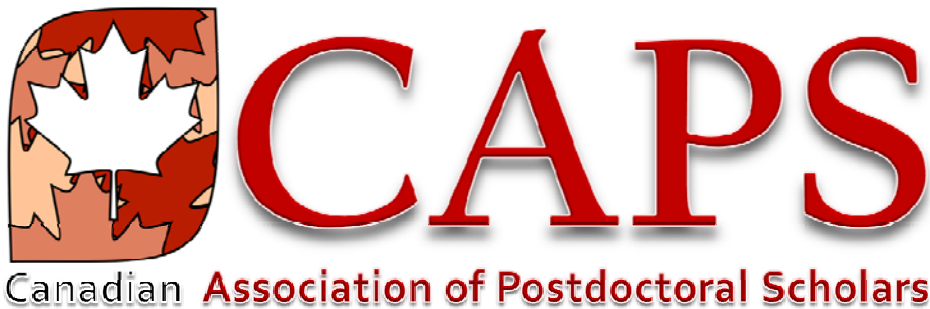


# A postdoctoral crisis in Canada: From the “Ivory Tower” to the Academic “Parking Lot”



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## **Introduction**

Postdoctoral scholars or fellows (PDFs) are newly qualified researchers who generally hold a PhD and/or MD degrees. They are a critical component within the framework of scholarly activity that is done at research focused institutions in Canada and around the globe. Although official numbers do not exist as many Canadian institutions do not formally collect information on their PDFs, we estimate that there are approximately 6,000 PDFs in Canada<sup>1</sup>. The administration and training of PDFs is generally conducted in an 'ad hoc' manner and can vary widely from institution to institution.

However, it is widely acknowledged that the current diffuse organization of postdoctoral training leaves this class of highly qualified personnel in an especially vulnerable position. Not graduate students, not faculty members, PDFs have so far slipped between the cracks of the recognized workforce of the scientific community and represent a heterogeneous group of poorly defined 'apprentice' scientists. As such, PDFs generally do not have well defined expectations of employment, appropriate employment rights and responsibilities, commensurate or even normalized pay scales, performance evaluations, employment benefits such as proper health care, pensions, occupational health insurance, or procedures for resolving conflict. To date, the treatment of PDFs within Canada is inconsistent at best, and largely ignored, at worst.

The **National Postdoctoral Association** (NPA, <http://www.nationalpostdoc.org/>) in the USA was founded in 1997 to improve the postdoctoral training experience for the approximately 50,000 postdoctoral researchers in that country. This organization has accepted Canadian PDFs into their organization as associate members and has freely offered badly needed mentorship in the formation of postdoctoral associations (PDAs) and postdoctoral offices (PDOs) in Canada. However, it has become increasingly evident, that issues arise that are unique to Canada and its research funding structure and a national advocacy organization is imperative for continued success at the institutional level. At the annual NPA conference in 2007, a group of representatives from Canadian PDOs and PDAs met to discuss the formation of a Canadian national postdoctoral association, which became known as the **Canadian Association of Postdoctoral Scholars** (CAPS). Although many postdoctoral associations have been successful at generating changes within their institutions, there are consistent roadblocks that require policy change at the national level.

Currently CAPS operates as a committee consisting of representatives from both PDAs and PDOs from across the country. This group has worked to bring the national issues directly affecting PDFs to a larger stage. Our efforts have resulted

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<sup>1</sup> Data prepared for the G13 Data Exchange show that the number of postdocs has increased from 4885 in 2005-06, to 5199 in 2006-07 and to 5675 in 2007-08 (the most recent number). These numbers do not include postdocs in smaller institutions, government laboratories or in industry settings.

in a national website connecting PDFs to relevant information (<http://tinyurl.com/canadapostdoc>), as well as a significant document that details the different ways in which PDFs are administered by different academic institutions. During this exercise, it was readily evident that there was little data examining the Canadian postdoctoral population. We were aware of the data collected by Sigma Xi: The Scientific Research Society, in their 2005 survey of US PDFs (“Doctors without Orders”)<sup>2</sup>, and we believed that a similar (though smaller) study would be useful in helping us determine what works - and what doesn’t – for PDFs in Canada. Therefore, we posted an online survey that would allow us to gauge the demographics of the population of PDFs in Canada, assess their standing within their institution and record their overall level of satisfaction with their experience(s). We were also motivated by a growing inconsistency in the tax status of PDFs and were anxious to address this issue at a national level. We created a short survey using LimeSurvey™ ([www.limesurvey.org](http://www.limesurvey.org)) and posted it to our website and used our combined contacts within academic institutions to encourage PDFs to participate online. The data was collected online from April 1 – July 1, 2009 and was analyzed by a committee of PDFs from our organization.

### **A Demographic Picture of PDFs in Canada**

The data presented herein reflect responses to the recent national survey, in which 1192 PDFs from across Canada participated. As our current projection is that there are approximately 6000 PDFs in Canada, this 20% response rate is encouraging. Although perhaps not perfectly sampled, these data provide the strongest available snapshot of the distribution of PDFs in Canada, as of June 2009.

### **Who is the Canadian PDF?**

The vast majority of PDF survey respondents in Canada were located in Ontario (38%) and Quebec (33%), with the University of Toronto and its associated institutes counting the largest concentration of PDFs (20%). This is slightly different from estimates from a 2007-2008 informal survey of the G13 Academic Institutions that estimated 47% of PDFs in Ontario and 28% in Quebec. A possible explanation for the higher number of responses from PDFs in Quebec is likely due to a generally more active PDF population due to a provincial mandate to follow this population and treat them in a similar manner to graduate students. In addition to the universities in Canada, there are countless research institutes and government research departments and institutions, many of which have strong partnerships with local universities, with cross-appointed scientists, shared research facilities and collaborative research programs. PDFs in these facilities were not invited to complete the survey as there is no mechanism to identify and contact them.

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<sup>2</sup> <http://postdoc.sigmaxi.org/results/>

Consistent with the generally held belief that most PDFs hold a PhD, we found that 89% of survey respondents hold a PhD, with other degrees such as an MD, PharmD and ScD also represented. Close to half (45%) of survey respondents completed their PhD in Canada. The majority of the remaining PDFs completed their PhD in Europe (33%, many in France, UK), the USA (9%) or the Middle East (9%). Canadian citizens constituted 44% of survey respondents, followed by 17% permanent residents and 39% international PDFs holding work permits.

Most (70%) survey respondents are currently in their first postdoc appointment, with 24% in their 2<sup>nd</sup> appointment and 4% in their 3<sup>rd</sup>. The duration of a given postdoctoral appointment and the number of appointments varies by individual and by discipline. Typically, PDFs in the biological, medical or neurological sciences (47% of the total respondents) choose to complete more than one PDF appointment, with 30% of such respondents currently in their 2<sup>nd</sup> or higher PDF appointment. The majority of survey respondents (70%) are within 3 years of completing their PhDs while 30% are four or more years post PhD conferment, when eligibility for most PDF scholarships is no longer granted.

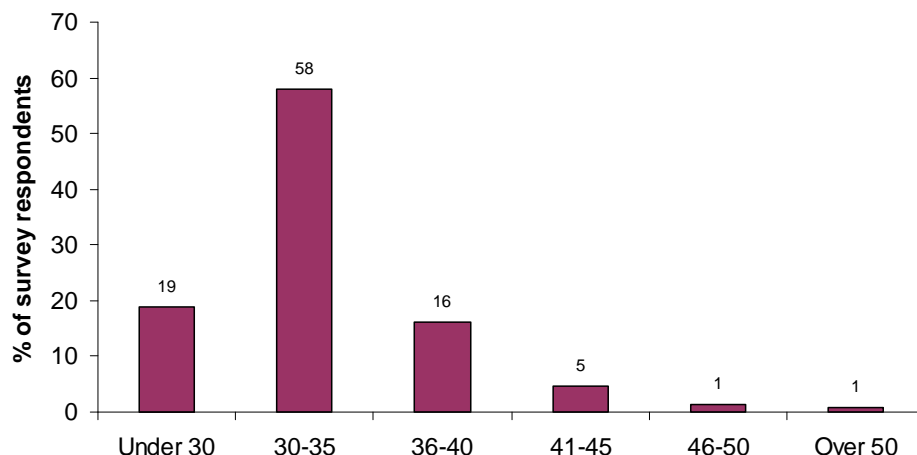
Many PDFs are conducting research in the areas of Life Sciences; particularly Biology (38%) and Medicine (25%). This is not surprising as the postdoc has become a necessary requirement for a faculty position in these fields. It is also noticeable that a significant number of PDFs are researching within the Social Sciences and Humanities (11%) and these numbers are expected to grow in the near future, due to increased competition for academic positions in these fields. The remainder of PDFs are in the basic sciences and engineering fields: Chemistry (6%), Physics (5%), Engineering (5%), Earth Science (3%), Computer Science (2%) and Mathematics (2%).

Among the survey respondents, 56% are male and 44% are female, although 18% of survey respondents did not indicate their gender. It is notable that in several disciplines, particularly in broader life science fields, the proportion of male and female graduate students are usually equal or even tend towards more women than men<sup>3</sup>. Our data suggest that this relationship may be somewhat reversed at the postdoctoral stage.

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<sup>3</sup> CIHR Women in Science Initiative: Fostering Women's Research Careers, Presentation to G13 Vice Presidents, Montreal, Quebec, October 20, 2006

## PDF Age in Canada



Survey respondents were mostly between the ages of 30-35 (58%), <30 (19%) and 36-40 (16%). It is interesting to note that 81% of respondents were over the age of 30, an age group in which their contemporaries are often well into their career and family progression. To that end, 48% of respondents have a spouse or common law partner, and 29% have children.

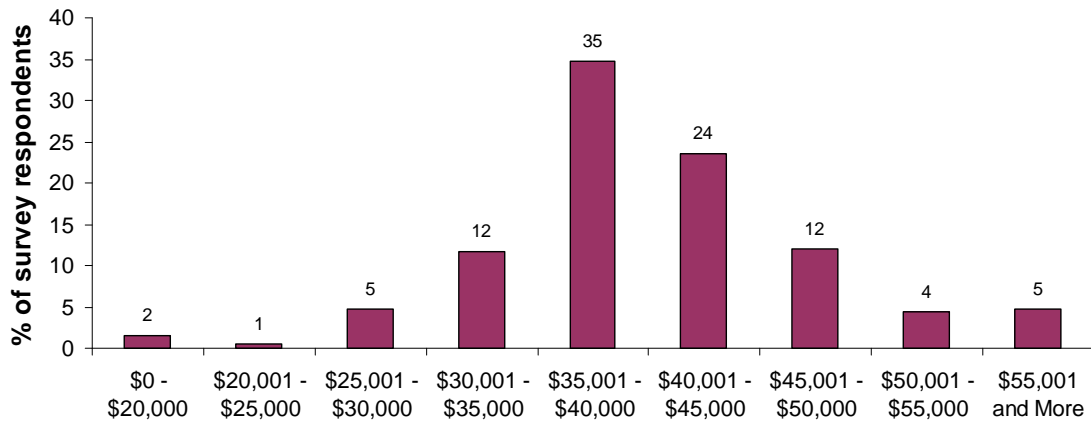
### How is the Canadian PDF paid?

The generally low compensation of PDFs is of particular concern to CAPS with the vast majority (79%) earning less than \$45,000 before taxes. The salary bracket with the most survey respondents included salaries between \$35,000-40,000 (35%), followed by those earning between \$40,000-45,000 (24%). Minimum postdoctoral salaries are stipulated by granting agencies and many university departments or research institutes have adopted similar minimums. Among the Tri-council funding bodies, NSERC has a minimum stipend of \$25,000, SSHRC funds fellowships up to \$31,500 and CIHR has a fellowship minimum of \$36,750. Years of postdoc experience is not recognized in the Tri-council fellowship stipend scales in contrast to many European awards<sup>4</sup> and the NIH fellowship stipend scales. In 2007, NIH postdoc fellowships started at \$36,996 with no previous postdoc experience, increasing to \$46,992 for 5 years and to \$51,036 for 7+ years experience<sup>5</sup> Canadian PDF salaries are not acceptable for individuals holding the highest degree that can be awarded by an academic institution; individuals with significant research experience and expertise and whom are expected to be highly productive.

<sup>4</sup> Jack Parker. How Much is a Scientist Worth? Pay and benefits for postdoctoral researchers. EMBO reports 3 (11) 2002, p.1012-1015

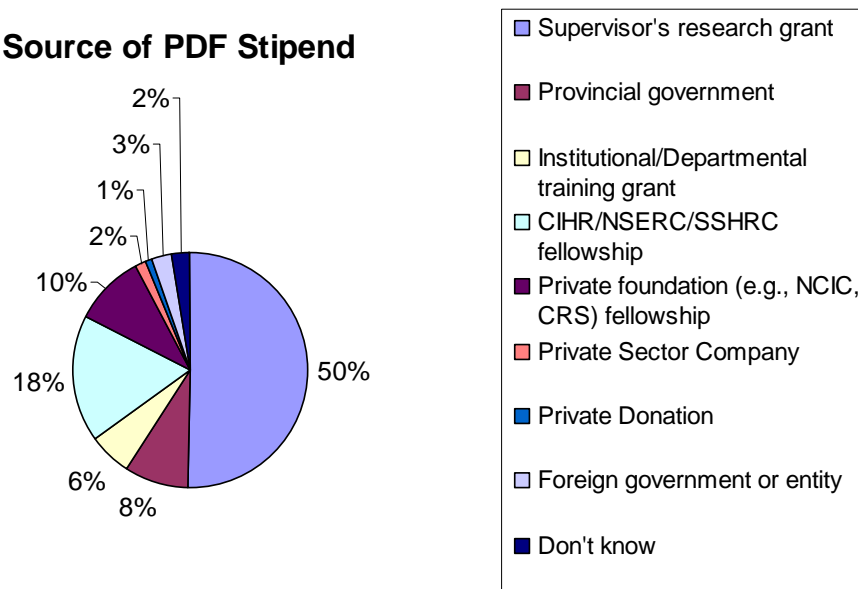
<sup>5</sup> <http://grants1.nih.gov/grants/guide/notice-files/NOT-OD-07-052.html>

### PDF Stipend (Before Taxes)



A significant proportion of survey respondents' salaries are derived from their supervisor's operating grants (50%) followed by PDFs with fellowship awards from CIHR/NSERC/SSHRC (17%). It is notable that the proportion of successful applicants from PDFs applying for either federal or provincial fellowships is often the lowest among all salary-related categories (ex. CIHR fellowship successes of 17% in 2006). Some international PDFs receive part of their salary funding from a Canadian source and part from a foreign country.

### Primary Source of PDF Stipend



Pursuing a postdoctoral fellowship requires financial sacrifice. In 2007, the median salary for a 2005 graduate with a Bachelor's degree was \$45,000, \$60,000 for a Master's degree holder, and \$65,000 for Ph.D. holders<sup>6</sup>—all

<sup>6</sup> Graduating in Canada: Profile, Labour Market Outcomes and Student Debt of the Class of 2005 (2009) Statistics Canada and Human Resources and Skills Development Canada. (<http://www.statcan.gc.ca/pub/81-595-m/81-595-m2009074-eng.pdf>)

significantly higher salaries than the most common PDF pay scale (\$35,000-\$40,000) or granting agency stipend of ~\$35,000. For PDFs in the life sciences, where the postdoctoral period can often be  $\geq 4$  years (30% of life science respondents) or  $\geq 5$  years (17% of life science respondents), this is a significant cost in terms of life long earnings. Furthermore, for those whose salary is taxed, this can reduce their net income to values that are lower than the income of many graduate students. We will further discuss the taxation of PDFs in the next section.

In addition, a large percentage of the Canadian PDF population is located in expensive metropolitan areas such as Toronto, Montreal, Calgary, Edmonton and Vancouver. These are areas in which apartment rental alone can easily exceed \$12,000 per year and where food expenditures are \$7,500-\$8,000 per annum<sup>7</sup>. Furthermore, minimum Tri-council stipends have been frozen since 2001. When adjusting for increases in the cost-of-living, the stipend freeze has resulted in an 8-15% decrease (depending on the city of residence) in the actual value of these stipends between 2002 and 2008.<sup>8</sup> Therefore, it is becoming increasingly difficult for young scientists to pursue a career in which the compensation is not sufficient to cover the basic necessities of life. Indeed a recent article in Science magazine indicates that studies show that 'top talent' students are moving away from science and technology careers, likely due to an inability to gain and maintain a career path.<sup>9</sup>

## **Postdoc Status (and lack thereof)**

### **The Status quo**

There is an obvious discrepancy between the factual designation and the desired designation of PDFs. This and the poor social protection of fellow PDFs constitute the main drive for achieving clarity in designation at the national level. The status quo can be viewed under several interrelated aspects: position of the funding agencies, Canada Revenue Agency (CRA), Universities and Citizenship and Immigration Canada (CIC).

### **The PDF status issue: to tax or not to tax?**

The government of Canada recently (2006) introduced a tax law that recognizes trainees who receive fellowships as having non-taxable income and permits tax exemptions. This tax law has been universally applied to graduate students in Canada. However, the application of this law has been woefully inconsistent in its treatment of PDFs, with a majority unable to be granted this recognition by both their home institution and the government.

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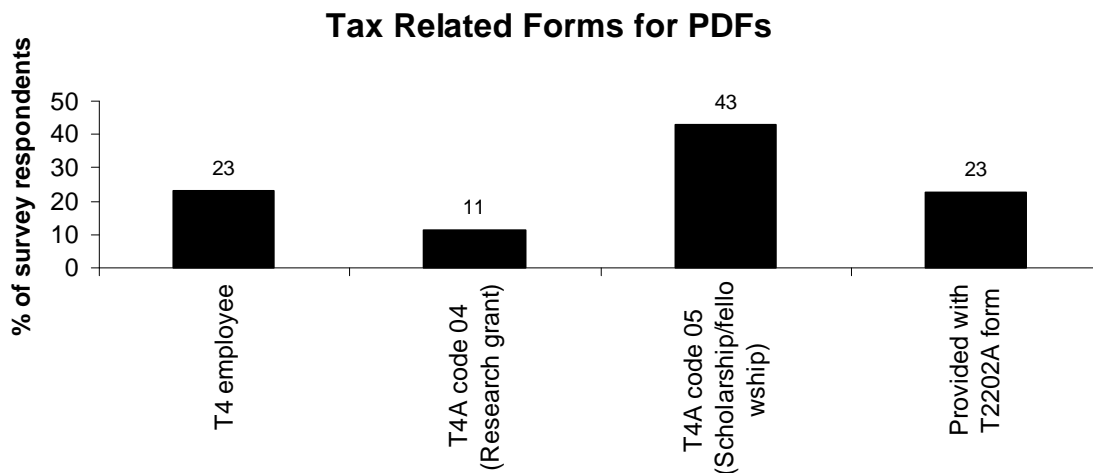
<sup>7</sup> Rent and food expenditures are averages for 2007. <http://www.canadaimmigrants.com>

<sup>8</sup> Statistics Canada <http://www40.statcan.gc.ca/l01/cst01/econ45a-eng.htm>

<sup>9</sup> News of the Week: "Study finds that science pipeline strong, but losing top students" Science 326: 654, 30 October 2009



Granting agencies in the Tri-council (CIHR, NSERC and SSHRC) consider all PDFs they fund as advanced trainees. This is reflected in the relatively modest stipends they offer to PDFs that they intend to be non-taxable income according to current law (Income Tax Act, Part 1, Division B, Section 56(3)), as is the case for graduate students. However, for PDFs to benefit from this trainee-focused status, they need to meet two specific criteria: (i) their stipend must be issued on a T4A document with a 05 coding indicating that the amount is a fellowship/scholarship (43% of respondents have been issued a T4A code 05 document). (ii) In addition, PDFs must receive a T2202A form, which indicates that they are engaged in training at their academic institution, a requirement of the existing tax exemption law. However, many PDFs across Canada do not have access to University sponsored training thus are ineligible for T2202A forms (23% of respondents have been issued a T2202 form). Hence the majority of PDFs have their decidedly low pay subject to income tax.

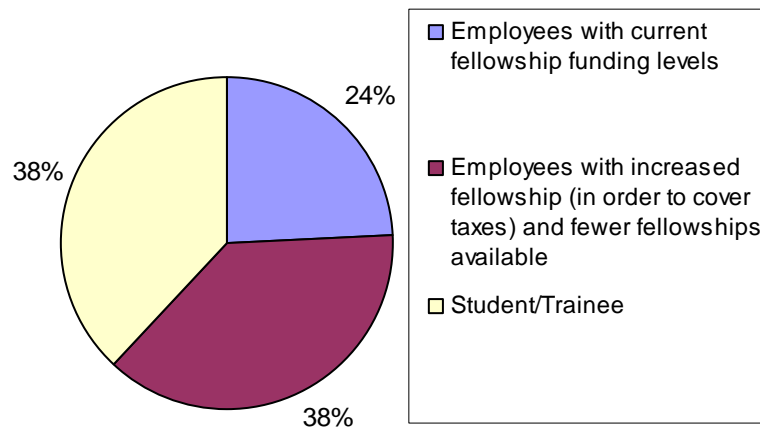


The view of PDF status at the level of individual academic institutions is the most heterogeneous field. The Canada Revenue Agency has stated in document (# 2004-0093211E5) that it is the responsibility of the Academic Institution to determine who within their institution are legitimately undergoing training. However, the majority of institutions where PDFs were present failed to recognize them in any formal way until very recently. There remains a general lack of understanding of the role of the PDF in the academic institution, and many institutions have only begun to track the numbers of PDFs within their walls. This lack of understanding leads often to miscommunications and is another strong reason why CAPS is seeking a systemic clarification of the PDF status at the national level. The need for a nationally recognized status is particularly relevant to the nearly 50% of foreign PDFs in Canada, as CIC requirements for entry into this country add an extra layer of complexity in granting the appropriate work permits to foreigners.

## Quo Vadis?

We asked the survey respondents what they believed their status should be, based on information found in our document entitled, “CAPS Preliminary Position Paper on Postdoctoral Status”<sup>10</sup>. In this document we outlined three potential status outcomes; 1. Trainees, 2. Employees at current stipend levels or 3. Employees with increased pay but fewer positions available. As shown below 38% of respondents felt that PDFs should be trainees, another 38% employees with increased stipends and 24% indicated PDFs should be designated employees at the current stipend levels. We also asked PDFs how they classify their work within their institution and found that 44% designated their role as a trainee while 56% felt they were in an employee type relationship.

**What status postdocs should have?**



## Postdoctoral Satisfaction

When asked, the majority of PDFs (55%) indicated that overall they are satisfied with their postdoctoral training, 19% were not satisfied and 26% did not provide an answer. The level of dissatisfaction tended to grow with the number of years post PhD completion, suggesting a level of frustration that likely stems from the inability to ‘make the next step’. Respondents were also provided the opportunity to comment on their level of satisfaction and on any other issues they felt deserved advocacy at the national level. Over two-thirds of respondents provided comments. While the PDFs dissatisfied with their training were the most likely to provide comments, overall, over half of the comments were provided by PDFs satisfied with their training.

<sup>10</sup> [http://torontopostdoc.googlepages.com/PDFs--Employee\\_vs\\_Student-F.pdf](http://torontopostdoc.googlepages.com/PDFs--Employee_vs_Student-F.pdf)

The most common request made by PDFs, irrespective of whether they were satisfied or not with their training was for respect and recognition for their contribution to research and teaching. This was followed by a desire for better training by those dissatisfied with their training while those satisfied with their training made requests for better pay/benefits. A selection of survey comments received is included below.

## **Respect and Recognition**

As with other knowledge workers<sup>11</sup>, PDFs want to be recognized as highly trained individuals with vital roles in the academic research enterprise. This respect and recognition needs to come not only from the supervisor/mentor and other departmental colleagues but also from the administration of the research institutions and the federal agencies involved in PDF affairs.

The supervisor or mentor is a key figure in the training of a PDF and many PDF satisfied with their career mentioned the role of the supervisor.

- *Academically, I have a great lab and great supervisor.*
- *My PI is supportive and interested in my project allowing me access to first rate equipment while allowing me to pursue my own interests.*
- *My supervisor is an excellent mentor who wholeheartedly supports my career development, including initiating my own research program while working in his lab as well as acquiring other professional skills such as science communication workshops.*
- *Training from my supervisor has been great. I have a high level of autonomy*
- *I have had a wonderful experience as a postdoc. I have a supportive supervisor who treats me as a colleague and not a research assistant.*
- *Excellent research experience with my supervisor*

On the other hand, few PDFs had complementary comments regarding the respect and recognition offered to them by their individual institutions or the federal agencies.

- *'I cannot believe how neglected PDF's are by research institutions and federal regulations'.*
- *How on earth can it be that a university doesn't know what a post-doctoral fellow is?!*

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<sup>11</sup> Today's workforce requires new age currency: responsibility, respect, relationships, recognition and rewards work well together to motivate workers. HR Magazine, March 2004, R. Brayton Bowen ([http://findarticles.com/p/articles/mi\\_m3495/is\\_3\\_49/ai\\_n6038398/](http://findarticles.com/p/articles/mi_m3495/is_3_49/ai_n6038398/))

In addition to the administrative confusion many PDFs experienced at their institution, most were concerned that their rights were very much determined by their supervisor, unlike the institutional oversight afforded to students or the rules and regulations surrounding employees.

In the words of one 'extremely lucky' PDF:

- *Regardless of whether postdocs ultimately gain trainee or employee status, we have definitely compromised a certain set of basic human rights on the job. As a postdoc, I rely exclusively on my supervisor's evaluation of my work performance and no one else. I have been extremely lucky in that none of my supervisors, past or present, have ever exploited me in any way but that door remains wide open nonetheless. It is extremely unfortunate that my supervisor is allowed so much exclusive power over my position and responsibilities and I know that this is the general case for all postdocs at present. The negative psychological impact of this situation really needs to be addressed at least in part through improved and objective methods of assessing a postdoc's work performance.*

In the words of less fortunate PDFs:

- *Abuse is never fun!*
- *I am satisfied with the most recent position, but prior experience has shown me that the post-doctoral researcher is essentially helpless before unethical treatment and exploitation.*

This lack of oversight for PDFs in Canada was cited by a number of international PDFs as a definite disadvantage to Canada being globally competitive in attracting bright and talented early stage researchers to our country.

- *Having experienced the university environment in several other countries, it is my opinion that Canada is the worst for exploiting postdocs, and for general inequality across universities within the country*
- *Trainee status is not just about the tax issue. It is also about equal recognition within the university community. I have been really disappointed with the Canadian approach to postdocs and when I return to Australia I will not be recommending doing a postdoc in Canada.*
- *Academically, I have a great lab and great supervisor. The attitude of my institution to my status and benefits stinks and is many times worse than it was in the UK*
- *These things go right to the heart of how science is achieved in Canada. The current position is damaging Canada and making it less competitive in the international job market for post-docs.*

## **Training**

Those satisfied with their training to date commented that their PDF training has provided the opportunity to:

- Considerably improve their laboratory/research skills (theoretical and practical)
- Learn a new area of research
- Expand their research technique skill set.
- Continue to study, grow professionally by teaching and publishing research, and develop valuable networks for future research endeavors.
- Decide on the direction of their own research
- Train graduate students.
- Learn how to manage a laboratory
- Co-author and/or write research grants
- Work with world-class scientists
- Work in excellent facilities
- Contact with the industry and to apply their research to the resolution of practical issues

PDFs who perceived themselves of being in a good PDF position saw the largest gap in their training was in the inability to apply for operating grants. This is unique to Canada, and in many other countries, PDFs are permitted to apply as the primary applicant on grants. This will be discussed in more detail in the CAPS recommendations stemming from the survey.

The same opportunities mentioned above were said to be missing by many of those who were dissatisfied with their training to date and include:

- Too much or no teaching opportunities
- No possibility to gain supervision experience
- No experience in grant writing
- No training in managing a research project

Others stated that they carried out many of these roles but received no recognition for their effort and in some cases it took away from their time to develop their own research interests.

- *“Postdocs are seen as trainees, but are actually running the lab; we train the technicians and supervise the graduate students. And we write the operating grants in our boss’ name.”*

### **Better pay / benefits**

While respect and recognition were the number one requests of PDFs, better compensation was also extremely important. Whether finding the low pay insulting “for a *HIGHLY EDUCATED, HIGHLY TRAINED population of academic individuals who SIGNIFICANTLY CONTRIBUTE to the research endeavours*” or comparing it to what is earned by postdocs in other countries<sup>12</sup>, or to other professionals within Canada, or to graduate students receiving top scholarships

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<sup>12</sup> The Scientist, March 2009

tax free<sup>13</sup>, the bottom line was that “*It is not enough to live on*,” *It is simply not enough to raise a family*”.

Current Canadian PDF stipend levels are lower than entry level research support staff (i.e. research technicians)<sup>14</sup>. While a laboratory technician has limited laboratory experience and generally works a forty-hour work week, a PDF has an average of seven or more years of lab experience and may work as much as 50 percent more hours per week. Comments from PDFs that they are ‘*cheap labour*’, ‘*highly qualified but cheap labour*’, and have ‘*limited access to lab technicians*’ suggest that PIs alter staffing models in the lab to exploit the low cost associated with postdoc’s who have experience and a willingness to work. This activity undermines the covenant of postdoctoral mentoring and training.

With many PDFs receiving less than adequate compensation and often having spouses and dependent children, the access to benefits is of the utmost concerns. The below table outlines the access to and desire to gain basic and extended benefits.

	<i>Currently have</i>	<i>Would Like</i>
Career training courses	26.8	38.2
Health insurance	39.6	37.2
Dependant health coverage	19.2	22.2
Vision/eye care	19.7	44.8
Dental	31.7	51.5
Vacation leave	32.3	33.6
Sick leave	15.5	35.9
Life insurance	5.4	21.8
Long term disability insurance	2.9	24.7
Parental leave	10.1	35.1
Retirement plan	3.1	41.7
Reduced rate parking	3.4	18.3
Legal/visa services	2.0	15.0
Child care (access to onsite facility)	4.9	29.7
Child care subsidy	3.3	24.9
Paid family/medical leave	2.4	24.4
Housing subsidy	0.8	21.3
Canada Pension Plan	9.6	36.2
Employment Insurance	10.2	36.3

<sup>13</sup> Canada Graduate Scholarships: Trainee stipend: **\$30,000** per annum. Vanier Canada Graduate Scholarships: Trainee stipend: **\$45,000** per annum.

<sup>14</sup> At the University of Calgary, entry level technicians start at \$37,620.

## Career Prospects

Many PDFs expressed concern for career advancement particularly in the academic arena.

- *Essentially the post doctoral position is undertaken with the goal of a faculty or equivalent position. There is little point in taking one on unless this is a career goal. The number of new faculty positions opening in Canada is at an all time low*
- *As the ratio of PDFs to available faculty positions increases (dramatically), it is more likely that individuals with PhDs wishing to remain in academics will be PDFs for the remainder of their working lives. This NEEDS to be recognized both by academic institutions and by government/funding agencies.*

Their concern is warranted. In Canada, the proportion of PhDs who will become university professors is decreasing. In 1986, 34% of Canada's PhDs were university professors whereas it was 24% in 2001, a decline of 10 percentage points in 15 years<sup>15</sup>. Further decreases are predicted given that enrolment in doctoral programs is far outpacing the increase in full time university professors. In 2007/2008<sup>16</sup>, enrolment at the doctorate level was 40,400, an increase of 62% from 2001/2002<sup>17</sup>. The number of full time university teachers increased approximately 20% over the same time period.

In 2007, Canadian universities granted 4,800 doctorate degrees, the highest number recorded<sup>16</sup>, and there were approximately 6000 PDFs. On the other side of the equation, Canadian universities hired 2616 new full time university teachers that year<sup>18</sup>. It is clear from these numbers that the majority of PDFs will not be entering into academic positions. They may stay within the university and teach or as one postdoc put it "*Enter the sessional nightmare situation*" or stay in research and become a Research Associate, a title afforded to a non-faculty scientist, after the PDF period is complete. Given that Research Associate positions start at \$48,000+ and have 22% benefits associated with them, more funds will need to be provided in operating grants if Canada wishes to retain these HQP within the research setting,.

For PDFs searching for non-academic careers, many were questioning whether the classical postdoctoral fellowship as it exists today is failing to prepare them for what is likely their realistic future career path.

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<sup>15</sup> Where are the Scientists and Engineers? Statistics Canada Catalogue no. 88F0006XIE – No. 002 <http://www.statcan.gc.ca/pub/88f0006x/88f0006x2007002-eng.pdf>

<sup>16</sup> <http://www.statcan.gc.ca/daily-quotidien/090713/dq090713a-eng.htm>

<sup>17</sup> [http://www.caut.ca/uploads/Almanac\\_2005.pdf](http://www.caut.ca/uploads/Almanac_2005.pdf)

<sup>18</sup> [http://www.caut.ca/uploads/2009\\_2\\_Staff.pdf](http://www.caut.ca/uploads/2009_2_Staff.pdf)

*A postdoc position is counterproductive for non-academic positions*

- *I feel that postdoctoral training is not very beneficial to a non-academic career*
- *Job market does not distinguish between fresh PhDs and PhDs with post doc*

They were also very aware that that “*Better job opportunities for PhDs in Canada are badly required*”. They are experiencing the effects of the chronic lack of non-academic scientist positions in Canada. This lack is due to the fact that Canadian companies do not invest as much as their competitors around the world in R&D and funding for government R&D, as a share of GDP, is well below the G-7 average.<sup>19</sup>

### **CAPS recommendations arising from the survey**

#### ***Recommendation #1:***

***To establish a nationally accepted definition of a PDF in Canada.***

Although it is generally accepted by the scholarly community that a PDF appointment is an apprenticeship program meant to bridge the transition between the PhD and the chosen permanent career, be it academic or otherwise, many PDFs are languishing in a non-structured, dead-ended position. This is obvious by the increasing number of PDFs outside of the ‘classic’ 2-4 years of postdoctoral training. We submit that a true postdoctoral position is a *temporary* one, and that continued training is limited in its scope and timing. We insist that a time limit should be put on the postdoctoral training period, and PDFs who fall outside of this time limit be reclassified under current academic institutions into positions such as research scientist and research associate, positions that are commonly more stable in nature and often classified by employment within the institution. This would eliminate the number of PDFs who are in positions wherein they fail to have established training goals, and yet still function as ‘cheap labour’ with low stipends and lack of any additional employment benefits.

#### ***Recommendation #2:***

***To establish a clear status for PDFs at Canadian Institutions.***

We recommend that all PDFs in Canada have a clear status, be it either employee or trainee/student. In many institutions, PDFs fall in between the two in that they receive their income as T4A income, which is recognized as income for tax purposes but not as employment income, and thus cannot contribute (and benefit from) contributions to employment insurance (EI) and Canadian Pension Plan (CPP) or RRSP. However, as they are also not designated as ‘students’ they do not receive a T2202A document, required for the additional tax benefits afforded to graduate students. Thus, with low salaries (78% of respondents to make less than \$45,000 per year) the majority of PDFs pay full taxes and receive

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<sup>19</sup> *State of The Nation 2008 - Canada's Science, Technology and Innovation System.*  
[http://www.stic-csti.ca/eic/site/stic-csti.nsf/eng/h\\_00011.html](http://www.stic-csti.ca/eic/site/stic-csti.nsf/eng/h_00011.html)



no additional benefits. This often results in a huge wage disparity between PDFs who have completed their PhD and the graduate students within the same research group.

However, in some institutions, PDFs are designated as trainees/students, receive the T4A code 05 documents and the T2202A form, and thus are able to avail of the same tax-free status as graduate students. Still others are designated as employees, pay income tax as well as EI/CPP contributions and can avail of these benefits, in the form of social benefits such as parental leave. Whereas the validity of both of the trainee or employee statuses has yet to be determined by both the Canada Revenue Agency (CRA) and the Ministry of Finance of Canada, we propose that all PDFs should be able to avail of one of the two statuses. In short, PDFs are either an employee **OR** a trainee/student, not neither. Academic institutions need to take a leading role in this matter as it is they who are tasked to determine who are training at their respective institution.

***Recommendation #3:  
To establish clear training guidelines for PDFs***

Recommendation 3.1 - Postdoctoral Competencies: It is generally accepted that the PDF is a necessary step in career progression and is a position of advanced training. However, few Canadian institutions have any sort of formal training available for PDFs. We propose that institutions make available training that may already exist (for graduate students and junior faculty) that would benefit PDFs as well as develop training material<sup>20</sup> that will facilitate career progression from the PDF into the next step in their career.

Recommendation 3.2 – Facilitate the movement of PDFs out of the ‘academic parking lot’. We encourage the Tri-council to:

- Take a lead on compiling and distributing best practices for PDF training as gained through their CREATE (NSERC) grants and STIHR (CIHR) grants
- Make it a requirement of all grant applications requesting funding for trainees to identify the training to be provided to PDFs.
- Make it a requirement that training should encompass both academic and non-academic careers

Recommendation 3.3 – Formalize the Mentor/Postdoc Relationship: We recommend the adoption in whole or part the “*Compact between Postdoctoral Appointees and their Mentors*”<sup>21</sup>: In most cases, the relationship between the PDF and their chosen research mentor is extremely important, but to date has no formal document has been adopted in Canada that outlines the responsibilities and expectations of either party.

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<sup>20</sup> <http://www.nationalpostdoc.org/competencies>. NPA Core Competency document

<sup>21</sup> Compact between Postdoctoral Appointees and their Mentors, AAMC, December 2006  
[http://services.aamc.org/publications/showfile.cfm?file=version76.pdf&prd\\_id=176&prv\\_id=210&pdf\\_id=76](http://services.aamc.org/publications/showfile.cfm?file=version76.pdf&prd_id=176&prv_id=210&pdf_id=76)

Recommendation 3.4 – Independent Development Plans. We recommend that to prevent disagreements and misunderstandings and encourage career planning, an individual development plan (IDP) be developed at the initiation of each postdoctoral training period. The IDP provides a level of communication between a PDF and their mentor around the topics of research expectations, publication and conference attendance, specific career goals and realistic timelines. It also serves as a template for the annual assessment of the performance of both PDF and mentor. The idea of the IDP has been supported by the NPA and instituted by several US institutions. The Sigma Xi survey found that PDFs who had IDPs published more papers and were generally more satisfied with their postdoctoral experience. A sample IDP can be found on the *Federation of American Societies for Experimental Biology (FASEB)* website<sup>22</sup>.

***Recommendation #4:***

***Funding agencies and Institutions facilitate the granting of appropriate stipends and extended benefits for PDFs***

Many institutions set their PDF salaries based on granting agency minimums. These minimums have not kept pace with the cost of living in most Canadian centres, are lower than the top scholarships offered to graduate students and are significantly lower than those provided to PDFs in other countries. We recommend that these minimums be increased immediately. We also recommend that stipends scales recognizing years of postdoc experience be developed.

The Tri-council does allow for non-discretionary benefits paid to PDFs from their grants. Institutional non-discretionary benefits normally include long- and short-term disability insurance; life insurance; pension benefits; medical, vision and dental care benefits; and parental leave. Institutional non-discretionary benefits must not contravene Agency guidelines.<sup>23</sup>

From our survey, 50% of PDFs receive their stipend directly from their mentor's research grants and an additional 18% receive funding directly from Tri-council funding. Thus, the granting agencies are either directly or indirectly responsible for the salaries of the majority of PDFs in Canada. Yet, the numbers receiving any form of extended benefits are quite low. We propose that it is up to the institutions to set up benefits that meet Agency guidelines. We also recommend that extended health benefit plans and parental leave be an institutional imperative. With 81% of PDFs over the age of 30, and 30% already having dependent children, parental leave is of the utmost importance, yet most institutions have no allowances for PDFs to take any form of parental leave or

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<sup>22</sup> <http://opa.faseb.org/pdf/idp.pdf>

<sup>23</sup> [http://www.nserc-crsng.gc.ca/Professors-Professeurs/FinancialAdminGuide-GuideAdminFinancier/FundsUse-UtilisationSubventions\\_eng.asp#compensation](http://www.nserc-crsng.gc.ca/Professors-Professeurs/FinancialAdminGuide-GuideAdminFinancier/FundsUse-UtilisationSubventions_eng.asp#compensation)

basic health benefits for PDFs and their families. This situation requires immediate action.

***Recommendation #5:  
Enhance academic career progression.***

Recommendation 5.1 – Enhance the academic stature of postdoctoral training in Canada. Of the PDFs who do desire the academic route and a postdoctoral training in Canada, they are at a distinct disadvantage to PDFs who have received training elsewhere, especially the US. In Canada, granting agencies, particularly the Tri-council, do not permit PDFs to apply for and hold grants. They are in some circumstances permitted to be co-applicants with their PDF mentor. However, in the US, PDFs can apply for and hold their own grants, putting them at a distinct advantage when applying for academic positions in competition with Canadian trained PDFs. Although statistics do not exist comparing success rates in obtaining Canadian academic positions based on location of postdoctoral training, anecdotal evidence supports that Canadians who leave Canada for postdoctoral training fare better in obtaining tenure-track positions. This inequality can be easily changed at the granting council level.

Recommendation 5.2: Transitional Awards for Postdocs. Another enviable granting opportunity offered by the National Institute of Health (NIH) in the US is the K99/R00 NIH Pathway to Independence (PI) Award. Information on this award can be found here<sup>24</sup> and there are between 150 and 200 of these grants granted each year. It allows for the PDF to have two types of NIH-funded support; the K99 portion as a mentored research program that transition into independent research within the institution, leading into an assistant professor position (R00 grant) within the institution. This allows for highly competitive postdoctoral candidates to successfully transition from a postdoctoral position into a junior faculty position. These sorts of transitional awards do not currently exist in Canada, yet their establishment would likely successfully attract and retain some of the best PhD candidates in our country.

**Concluding Statement**

Today, many PDFs in Canada feel as they are on ‘the outside looking in’ in their academic institutions. They feel as though our significant contribution to the academic enterprise is underappreciated and our needs and concerns are largely ignored. We also feel that our vast numbers compared to the academic careers available create a “parking lot” mentality, where we sit and wait with little control over our own progression. However, a significant opportunity exists to validate the efforts of Canadian PDFs and create a positive and productive environment for them at Canadian institutions. We at CAPS intend to work with all stakeholders to make these positive changes occur.

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<sup>24</sup> [http://grants.nih.gov/grants/new\\_investigators/QsandAs.htm](http://grants.nih.gov/grants/new_investigators/QsandAs.htm)