researchers to launch productive research programs

The most frequently mentioned impact of obtaining CFI funding and acquiring state-of-the-art infrastructure was that infrastructure helps to recruit and involve students in the participants' research programs: "One big thing that the CFI infrastructure has helped me do is recruit graduate students and post-docs and that has been important in building my research group." Another important role of CFI funding is that it helps enable researchers new to the institution to launch their research programs: "In anthropology, especially in the States, there is no grant like CFI. A lot of the money gets pushed toward archeology. When you get big money, multi-million-dollar grants, a lot of it has to do with fieldwork, extraction of things, and equipment in the field, versus infrastructure at the university. In two years, I've been able to put together not just my dream lab, but basically the best paleoethnobotanical laboratory in the Americas. In terms of retention, I think CFI funding is huge."

Other participants noted that CFI funding helps accelerate their research: "My research program would not be at the level it is at now if I hadn't had CFI equipment, because I just couldn't do a lot of the things we're doing now without it." Another stressed that their start-up funding was essentially their CFI award and that it helped them purchase not just equipment, but renovations to their laboratory that they considered very important.

Although early in their careers, many researchers mentioned achievements related to their CFI infrastructure including publications, collaborations, other funding leveraged as well as spin-off companies and patents. One participant noted that they recently published a paper as a result of a discovery they made using a CFI-funded mass spectrometer while another referred to collaborations with private-sector companies due to CFI-funded equipment they received.

Looking ahead, many early career researchers plan to further the research they've started: "I think there's a lot we'll learn in the next year or two, a lot of data to analyze, that will help inform future projects and will really help move the research program forward. We also have a number of concussion-related

clinical trials currently underway that will align with some of my CFI equipment, which I think will really help inform some of our treatment protocols." Other participants plan to acquire additional infrastructure, seek additional funding, train students, collaborate and focus on optimizing the use and maintenance of their infrastructure. For those who identified their infrastructure as not yet operational, their immediate plans involved getting their equipment up and running and launching their research program.

Conclusion

Canadian research institutions use CFI awards, in particular the John R. Evans Leaders Fund (JELF), as part of their efforts to attract, retain and support early career researchers. Researchers and research administrators from universities consulted across Canada confirmed that the availability of CFI funding was instrumental in enabling Canadian research institutions to attract or retain early career researchers. The competitiveness of offers made by Canadian institutions to early career researchers, particularly those who were fielding other offers from outside of Canada, rely heavily on the inclusion of a CFI award component. Obtaining CFI funding and purchasing state-of-the-art research equipment has helped early career researchers to launch or, in some cases, accelerate their research programs and achieve a number of research outcomes including attracting and training students and postdoctoral fellows, publications, collaborations as well as patents and spin-off companies.

