



## Scholarship and Fellowship Surveys

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# Executive Summary

NSERC (the Natural Sciences and Engineering Research Council of Canada) invests over \$200 million annually to help students acquire the skills needed to generate knowledge and pursue rewarding careers in all sectors of society. These investments in Canada's knowledge base lead to innovations in industry and advances in setting policy, standards and regulations, and in solving problems, thus strengthening the economy and improving the quality of life for all Canadians.

NSERC must be able to support enough students in the natural sciences and in engineering to meet the needs of the country. The support must also be at a high enough level to attract the best people. Without these long-term investments in young people Canada will experience a decline in its ability to compete and innovate in a knowledge-based world.

This report presents the results of surveys conducted to determine the program impact for NSERC's major direct student support programs - the Undergraduate Student Research Awards (USRA) program, the Postgraduate Scholarship program, and the Postdoctoral Fellowship program. The major findings of three separate surveys can be summarized as follows:

- The USRA job experience increased the level of interest or maintained a high level of interest in research and development for 84% of the respondents.
- More than 80% of USRA respondents plan to obtain a postgraduate degree, five times the national average for students in the natural sciences and engineering.
- The unemployment rates for postgraduate scholarship and postdoctoral fellowship respondents are less than one quarter of the national average.
- 96% of the postgraduate scholarship respondents completed the degree (master's or doctoral) for which they received NSERC funding.
- A high percentage of postgraduate scholarship (65%) and postdoctoral fellowship (88%) respondents are active in a research and development capacity, using their training for one of the primary purposes of the programs.

- Three quarters of postgraduate scholarship and postdoctoral fellowship respondents feel that their training was "critical" to their careers.
- 18% of postgraduate scholarship respondents and 30% of postdoctoral fellowship respondents were living outside the country at the time of the survey.

## **Acknowledgements**

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## 1. Introduction

NSERC (the Natural Sciences and Engineering Research Council of Canada) is the national instrument for making strategic investments in Canada's capabilities in science and technology. The Council's ultimate objective is to advance Canada's prosperity and high quality of life by supporting the creation and transfer of knowledge in natural sciences and engineering in Canada, and by ensuring people are trained to create and use that knowledge. To achieve this, NSERC supports research in Canadian universities and colleges that meets the highest international standards of excellence and it supports the education of young people in that research.

Students trained with the support of NSERC acquire the skills needed to generate and use new knowledge and pursue rewarding careers in all sectors of society. These investments in Canada's knowledge base lead to innovations in industry and advances in setting policy, standards and regulations, and in solving problems, thus strengthening the economy and improving the quality of life for all Canadians.

NSERC must be able to support enough students in the natural sciences and in engineering to meet the needs of the country. The support must also be at a high enough level to attract the best people. Without these long-term investments in young people, Canada will experience a decline in its ability to compete and innovate in a knowledge-based world.

NSERC invested over \$200 million in 2000-01 to support the training in research of the next generation of HQP with advanced degrees in science and engineering. This training support is provided in two ways: (1) directly to individuals selected through national competitions; and (2) indirectly through support provided by NSERC-funded researchers from their NSERC grant.

NSERC provides four-month positions for undergraduate students in natural sciences and engineering through the Undergraduate Student Research Awards (USRA) program (Note: NSERC-funded researchers also support undergraduate students through their NSERC research grants). The program's objective is to stimulate the interest of undergraduate students in research by providing them with valuable experience in a university or industrial laboratory, and to encourage these students to undertake graduate studies. NSERC's current annual investment of \$13 million brings this experience to nearly 3,000 students every year.

NSERC also provides scholarship support for Canadians to pursue a master's or doctoral degree in the natural sciences and engineering. This is done in two ways: (1) directly through national programs supporting more than 3,200 students annually at a cost of \$53 million per year; and (2) indirectly through NSERC's research grants, which support more than 4,500 students (full-time equivalent), at roughly \$83 million per year. The career status of former NSERC-funded master's and doctoral students and the degree to which NSERC funding affects their ability to undertake or continue with their studies are important indicators of the impact of the scholarship support.

In certain fields it has become customary to go through additional postdoctoral research training after a doctoral degree. NSERC directly funds postdoctoral fellows (PDFs) for up to two years to continue their research training. NSERC now invests approximately \$13 million per year to support roughly 450 Canadian PDFs. NSERC also provides this PDF support for more than 800 other individuals (full-time equivalent) through NSERC research grants, at roughly \$29 million per year.

This report presents the results of surveys conducted to determine the impact for NSERC's major direct student support programs - the Undergraduate Student Research Awards (USRA) program, the Postgraduate Scholarship program, and the Postdoctoral Fellowship program.

## 2. Undergraduate Student Research Award Survey

In the fall of 1999, NSERC completed a survey of students who had just completed a summer job, at a university or industry lab, that was partially funded by an NSERC Undergraduate Student Research Award (USRA). This section presents results for this first exit survey of USRA winners. The methodology and questionnaire used for the surveys can be found in Appendix A.

The NSERC USRA is meant to stimulate the interest of undergraduate students in research in the natural sciences and engineering. The award is also meant to encourage those students supported to undertake graduate studies and pursue a research career. Based on the stated and implied program objectives, prime indicators of impact are:

- the education and career goals of students and the relationship to research, and
- the usefulness of the job experience.

### Survey Response

The survey was carried out at the end of the summer and most of the responses came in during September and October. An overview of the response rates by USRA award type is given in Table 2.1. The overall response rate of 60.8% for a mail survey without follow-up can be considered very good. The response rates by discipline and gender were not significantly different.

Table 2.1: Response Rates

	University USRA	Industry USRA	Total
Sample size	2,377	375	2,752
Number of responses	1,459	213	1,672
Response rate (%)	61.4	56.8	60.8

### 2.1 The Job Experience

Before addressing the job experience of the USRA holder, the reasons students accepted a USRA will be explored. Table 2.2 presents a list of the various reasons respondents considered in accepting the award. The opportunity to work in a research and development

environment proved to be the most cited. Education and career goals, and the prestige of the award also figured prominently in the respondents' decisions to accept a USRA.

**Table 2.2: Important Considerations in Accepting USRA**

Consideration	University USRA		Industry USRA		Total	Total (%)
	USRA	(%)	USRA	(%)		
Only offer received	196	13.4	40	18.8	236	14.1
Offered a high wage/salary	352	24.1	40	18.8	392	23.4
Was linked to career goal	947	64.9	87	40.8	1,034	61.8
Provided opportunity to work in R&D environment	1,164	79.8	141	66.2	1,305	78.1
Was related to education	989	67.8	93	43.7	1,082	64.7
Close to home	283	19.4	27	12.7	310	18.5
Prestige of award	771	52.8	98	46.0	869	52.0
Other	75	5.1	13	6.1	88	5.3
Total <sup>1</sup>	4,777	-	539	-	5,316	-

1. Multiple replies give more responses than the number of respondents. Percentages calculated on the basis of 1,459 and 213 respondents for the university and industry USRAs, respectively.

Once on the job the overall satisfaction with the USRA experience tended to be very good (see Table 2.3). More than 85% of respondents rated their experience a 4 or 5 (outstanding), with fewer than 2% of respondents rating the experience less than "fair".

**Table 2.3: Satisfaction with USRA Experience**

Satisfaction	University USRA		Industry USRA		Total	Total (%)
	USRA	(%)	USRA	(%)		
1 Poor	1	0.1	3	1.4	4	0.2
2	17	1.2	3	1.4	20	1.2
3 Fair	179	12.3	29	13.6	208	12.4
4	691	47.4	109	51.2	800	47.8
5 Outstanding	566	38.8	68	31.9	634	37.9
Unknown	5	0.3	1	0.5	6	0.4
Total	1,459	100.0	213	100.0	1,672	100.0

Similarly good ratings were given for the challenging nature of the position, shown in Table 2.4. Nearly 95% of the respondents felt that the position was at least moderately to extremely challenging. Research and development skills were the most often (86%) mentioned by respondents when asked to list new skills obtained on the job (see Table 2.5). Related R&D work such as experimental methods, analytical techniques, and the use of lab equipment were also highly cited.

## Undergraduate Student Research Award Profile

### Wendy Lines

*(Ms. Lines is a fourth-year undergraduate student at Memorial University.)*

"Without working in the lab in the summer, I would probably not be leaning as far toward graduate school as I am right now."

Ms. Lines offers a word of encouragement for people who may be struggling at the start of their studies. "In my first year, chemistry was probably the last field I would have chosen, because I was very intimidated going to labs. Everyone seemed to know more than I did, everyone seemed to have more experience. But once I got past first year, it didn't really seem as bad. Try as hard as you can and it will get better."

The term spent as a USRA was something of a revelation, not just for the hands-on experience, but for the understanding of the academic research environment. "I had no idea what exactly was in store for me when they said 'you can come work in the lab.' It really helps now that I've become friends with a few grad students, and they can tell me what is expected of them. I can see the dynamic between the supervisor and the graduate students. It gave me a much better perspective and it didn't seem quite as scary."

Although she was interested in getting lab experience, economic realities might have prevented it, were it not for the USRA. "I probably would have tried to do some kind of lab work in the summer, just to decide if I wanted to go into that field. But my family doesn't live here in St. John's, so I had to support myself. And I may have been less likely to go into this kind of a job, if I hadn't had the money."

Ms. Lines' plans for the future include taking her studies a step further. "At this point, I'm planning to go to graduate school. I think that it would be really great if I could stay around and do my Ph.D. It's going to depend a lot on the atmosphere of the lab I end up working in. But I do want to stay in Canada because all the profs I've been talking to have said that in the States they look for Canadian chemists. At the undergraduate level, Canadian universities sometimes give students more lab experience."

Further down the road, there are decisions to be made, but her experience at Memorial has made a strong impression. "I think I might end up working in industry for a little while, just to make a bit of money. But I would not rule out the possibility of going into academia eventually, because the people that I've seen doing it seem to really love it."

Table 2.4: Challenge of Position

Challenge of Position	University		Industry		Total	Total (%)
	USRA	(%)	USRA	(%)		
1 Not at all	11	0.8	6	2.8	17	1.0
2	59	4.0	8	3.8	67	4.0
3 Moderately	505	34.6	74	34.7	579	34.6
4	674	46.2	98	46.0	772	46.2
5 Extremely	206	14.1	27	12.7	233	13.9
Unknown	4	0.3	0	0.0	4	0.2
<b>Total</b>	<b>1,459</b>	<b>100.0</b>	<b>213</b>	<b>100.0</b>	<b>1,672</b>	<b>100.0</b>

Table 2.5: Skills Acquired on the Job

Skill	University		Industry		Total	Total (%)
	USRA	(%)	USRA	(%)		
Research and development	1,258	86.2	180	84.5	1,438	86.0
Theoretical, knowledge of the discipline	1,118	76.6	128	60.1	1,246	74.5
Analytical techniques, experimental methods	1,152	79.0	151	70.9	1,303	77.9
Use of lab equipment or instruments	1,017	69.7	153	71.8	1,170	70.0
Management (e.g. time, organisation, presentation)	690	47.3	117	54.9	807	48.3
Writing	438	30.0	86	40.4	524	31.3
None	4	0.3	3	1.4	7	0.4
Other	156	10.7	17	8.0	173	10.3
<b>Total<sup>1</sup></b>	<b>5,833</b>	<b>-</b>	<b>835</b>	<b>-</b>	<b>6,668</b>	<b>-</b>

1. Multiple replies give more responses than the number of respondents. Percentages calculated on the basis of 1,459 and 213 respondents for the university and industry USRAs, respectively.

For the most part respondents felt that they had received adequate supervision and instruction (see Table 2.6). Fewer than 7% of respondents thought that the supervision and instruction they received could have been better.

Table 2.6: Adequate Supervision and Instruction

Adequate Supervision and Instruction	University		Industry		Total	Total (%)
	USRA	(%)	USRA	(%)		
Yes	1,354	92.8	203	95.3	1,557	93.1
No	105	7.2	5	2.3	110	6.6
Unknown	0	0.0	5	2.3	5	0.3
<b>Total</b>	<b>1,459</b>	<b>100.0</b>	<b>213</b>	<b>100.0</b>	<b>1,672</b>	<b>100.0</b>

Concerning the important question of the job experience and its impact on the students' interest in R&D, Table 2.7 clearly demonstrates that the respondents attitudes towards R&D were positively influenced and/or reinforced. Less than 4% of respondents lost interest in R&D and another 4.4% were not stimulated to a higher level of interest. Overall, more than 84% of respondents were still interested in research.

**Table 2.7: Interest in R&D**

Interest in R&D	University		Industry		Total	Total (%)
	USRA	(%)	USRA	(%)		
Increased my interest	635	43.5	88	41.3	723	43.2
Maintained my high level of interest	598	41.0	90	42.3	688	41.1
Maintained my low level of interest	67	4.6	7	3.3	74	4.4
Decreased my interest	51	3.5	11	5.2	62	3.7
Do not know	92	6.3	16	7.5	108	6.5
Unknown	16	1.1	1	0.5	17	1.0
<b>Total</b>	<b>1,459</b>	<b>100.0</b>	<b>213</b>	<b>100.0</b>	<b>1,672</b>	<b>100.0</b>

The respondents who held their award in industry were also asked to describe their post award interest in a career in industry (see Table 2.8). Nearly 80% of industry USRA respondents had a favourable impression of working in industry after their summer job experience. Less than 10% of respondents maintained a low interest or lost interest in working in industry. This is a good indication that NSERC's industrial partners are providing a stimulating work environment, good supervision and instruction, and challenging positions.

**Table 2.8: Impact of Industry USRA on Interest in Career in Industry**

Interest in Career in Industry	No.	(%)
Increased my interest	83	39.0
Maintained my high level of interest	84	39.4
Maintained my low level of interest	8	3.8
Decreased my interest	11	5.2
Do not know	27	12.7
<b>Total</b>	<b>213</b>	<b>100.0</b>

The positive impact of the USRA job experience is also reflected in the respondents feeling that the award improved their prospects of landing a permanent position (see Table 2.9).

**Table 2.9: Improved Prospects for Getting a Permanent Job**

Improved Prospects	University		Industry		Total	Total (%)
	USRA	(%)	USRA	(%)		
Yes	1,146	78.5	191	89.7	1,337	80.0
No	52	3.6	7	3.3	59	3.5
Do not know	256	17.5	15	7.0	271	16.2
Unknown	5	0.3	0	0.0	5	0.3
<b>Total</b>	<b>1,459</b>	<b>100.0</b>	<b>213</b>	<b>100.0</b>	<b>1,672</b>	<b>100.0</b>

## 2.2 Future Plans

Several questions on the survey were included to determine the future work and education plans of the USRA holders.

### Education

One of the important objectives of the USRA program is to stimulate an interest in postgraduate education of the award holders. Table 2.10 provides a breakdown of the highest level of education that respondents plan to obtain. Only a small number of respondents plan to stop their education once they receive their bachelor's degree. More than 80% of respondents plan to go on to obtain a master's or doctoral degree, a figure well above the national average of less than 15% of bachelor degree holders who move on to graduate school in the natural sciences and engineering. Other professional degrees such as MD also figure prominently in the respondents' plans.

Table 2.10: Highest Level of Education Planned

Level of Education	University		Industry		Total	Total (%)
	USRA	(%)	USRA	(%)		
Bachelor's degree	77	5.3	36	16.9	113	6.8
Master's degree	452	31.0	86	40.4	538	32.2
Doctoral degree	776	53.2	74	34.7	850	50.8
MD	77	5.3	6	2.8	83	5.0
Other/Undecided	56	3.8	8	3.8	64	3.8
Unknown	21	1.4	3	1.4	24	1.4
<b>Total</b>	<b>1,459</b>	<b>100.0</b>	<b>213</b>	<b>100.0</b>	<b>1,672</b>	<b>100.0</b>

The results in Table 2.11 show that nearly one half of the respondents felt that the USRA experience had an impact on their education plans. Of the 794 respondents who indicated a link between the USRA and education plans, nearly two thirds responded that the influence was to stay in school longer than originally planned (see Table 2.12). Only 3% of these respondents plan to leave school earlier than planned.

Table 2.11: Did USRA Impact on Education Plans

Impact	University		Industry		Total	Total (%)
	USRA	(%)	USRA	(%)		
Yes	710	48.7	84	39.4	794	47.5
No	540	37.0	98	46.0	638	38.2
Not sure	206	14.1	31	14.6	237	14.2
Unknown	3	0.2	0	0.0	3	0.2
<b>Total</b>	<b>1,459</b>	<b>100.0</b>	<b>213</b>	<b>100.0</b>	<b>1,672</b>	<b>100.0</b>



Table 2.12: Change in Education Plans

Change in Education Plans	University		Industry		Total	(%)
	USRA	(%)	USRA	(%)		
Will stay in university longer	428	60.3	59	70.2	487	61.3
Will leave university earlier	22	3.1	2	2.4	24	3.0
Will change field of study	94	13.2	13	15.5	107	13.5
Other	166	23.4	10	11.9	176	22.2
Total	710	100.0	84	100.0	794	100.0

## Work

When asked to select a sector of employment that respondents would prefer for future employment, they were fairly uncommitted (see Table 2.13). The holders of the industry USRA mentioned a stronger preference for the industrial sector. Overall, nearly one half of the respondents were still undecided or the sector did not really matter.

Table 2.13: Preferred Sector of Future Employment

Preferred Sector	University		Industry		Total	(%)
	USRA	(%)	USRA	(%)		
Industry	352	24.1	104	48.8	456	27.3
University	325	22.3	14	6.6	339	20.3
Government	126	8.6	13	6.1	139	8.3
Non-profit	32	2.2	3	1.4	35	2.1
Does not matter	104	7.1	17	8.0	121	7.2
Undecided	559	38.3	66	31.0	625	37.4
Total <sup>1</sup>	1,498	-	217	-	1,715	-

1. Multiple replies give more responses than the number of respondents. Percentages calculated on the basis of 1,459 and 213 respondents for the university and industry USRAs, respectively.

## Going Abroad

The “brain drain” issue prompted some questions being directed to USRA holders on their intentions to stay in or to leave the country. Most respondents plan to stay in the country (66%), but a significant minority will leave or are still uncertain (see Table 2.14). Of the respondents that plan to leave the country, most (62%) will do so to pursue graduate studies (see Table 2.15).

Table 2.14: Plan to Stay in Canada After Bachelor's Degree

Plan to Stay	University		Industry		Total	(%)
	USRA	(%)	USRA	(%)		
Yes	951	65.2	152	71.4	1,103	66.0
No	119	8.2	10	4.7	129	7.7
Do not know	386	26.5	51	23.9	437	26.1
Unknown	3	0.2	0	0.0	3	0.2
<b>Total</b>	<b>1,459</b>	<b>100.0</b>	<b>213</b>	<b>100.0</b>	<b>1,672</b>	<b>100.0</b>

Table 2.15: Reasons for Leaving Canada

Reason	University		Industry		Total	(%)
	USRA	(%)	USRA	(%)		
Graduate school	73	61.3	7	70.0	80	62.0
Better/More job opportunities	26	21.8	2	20.0	28	21.7
Personal	16	13.4	1	10.0	17	13.2
Financial	12	10.1	1	10.0	13	10.1
Other	14	11.8	1	10.0	15	11.6
<b>Total<sup>1</sup></b>	<b>141</b>	<b>-</b>	<b>12</b>	<b>-</b>	<b>153</b>	<b>-</b>

1. Multiple replies give more responses than the number of respondents. Percentages calculated on the basis of 119 and 10 respondents for the university and industry USRAs, respectively.

## **Undergraduate Student Research Award Profile**

### **Usne Butt**

*(Mr. Butt is a master's degree student at the University of Saskatchewan.)*

"When outside making biological behavioural observations or even just walking outdoors, I really appreciate the deeper understanding, that I've developed through my education, of the processing working around me."

Mr. Butt's USRA term took him out in the field. "I assisted my supervisor in egg collection of different species of birds; I also helped out with a toxicology project looking into the immune function in American kestrels. I coordinated the set up of a facility to bring in a captive population of American kestrels. It was a very good summer."

In addition to learning about the natural history of several bird species, he learned about the challenges of doing science. "It gave me a real appreciation for the amount of work necessary for some of these scientific studies. There's a significant amount of work involved in collecting your data before you can even get to the point of analysing it. It gave me hands-on experience that I didn't really have before that."

What does the future hold? "Because I won this award, I was able to go out and get employment in the field and gain some experience, which was very important in me making my decision to continue on in biology. I think these programs are very important to help people make these decisions earlier in their academic career. I've just entered into a master's project now. And at this point, for this year anyway, I'm going to focus on the master's project. If it goes well, and if I'm enjoying the research, then I'd continue on and do a Ph.D."

The key to success in your studies, according to Mr. Butt, is quite simple. "The secret of university isn't so much intelligence, or brain capacity by any means, it's work ethic. If you're willing to go out and work, that makes all the difference. I think the most important thing to do in university is to find something that interests you. The most successful students are students that enjoy what they are doing."

Don't forget that the community offers other opportunities for learning. "Get involved and get out and learn things. In the last couple of years, I've become involved with the Natural History Society here in Saskatoon. Getting out and meeting other people and getting different perspectives, and taking advantage of learning from knowledgeable people is important. And there's the potential to do those sorts of things in a non-academic setting. Without those academic pressures, it makes the learning process very enjoyable."

## 2.3 Key Findings

The first exit survey of USRA winners has provided NSERC with some important information previously unavailable. The results indicate that the NSERC USRA program is achieving the desired impacts. The major findings of the survey can be summarized as follows:

- More than 85% of the respondents rated their overall USRA experience from good to outstanding.
- Nearly 95% of the respondents felt that the USRA job experience was from moderately to extremely challenging.
- 86% of the respondents acquired research and development skills on the job.
- Interest in R&D was higher or maintained at a high level for 84.3% of the respondents.
- NSERC's industrial partners are providing a stimulating work environment, good supervision and instruction, and challenging positions for the industry USRA winners.
- More than 80% of the respondents plan to obtain a postgraduate degree.
- Nearly 30% of respondents will stay in school longer because of their USRA experience.

### 3. Postgraduate Scholarship Surveys

In the fall of 1994, NSERC completed a pilot survey of former Postgraduate Scholarship winners. Upon successful completion of the pilot survey it was decided to continue the survey work on an annual basis. This section presents results for the first five years of the survey. The methodology and questionnaire used for the surveys can be found in Appendix B.

Former NSERC scholars were surveyed nine years after receiving a scholarship to obtain data on whether the scholarship program were having the desired impacts. The main objective of the NSERC Postgraduate Scholarship (PGS) program is:

- to assist in the training of highly qualified scientists and engineers by providing financial support to excellent students working toward a master's or doctoral degree in the natural sciences or in engineering.

Based on the stated and implied program objectives, prime indicators of impact are:

- the current career status of former scholarship holders;
- the role of NSERC funding in a scholar's decision to undertake graduate studies; and
- their success in obtaining graduate degrees.

#### Survey Response

The surveys were generally carried out during the summer months and most of the responses came in during August and September. An overview of the response rates by year is given in Table 3.1.

Table 3.1: Response Rates

	1985 Cohort	1986 Cohort	1987 Cohort	1988 Cohort	1989 Cohort	Total
Sample size	595	560	555	679	564	2,953
Number sent out	510	444	462	535	481	2,432
Number of responses	268	245	261	218	203	1,195
Response rate (%)	52.5	55.0	56.5	40.7	42.2	49.1

The sample sizes were reduced to the number actually sent out when the alumni associations discovered that they did not have addresses for certain individuals. Overall, the survey achieved a fairly respectable response rate of 49.1%. Because of privacy laws in several provinces NSERC did not have the names for those not reached, complicating the analysis.

### A Comment on Bias

Although a response rate of 49% is reasonable for a survey without follow-up, it does raise the question of bias. The aim of this study was to provide data on performance indicators, so it is important to assess (to the extent feasible) the reliability of the data. The only identifier in the survey populations that can be checked with any certainty is the discipline of study. The NSERC database has the discipline of the postgraduate study as classified by NSERC at the time of the award. The survey respondents filled in, in their own terms, the disciplines of each of their degrees. The point of comparison was the discipline mix in the original sample and the respondent sample. The results are shown in Table 3.2.

Table 3.2: Comparison of Discipline Breakdown of Sample Versus Respondents

Discipline	Sample Size by Cohort					No. Respondents by Cohort					Response Rate (%) by Cohort				
	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989
Life Sciences	169	144	165	210	175	81	61	68	55	59	47.9	42.4	41.2	26.2	33.7
Physical Sci.	174	142	130	177	161	66	56	57	56	56	37.9	39.4	43.8	31.6	34.8
Engineering	133	160	166	167	133	69	75	78	54	50	51.9	46.9	47.0	32.5	37.6
Math./Statistics	51	49	45	52	51	24	22	23	17	13	47.1	44.9	51.1	32.7	25.5
Computer Sci.	68	65	49	73	44	23	21	26	27	15	33.8	32.3	53.1	37.0	34.1
Other/Unknown	0	0	0	0	0	5	10	9	17	10	-	-	-	-	-
Total	595	560	555	679	564	268	245	261	218	203	45.0	43.8	47.0	32.1	36.0

In comparing the numbers in Table 3.2, the following should be borne in mind:

- The alumni associations were unable to locate 521 (17.7%) of the cohort for the five years. The associations may have more difficulty in keeping in touch with alumni abroad. Thus a larger proportion of the missing 17.7% may be living outside the country.
- The data are based on comparing disciplinary classifications made by NSERC at the time of the award, with a classification written by the recipient during the survey. This can lead to some crossovers between certain categories, e.g. between Applied

Mathematics and Computer Sciences, between Computer Sciences and Electrical Engineering. But the net effect of artifacts of classification is probably small.

In summary, on the basis of the discipline profiles, there is no marked difference between the original sample and the respondent groups. That is, the respondent groups can be considered as representative samples of the original. This does not rule out some bias in terms of various other factors, but it is not practical to try and investigate this further.

### 3.1 Career Status of Former Scholars

A significant portion of the survey was devoted to gaining a better understanding of the career progression of NSERC-funded graduate students. The career status of former scholars is an important indicator of the impact of scholarship programs. Questions 6 to 14 of the survey are related to career status and will be analysed below.

#### Employment Status

Table 3.3 presents the current status of the respondents by year. The clear majority of respondents are currently employed, with the bulk of the remainder still in school or finishing their postdoctoral fellowship. The results for the different years are very similar. The combined unemployment rate at 1.7% of the respondents or 2.1% of those employed is very low, and considerably lower than the general Canadian unemployment rates of 8.3% to 10.4% for the time period (1994 to 1998) of the survey.

Table 3.3: Current Status

Status	1985		1986		1987		1988		1989		Total	Total (%)
	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)		
Employed	189	70.0	185	72.0	199	72.9	176	78.2	154	73.0	903	73.1
Self-employed	17	6.3	13	5.1	23	8.4	20	8.9	18	8.5	91	7.4
Unemployed	6	2.2	5	1.9	4	1.5	2	0.9	4	1.9	21	1.7
Postdoctoral fellow	36	13.3	28	10.9	20	7.3	13	5.8	10	4.7	107	8.7
Student	16	5.9	16	6.2	16	5.9	5	2.2	14	6.6	67	5.4
Other	6	2.2	10	3.9	11	4.0	9	4.0	11	5.2	47	3.8
Total <sup>1</sup>	270	100.0	257	100.0	273	100.0	225	100.0	211	100.0	1,236	100.0

1. Multiple replies give more responses than the number of respondents.

Those surveyed were also asked to answer questions on their current or most recent position. The sector in which they are or were employed is highlighted in Table 3.4. Most of those responding are or were working in the industrial or university sector. The vast

majority of these positions were full-time, as indicated in Table 3.5. The activities related to their current or most recent position are presented in Table 3.6 (multiple entries were possible for this question). A high percentage of award winners are/were active in an R&D capacity. Teaching activities were second most prevalent, typically in connection with R&D work as related to university faculty positions. The percentage of respondents in each discipline group performing R&D is roughly equal, except for mathematics and statistics where the small sample size does not allow for a proper comparison (see Table 3.7).

Table 3.4: Sector of Employment

Sector	1985		1986		1987		1988		1989		Total	Total (%)
	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)		
Industry	98	36.6	106	42.7	116	43.9	115	52.8	96	47.3	531	44.2
University	104	38.8	84	33.9	86	32.6	53	24.3	64	31.5	391	32.6
Government	55	20.5	56	22.6	52	19.7	44	20.2	35	17.2	242	20.1
Non-profit	11	4.1	2	0.8	10	3.8	6	2.8	8	3.9	37	3.1
Total	268	100.0	248	100.0	264	100.0	218	100.0	203	100.0	1,201	100.0

Table 3.5: Position Status

Position Status	1985		1986		1987		1988		1989		Total	Total (%)
	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)		
Full-time	252	94.0	222	90.6	241	92.3	201	92.2	183	90.1	1,099	92.0
Part-time	11	4.1	23	9.4	9	3.4	15	6.9	15	7.4	73	6.1
Unknown	5	1.9	0	0	11	4.2	2	0.9	5	2.5	23	1.9
Total	268	100.0	245	100.0	261	100.0	218	100.0	203	100.0	1,195	100.0

Table 3.6: Activities Related to the Job

Activity	1985		1986		1987		1988		1989		Total	Total (%)
	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)		
Teaching	75	28.0	77	31.4	76	29.1	44	20.2	62	30.5	334	27.9
Health sciences	25	9.3	11	4.5	21	8.0	15	6.9	18	8.9	90	7.5
Consulting	34	12.7	39	15.9	57	21.8	45	20.6	32	15.8	207	17.3
Sales/Marketing	10	3.7	14	5.7	9	3.4	3	1.4	9	4.4	45	3.8
R&D	189	70.5	147	60.0	175	67.0	134	61.5	129	63.5	774	64.8
Management/Admin.	34	12.7	37	15.1	29	11.1	30	13.8	33	16.3	163	13.6
Product development	37	13.8	47	19.2	44	16.9	46	21.1	36	17.7	210	17.6
Other	31	11.6	16	6.5	26	10.0	28	12.8	19	9.4	120	10.0
Total <sup>1</sup>	435	-	388	-	437	-	345	-	338	-	1,943	-

1. Multiple replies give more responses than the number of respondents. Percentages are calculated on the basis of number of respondents, i.e. 1985 (268), 1986 (245), 1987 (261), 1988 (218), and 1989 (203).



Table 3.7: Discipline Breakdown of R&amp;D Activities

Discipline	No. Respondents by Cohort					No. Reporting R&D Activity by Cohort					Percentage Reporting R&D Activity by Cohort				
	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989
Life Sciences	81	61	68	55	59	61	39	42	28	40	75.3	63.9	61.8	50.9	67.8
Physical Sci.	66	56	57	48	56	47	38	41	34	39	71.2	67.9	71.9	70.8	69.6
Engineering	69	75	78	54	50	51	44	54	33	26	73.9	58.7	69.2	61.1	52.0
Math./Statistics	24	22	23	17	13	8	10	17	11	8	33.3	45.5	73.9	64.7	61.5
Computer Sci.	23	21	26	27	15	18	12	17	18	12	78.3	57.1	65.4	66.7	80.0
Other/Unknown	5	10	9	17	10	4	4	4	10	4	80.0	40.0	44.4	58.8	40.0
Total	268	245	261	218	203	189	147	175	134	129	70.5	60.0	67.0	61.5	63.5

## **NSERC Postgraduate Scholarship Profile**

### **Lynn Moorman**

*(Ms. Moorman is now the president of her own company and a university specialist advisor.)*

"It's really exciting for me to be able to transfer that knowledge. I feel that I have been given a lot, and now it's time to give back."

For Ms. Moorman, research fed into one of her life's passions: travelling. "By studying geography, I learned the science about landscape formation, and why the land looks the way it does. I travelled so much that I could always find examples that I could apply to the science that we were learning."

Those twin passions stayed with her after university. "I was able to travel an awful lot. I lived and worked in Vietnam for six months, and was also able to travel to Borneo. When I was in Canada I was still able to work on international projects, so was always in contact with people from other countries. That made the work very interesting; there was never really a boring day at work".

Having an NSERC scholarship in university helped her to focus on her work. "During grad school, having NSERC funding really allowed me to concentrate on my studies, instead of spending my time doing extra work. There are likely people in even greater financial need that wouldn't go on to do graduate studies - they would be just too intimidated by the amount of extra work they would have to do to cover their costs for graduate school."

Ms. Moorman's career has taken her from government to the private sector, a move she found personally satisfying. "Working in industry gave me a sense of accomplishment. In government, I was looking at a forty-year research project, whereas in industry, it's forty days and you're on to the next thing." Ms. Moorman worked at the Image Mapping and Geotechnologies Education Centre, where she discovered a new passion. "I was able to start teaching people what I had learned in my own studies and work experience - it completed the circle. And one of the main projects that I'm still working on is dealing with K-12 level students - trying to interpret the land features from images from space. This is now a recognized part of the Ontario curriculum."

Currently, Ms. Moorman is managing a Masters degree program at the University of Calgary and continues her work with teacher training. "I've started up my own company now, focusing on the education. It's an ongoing theme for me - giving back in knowledge and skills, teaching the teachers and let them pass that experience on to the students as well."

The title of the respondents' current or most recent position was also requested. The open text reply allowed for a variety of responses, but categorization of a certain number of the positions was possible, and the results are presented in Table 3.8. The most common positions for the five years are/were: research scientist, engineer or manager (19.4%), university professor (16.3%), engineer (11.1%), and software engineer/systems analyst (8.4%). The number of individuals holding a position outside the natural sciences and engineering (NSE) appears to be low, with few lawyers or medical doctors reported. Most persons reported under the "Other" position title are or were working in the NSE, but could not be easily classified into the categories chosen.

Table 3.8: Title of Position

Position Title	1985		1986		1987		1988		1989		Total	(%)
	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)		
University Professor	47	17.5	44	18.0	36	13.8	25	11.5	43	21.2	195	16.3
Research Associate or Assistant	22	8.2	16	6.5	16	6.1	4	1.8	6	3.0	64	5.4
Postdoctoral Fellow	28	10.4	22	9.0	14	5.4	8	3.7	9	4.4	81	6.8
Teacher, K-12/College	8	2.9	7	2.8	8	3.1	3	1.4	7	3.4	33	2.8
Research Scientist, Engineer, or Manager	43	16.0	38	15.5	58	22.2	54	24.8	39	19.2	232	19.4
Engineer	25	9.3	37	15.1	27	10.3	23	10.6	21	10.3	133	11.1
Software Engineer, or Systems Analyst	20	7.5	18	7.4	20	7.7	24	11.0	18	8.9	100	8.4
Consultant	4	1.5	3	1.2	5	1.9	11	5.0	4	2.0	27	2.3
MD	8	3.0	2	0.8	6	2.3	6	2.8	7	3.4	29	2.4
Psychologist	2	0.7	4	1.6	3	1.1	2	0.9	3	1.5	14	1.2
Lawyer	2	0.7	0	0.0	0	0.0	2	0.9	2	1.0	6	0.5
Other	55	20.5	53	21.6	61	23.4	54	24.8	41	20.2	264	22.1
Unknown	4	1.5	1	0.4	7	2.7	2	0.9	3	1.5	17	1.4
Total	268	100.0	245	100.0	261	100.0	218	100.0	203	100.0	1,195	100.0

A new question on the salaries that respondents were currently receiving was added to the survey for the 1987 and subsequent cohorts. The results by discipline for employed or self-employed individuals in a full-time position in Canada are presented in Table 3.9.

Respondents were asked to identify their salaries within a \$10,000 range. The most common salary range was \$45K - \$55K for almost 29% of the respondents, while more than 77% of the respondents indicated a salary of greater than \$45K. This compares well with the average salary of \$26,000 for the 25 to 34 age group in Canada in 1996 (the latest census data available). Although the sample sizes by discipline are small, it appears that engineers and computer scientists are at the higher end of the salary spectrum.

Table 3.9: Discipline Breakdown of Salaries, 1987 to 1989 Cohorts

Discipline	Salary Range (\$)													
	<25K		25K – 35K		35K – 45K		45K – 55K		55K – 65K		65K – 75K		>75K	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Life Sciences	6	4.8	12	9.7	34	27.4	34	27.4	23	18.5	4	3.2	11	8.9
Physical Sci.	3	2.5	8	6.6	21	17.4	38	31.4	25	20.7	10	8.3	16	13.2
Engineering	0	0.0	0	0.0	9	5.7	43	27.4	38	24.2	23	14.6	44	28.0
Math./Statistics	0	0.0	2	5.4	7	18.9	14	37.8	3	8.1	5	13.5	6	16.2
Computer Sci.	0	0.0	0	0.0	6	10.9	15	27.3	14	25.5	8	14.5	12	21.8
Other/Unknown	1	3.6	1	3.6	2	7.1	8	28.6	4	14.3	4	14.3	8	28.6
Total	10	2.1	23	4.8	75	15.7	139	29.0	96	20.0	49	10.2	87	18.2

### Importance of Graduate Training

When asked about the importance of graduate training to their careers, a large majority of respondents believed that it was critical (see Table 3.10). The most common positions of the 349 individuals who felt that graduate training was beneficial but not essential or not important are/were: engineer (66 or 18.9%), software engineer/systems analyst (59 or 16.9%), and MD (21 or 6.0%). From a discipline perspective, 123 or 35.2% of the 349 respondents in this group have an engineering background whereas engineers constitute only 27% of the respondents.

Table 3.10: Importance of Graduate Training

Importance	1985		1986		1987		1988		1989		Total	(%)
	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)		
Critical	205	76.5	170	69.4	184	70.5	137	62.8	137	67.5	833	69.4
Beneficial	56	20.9	67	27.3	69	26.4	73	33.5	60	29.6	325	27.1
Not important	6	2.2	6	2.5	3	1.1	5	2.3	4	2.0	24	2.0
Unknown	1	0.4	2	0.8	5	1.9	3	1.4	2	1.0	13	1.1
Total	268	100.0	245	100.0	261	100.0	218	100.0	203	100.0	1,195	100.0

### Abroad

Concern has often been expressed over the departure of highly skilled individuals from the country. A number of survey questions were intentionally included to gather data on the controversial "brain drain" issue. (The question for the 1986 and subsequent groups was changed to ask for the current country of employment/study rather than country of permanent residence.) Table 3.11 lists the respondents' country of permanent residence or current country of employment/study at the time of the surveys. For the five years, 17.6% of the respondents (including 40 postdoctoral fellows) were living outside the country. Compared with general emigration levels of roughly 1% of the population for the past

decade, the exodus of NSERC-funded graduate students appears high. By far the most popular foreign destination is the United States. The discipline background of the respondents living abroad is highlighted in Table 3.12. With the small numbers available, no conclusion can be reached on a disciplinary effect, if one exists. When asked if they plan to return to Canada, 101 or 48% of the 210 persons living abroad indicated that they indeed would return (see Table 3.13). If those intentions turn into reality then the "brain drain" loss would amount to 6.9% of the respondents, still a high figure. Of the 82 respondents who do not intend to return, 83% or 68 of them are working in an R&D capacity. The last question related to this issue addressed the reasons for leaving the country. Table 3.14 presents the main reasons persons indicated for their departure. The two most common reasons cited were better/more job opportunities and variety of experience.

**Table 3.11: Country of Permanent Residence (1985 Cohort) or Current Country of Employment/Study (1986 and Subsequent Cohorts)**

Country	1985		1986		1987		1988		1989		Total	Total (%)
	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)		
Canada	218	81.3	197	80.4	219	83.9	180	82.6	160	78.8	974	81.5
United States	42	15.7	27	11.0	27	10.3	29	13.3	30	14.8	155	13.0
United Kingdom	3	1.1	6	2.5	5	1.9	1	0.5	2	1.0	17	1.4
France	1	0.4	2	0.8	1	0.4	3	1.4	2	1.0	9	0.8
Switzerland	3	1.1	1	0.4	0	0.0	1	0.5	1	0.5	6	0.5
Germany	0	0.0	3	1.2	0	0.0	0	0.0	1	0.5	4	0.3
Australia	0	0.0	2	0.8	1	0.4	0	0.0	0	0.0	3	0.3
Hong Kong	0	0.0	2	0.8	1	0.4	0	0.0	0	0.0	3	0.3
Netherlands	0	0.0	0	0.0	2	0.8	0	0.0	0	0.0	2	0.2
Poland	0	0.0	0	0.0	0	0.0	1	0.5	0	0.0	1	0.1
Singapore	0	0.0	0	0.0	0	0.0	1	0.5	0	0.0	1	0.1
New Zealand	0	0.0	0	0.0	0	0.0	1	0.5	0	0.0	1	0.1
South Africa	0	0.0	0	0.0	0	0.0	1	0.5	0	0.0	1	0.1
Taiwan	0	0.0	0	0.0	0	0.0	0	0.0	1	0.5	1	0.1
Unknown	1	0.4	5	2.1	5	1.9	0	0.0	6	3.0	17	1.4
<b>Total</b>	<b>268</b>	<b>100.0</b>	<b>245</b>	<b>100.0</b>	<b>261</b>	<b>100.0</b>	<b>218</b>	<b>100.0</b>	<b>203</b>	<b>100.0</b>	<b>1,195</b>	<b>100.0</b>

**Table 3.12: Discipline of Respondents Living Abroad**

Discipline	No. Respondents by Cohort					No. Abroad by Cohort					Percentage Abroad by Cohort				
	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989
Life Sciences	81	61	68	55	59	16	10	7	7	8	19.8	16.4	10.3	12.7	13.6
Physical Sciences	66	56	57	48	56	9	13	8	13	12	13.6	23.2	14.0	27.1	21.4
Engineering	69	75	78	54	50	11	12	11	10	12	15.9	16.0	14.1	18.5	24.0
Math./Statistics	24	22	23	17	13	6	1	7	2	0	25.0	4.5	30.4	11.8	0.0
Computer Sciences	23	21	26	27	15	5	10	4	3	3	21.7	47.6	15.4	11.1	20.0
Other/Unknown	5	10	9	17	10	3	2	0	3	2	60.0	20.0	0.0	17.6	20.0
<b>Total</b>	<b>268</b>	<b>245</b>	<b>261</b>	<b>218</b>	<b>203</b>	<b>50</b>	<b>48</b>	<b>37</b>	<b>38</b>	<b>37</b>	<b>18.7</b>	<b>19.6</b>	<b>14.2</b>	<b>17.4</b>	<b>18.2</b>

Table 3.13: Intend to Return to Canada

Intend to Return	1985		1986		1987		1988		1989		Total	Total (%)
	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)		
Yes	23	46.0	27	56.3	16	43.2	19	50.0	16	43.2	101	48.1
No	20	40.0	10	20.8	14	37.8	17	44.7	21	56.8	82	39.0
Unknown	7	14.0	11	22.9	7	18.9	2	5.3	0	0.0	27	12.9
Total	50	100.0	48	100.0	37	100.0	38	100.0	37	100.0	210	100.0

Table 3.14: Reasons for Leaving Canada

Reason for Leaving	1985		1986		1987		1988		1989		Total	Total (%)
	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)		
Better/More job opportunities	18	36.0	19	39.6	17	45.9	17	44.7	17	45.9	88	41.9
Variety of experience, exposure to new people & ideas	19	38.0	15	31.2	8	21.6	11	28.9	11	29.7	64	30.5
Better facilities, technology, researchers abroad	8	16.0	9	18.8	4	10.8	7	18.4	7	18.9	35	16.7
Lack of support for R&D in Canada	6	12.0	4	8.3	4	10.8	6	15.8	4	10.8	24	11.4
Personal	5	10.0	3	6.2	3	8.1	3	7.9	9	24.3	23	11.0
Financial	3	6.0	0	0.0	1	2.7	0	0.0	4	10.8	8	3.8
Other	7	14.0	6	12.5	7	18.9	6	15.8	4	10.8	30	14.3
Total <sup>1</sup>	66	-	56	-	44	-	50	-	56	-	272	-

1. Multiple replies give more responses than the number of respondents. Percentages are calculated on the basis of number of respondents in the abroad category, i.e. 1985 (50), 1986 (48), 1987 (37), 1988 (38), and 1989 (37).

## 3.2 Role of NSERC Funding

NSERC funding is an important source of revenue for a select number of graduate students. A number of survey questions were therefore included to obtain a better understanding of the value that these students place on this funding. The first question on the survey related to this topic asked if they completed the degree for which they received NSERC funding. The results for this question are found in Table 3.15. Clearly, the overwhelming majority of students funded by NSERC go on to finish the degree for which they are being funded. This is a basic but important indicator of the success in funding students who go on to graduate.

Table 3.15: Completion of NSERC-Funded Degree

Completed Degree	1985		1986		1987		1988		1989		Total	Total (%)
	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)		
Yes	257	95.9	236	96.3	250	95.8	212	97.2	193	95.1	1,148	96.1
No	11	4.1	9	3.7	11	4.2	6	2.8	10	4.9	47	3.9
Total	268	100.0	245	100.0	261	100.0	218	100.0	203	100.0	1,195	100.0

The importance students attach to NSERC funding is presented in Table 3.16. The question asked was "How important a factor was NSERC scholarship funding in your decision to undertake/continue graduate studies?" (Appendix B). This question can be interpreted in two ways: was the existence of a program providing funds for postgraduate studies, a factor in a student's decision to consider further studies (rather than immediately entering the job market), or for the student, who had applied for an award for whatever reason, was getting the NSERC award the deciding factor. In any event, 90.5% of the respondents said that NSERC funding was moderately important to essential in their decision to undertake or continue with their studies.

**Table 3.16: Importance of NSERC Funding in Your Decision to Undertake/Continue Graduate Studies**

Ranking of Importance	1985		1986		1987		1988		1989		Total	
	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)	Cohort	(%)		(%)
1 Not important	16	6.1	9	3.7	6	2.3	9	4.1	5	2.5	45	3.8
2	22	8.4	8	3.3	11	4.2	16	7.3	11	5.4	68	5.7
3 Moderately important	57	21.8	36	14.9	48	18.5	32	14.7	25	12.3	198	16.7
4	83	31.7	67	27.7	65	25.0	55	25.2	64	31.5	334	28.2
5 Essential	84	32.1	122	50.4	130	50.0	106	48.6	98	48.3	540	45.6
Total	262	100.0	242	100.0	260	100.0	218	100.0	203	100.0	1,185	100.0

The percentage that NSERC scholarship support represented in a student's total funding and earnings during their studies is presented in Table 3.17. On average, roughly 70% to 80% of student earnings were from NSERC scholarships. Therefore, the importance students place on NSERC funding (Table 3.16) is understandable considering the high percentage of total funding that this support represents. (Note: The total number of students per degree supported is higher than the number of respondents because: (1) individuals included NSERC support throughout their studies, and not just the award held to construct the sample; and (2) support may have been split between two degrees.)

**Table 3.17: NSERC Scholarship Support as a Percentage of Total Earnings**

Degree	No. Supported by Cohort					% NSERC Support by Cohort				
	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989
Master's (1)	201	206	216	195	159	78.0	80.5	79.6	77.3	80.0
Master's (2)	5	4	7	4	1	72.0	75.0	95.6	46.3	75.0
Doctorate	138	99	108	75	87	68.8	68.2	63.6	65.5	67.1
Other	8	10	7	9	21	80.6	79.0	85.6	77.9	81.9

## **NSERC Postgraduate Scholarship Profile**

### **Dr. Michel Carreau**

*(Dr. Carreau is currently the Director of Software Development at Acres Productive Technologies International Inc., a Montréal based high-tech firm.)*

Science has always fascinated Michel Carreau. "I've always been very interested in science. Even at six years of age, in grade 1, I was doing a lot of combinatorial calculations with dice. That was one of my pastimes. Coming from an artistic family, I was definitely odd man out!"

The language barrier almost prevented Dr. Carreau from studying theoretical physics at MIT. An NSERC Postgraduate Scholarship made the difference. "I was only accepted at MIT because of the Scholarship. The physics departments had turned down all of my previous applications because I lacked the required English skills. I went to MIT in person, with my recommendations and Scholarship in hand, and was accepted the same day. Without a doubt, the Scholarship made all the difference. And the experience to be gained in a place like MIT is absolutely incredible."

Boston was exhilarating. "Significant decisions and major developments take place in Boston. In my 10 years there, I witnessed some important events. People come to Boston to deliver papers. In Montreal, more often than not, you only see papers once they are published, but in Boston, you see current events as they happen. There is always someone in Boston with a worldwide reputation in a given field. There is always someone to consult for answers to complex questions. Working in that environment was truly a unique experience."

It was far from certain whether Dr. Carreau would be returning to Canada, but he was particularly attracted to Montreal. "It was a real roll of the dice. My wife is American. But Montreal has become a city of choice—very much a world leader in computing, biotechnology, and new sciences—and very dynamic in these fields."

Dr. Carreau chose to pursue a career in high technology. That shift allowed him to continue working in the scientific field while meeting new challenges. "There are many challenges. Having the chance to work on a number of varied problems, to move quickly from one problem to another, from one challenge to another, is great. Personally, I like all the various facets: finance, high technology, human resource management. As Director of Software Development at APTI, I not only handle technical problems but also manage operating budgets and human resources. I enjoy the overall mix."



### 3.3 Obtaining Graduate Degrees

Although it was not the primary purpose of the survey to collect background education information, i.e. Question 2, some analysis of the information collected is useful and interesting. (Question 2 was modified for the 1986 and subsequent samples to include the month in which the degrees were started and completed. Therefore, data for the 1986 and subsequent samples are more accurate as compared with the 1985 sample.) Specifically, the discipline in which respondents completed their degree and the time it took them to finish will be highlighted. Tables 3.18, 3.19, and 3.20 present this information for bachelor's, master's and doctoral degrees, respectively. The average time it took respondents to complete a bachelor's, master's or doctorate degree for the five cohorts was 3.8, 2.3 and 4.6 years, respectively. There does not appear to be any significant differences in completion times by discipline, but conclusions should be reserved since the sample sizes are relatively small. The time to complete a master's or doctoral degree found in this survey is similar to the times reported by the Canadian Association of Graduate Schools of 2.8 and 4.7 years, respectively.

Of the 558 respondents who completed a doctoral degree, 394 or 70.6% completed at least one master's degree, making it the most common route to the doctorate. Respondents were also asked to identify the type of NSERC scholarship (regular or 1967) they received. The 1967 NSERC scholarship was for a longer duration (four years), higher value and was meant to stimulate doctoral degree completion. Doctoral degrees granted by NSERC award type were as follows: 439 or 44.2% of the regular scholarship respondents, and 125 or 66.1% of the 1967 respondents. It would appear that the 1967 respondents, as intended by the program, are more likely to complete a doctoral degree than their regular scholarship counterparts.

Table 3.18: Bachelor's Degrees Completed by Discipline

Discipline	No. Respondents by Cohort					Percentage of Total by Cohort					Average Time to Complete by Cohort (Years)				
	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989
Life Sciences	75	49	65	55	59	29.5	23.8	26.4	25.2	29.1	3.96	3.76	3.59	3.68	3.81
Physical Sciences	65	44	56	48	56	25.6	21.4	22.8	22.0	27.6	3.85	3.46	3.49	3.47	3.69
Engineering	62	65	72	54	50	24.4	31.6	29.3	24.8	24.6	4.08	3.89	3.97	3.94	3.97
Math./Statistics	21	19	22	17	13	8.3	9.2	8.9	7.8	6.4	3.76	3.78	3.74	3.66	3.61
Computer Sciences	22	18	23	27	15	8.7	8.7	9.3	12.4	7.4	4.23	3.77	3.99	3.81	3.85
Other/Unknown	9	11	8	17	10	3.5	5.3	3.3	7.8	4.9	4.44	3.48	3.52	3.50	4.05
Total	254	206	246	218	203	100.0	100.0	100.0	100.0	100.0	3.98	3.72	3.73	3.70	3.82

Table 3.19: Master's (1) Degrees Completed by Discipline

Discipline	No. Respondents by Cohort					Percentage of Total by Cohort					Average Time to Complete by Cohort (Years)				
	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989
Life Sciences	59	34	54	48	46	30.4	20.0	26.3	25.7	27.9	2.59	2.41	2.50	2.77	2.53
Physical Sciences	42	34	41	38	34	21.6	20.0	20.0	20.3	20.6	2.19	2.42	2.33	2.20	2.21
Engineering	60	58	60	45	35	30.9	34.1	29.3	24.1	21.2	2.40	2.26	2.23	1.94	2.36
Math./Statistics	11	16	17	19	9	5.7	9.4	8.3	10.2	5.5	1.45	2.10	1.56	1.57	2.08
Computer Sciences	19	16	25	26	19	9.8	9.4	12.2	13.9	11.5	2.21	2.17	2.67	2.22	2.14
Other/Unknown	3	12	8	11	12	1.5	7.1	3.9	5.9	7.3	2.33	2.48	1.80	1.93	2.18
Total	194	170	205	187	165	100.0	100.0	100.0	100.0	100.0	2.34	2.32	2.30	2.21	2.31

Table 3.20: Doctoral Degrees Completed by Discipline

Discipline	No. Respondents by Cohort					Percentage of Total by Cohort					Average Time to Complete by Cohort (Years)				
	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989
Life Sciences	47	28	26	24	36	30.7	29.5	22.4	27.3	34.0	4.77	4.22	5.26	3.93	4.49
Physical Sciences	48	29	41	31	38	31.4	30.5	35.3	35.2	35.8	4.90	4.68	4.74	4.48	4.68
Engineering	40	19	24	17	17	26.1	20.0	20.7	19.3	16.0	4.33	4.00	4.06	3.69	4.44
Math./Statistics	7	4	13	5	7	4.6	4.2	11.2	5.7	6.6	4.71	5.63	4.54	3.73	5.18
Computer Sciences	8	6	8	8	6	5.2	6.3	6.9	9.1	5.7	5.25	3.56	5.07	5.03	3.92
Other/Unknown	3	9	4	3	2	2.0	9.5	3.4	3.4	1.9	5.00	4.53	4.33	4.08	7.33
Total	153	95	116	88	106	100.0	100.0	100.0	100.0	100.0	4.72	4.36	4.70	4.17	4.63

### 3.4 Key Findings

The five surveys conducted to date have provided NSERC with some important information previously unavailable. The results clearly indicate that NSERC Postgraduate Scholarship programs are achieving the desired impacts. The major findings of the surveys can be summarized as follows:

- The unemployment rate for respondents is very low, estimated to be between 1.7% and 2.1%. This compares very favourably with the general unemployment levels of 8.3% to 10.4% over the time period (1994 to 1998) in question.
- A high percentage (65%) of respondents are active in a research and development capacity, using their training for one of the primary purposes of the Scholarship programs.
- 69.4% of respondents feel that their graduate training was "critical" to their careers.
- 210 respondents (18% of the total) were living outside the country at the time of the survey. One half of these respondents intend to return to Canada.
- 96% of the respondents completed the degree (master's or doctoral) for which they received NSERC funding.
- 91.5% of the respondents said that NSERC funding was at least moderately important to undertake or continue with their studies.
- The respondents' average completion times for bachelor's, master's and doctoral degrees were 3.8, 2.3 and 4.6 years, respectively.
- 66% of the 1967 Science and Engineering scholarship winners went on to complete their doctorate, an important objective of the program.
- 77% of the respondents (employed or self-employed individuals in a full-time position in Canada) indicated a salary greater than \$45K. This compares well with the average salary of \$26,000 for the 25 to 34 age group in Canada in 1996.



## 4. Postdoctoral Fellowship Survey

In the fall of 1999, NSERC completed a pilot survey of former Postdoctoral Fellowship winners. This section presents results for the first survey. The methodology and questionnaire used for the survey can be found in Appendix C.

NSERC surveyed former NSERC Postdoctoral Fellows seven years after receiving a fellowship to obtain data on whether the Postdoctoral Fellowship program was having the desired impact. The survey had many of the same questions as the Postgraduate Scholarship survey. The main objective of the NSERC Postdoctoral Fellowship program is:

- to secure a supply of highly qualified Canadians with leading-edge scientific and research skills for Canadian industry, government, and universities.

Based on the stated and implied program objectives, prime indicators of impact are:

- the current career status of former fellowship holders; and
- the role of NSERC funding in a fellow's decision to undertake postdoctoral work.

### Survey Response

The survey was carried out during the fall of 1999 and most of the responses came in during September and October. An overview of the response rate for the 1992 cohort is given in Table 4.1.

Table 4.1: Response Rate

	1992 Cohort
Sample Size	501
Number Sent Out	407
Number of Responses	156
Response Rate (%)	38.3

The sample size was reduced to the number actually sent out when the alumni associations discovered that they did not have addresses for certain individuals. Overall, a reasonable response rate of 38.3% was achieved. NSERC did not have the names for those not reached, complicating the subsequent analysis.

## A Comment on Bias

Although a response rate of 38% is reasonable for a survey without follow-up, it does raise the question of bias. The aim of this study was to provide data on performance indicators, so it is important to assess (to the extent feasible) the reliability of the data. The only two identifiers in the survey population that could be checked with any certainty are the discipline of study and the tenure of the award in Canada or abroad. The NSERC database has the discipline of the postgraduate study as classified by NSERC at the time of the award. The respondents filled in, in their own terms, the disciplines of each of their degrees. NSERC compared the discipline mix in the original sample and the respondent sample. The results are shown in Table 4.2. In addition, data on the location of tenure of the award, whether in Canada or abroad, was compared and the results are shown in Table 4.3.

**Table 4.2: Comparison of Discipline Breakdown of Sample Versus Respondents**

Discipline	Sample Size	No. Respondents	Response Rate <sup>1</sup> (%)
Life Sciences	235	72	30.6
Physical Sciences	208	56	26.9
Engineering	12	5	41.7
Math./Statistics	40	10	25.0
Computer Sciences	6	2	33.3
Other/Unknown	-	11	-
Total	501	156	31.1

1. Response rate cannot be adjusted for the number of questionnaires sent out by discipline as with the actual response rate in Table 4.1.

**Table 4.3: Comparison of Location of Tenure of Award of Sample Versus Respondents**

Location of Tenure	Sample Size	No. Respondents	Response Rate <sup>1</sup> (%)
Canada	207	58	28.0
Abroad	294	98	33.3
Total	501	156	31.1

1. Response rate cannot be adjusted for the number of questionnaires sent out by discipline as with the actual response rate in Table 4.1.

In comparing the numbers in Tables 4.2 and 4.3, the following should be borne in mind:

- the alumni associations were unable to locate 94 (18.8%) of the cohort. The associations may have more difficulty keeping in touch with alumni abroad. Thus a larger proportion of the missing 18.8% may be living outside the country.

- the data are based on comparing disciplinary classifications made by NSERC at time of the award, with a classification written by the recipient during the survey. This can lead to some crossovers between certain categories, e.g. between Applied Mathematics and Computer Sciences, between Computer Sciences and Electrical Engineering. But the net effect of artifacts of classification is probably small.

In summary, on the basis of the discipline and location of tenure profiles, there is no marked difference between the original samples and the respondent groups. That is, the respondent groups can be considered as representative samples of the original. This does not rule out some bias in terms of various other factors, but it is not practical to try and investigate this further.

## 4.1 Career Status of Former Fellows

A significant portion of the survey was devoted to gaining a better understanding of the career progression of NSERC-funded postdoctoral fellows. The career status of former fellows is an important indicator of the impact of the fellowship program. Questions 9 to 15 of the survey are related to career status and will be analysed below.

### Employment Status

Table 4.4 presents the current employment status of the respondents. The clear majority of respondents are currently employed. The unemployment rate at 1.9% of the respondents or 2.1% of those employed is very low, and considerably lower than the general unemployment rate of 7.6% in Canada in 1999.

Table 4.4: Current Status

Status	No.	(%)
Employed	140	89.7
Self-employed	8	5.1
Unemployed	3	1.9
Postdoctoral fellow	2	1.3
Student	3	1.9
Other	7	4.5
Total <sup>1</sup>	163	100.0

1. Multiple replies give more responses than the number of respondents.

## **NSERC Postdoctoral Fellowship Profile**

### **Dr. André Buret**

*(Dr. Buret is an associate professor of biological sciences at the University of Calgary.)*

"It's okay not to be absolutely sure as to what you want to do, but you really have to keep an eye open for openings and opportunities."

*When Dr. Buret completed his first degrees in teaching and wildlife biology in Switzerland, his priority was to get out and see the world. His plan did not include continuing his education. "What I was aware of, was the fact that I was going to be teaching one day. I swore to myself that one thing was sure, I would never set foot in a university again, that was the only thing I really knew. And if I would, the second thing was a fact: never ever would I get into research."*

*When he came to Canada, he worked in a hospital laboratory, in gastroenterology. That reawakened his interest in parasitism, a major factor in gastrointestinal disease. It also changed his mind about university and research. "As a result of this time as a research assistant, I started a grad degree in parasitology where I obtained a master's, then obtained my Ph.D. in pathophysiology. After that, I wanted to know a bit more about how host factors and immune systems could be responsible for disease, rather than just the microbe. This is why I pursued postdoctoral research in Australia. I spent three years down there at the Australian Mucosal Immunology Research Institute, with NSERC Postdoctoral Fellowship."*

*Dr. Buret is a strong supporter of the PDF program. "Fellowships abroad should be strongly encouraged. You bring back with you ideas, things that you have seen in a different setting, in a different social, cultural setting. I'm not talking about science. Science is outstanding in Canada. I'm talking about life issues, breadth of thinking, tolerance, these sorts of things. Depending on what happens to you professionally, perhaps you can even start to implement these things in your own country and make it richer for that reason."*

*Dr. Buret has lived in some of the finest countries in the world. He is happy to be back in Canada. "I'm fortunate enough to interact with wonderful people, some absolutely awesome scientists, who also happen to be very generous, kind and nice people. And that's a nice combination, which is unfortunately too rare. But quality of life is, in my opinion, priority number one, and priority two is career. And both are top notch in Calgary for me."*

*His unconventional career path has taught him a few lessons, primarily to stay positive and keep your eyes open. "Don't get discouraged if it's tough to get to where you want to get. You can really throw yourself in the ocean and not know how to swim and still make it. When I came to Canada, I had nothing, no job, I had a wildlife biology degree, which nobody wanted, and I spent ten months sorting out mail for an oil company downtown. That's absolutely fine - it taught me a lot of other things. When you have these dead times, that's when you start looking sideways, and you should be very acutely aware of any opportunity that could present itself. Those are the ones that you don't want to miss. And postdoctoral programs are a superb tool to provide young scientists with such new opportunities!"*



Those surveyed were also asked to answer questions on their current or most recent position. The sector in which they are or were employed is highlighted in Table 4.5. Most of those responding are or were working in the university sector. The vast majority of these positions were full-time, as indicated in Table 4.6. The activities related to their current or most recent position are presented in Table 4.7 (multiple entries were possible for this question). A high percentage of award winners are/were active in an R&D capacity. Teaching activities were second most prevalent, typically in connection with R&D work as related to university faculty positions.

**Table 4.5: Sector of Employment**

Sector	No.	(%)
Industry	21	13.5
University	114	73.1
Government	18	11.5
Non-profit	3	1.9
Total	156	100.0

**Table 4.6: Position Status**

Position Status	No.	(%)
Full-time	147	94.2
Part-time	5	3.2
Unknown	4	2.6
Total	156	100.0

**Table 4.7: Activities Related to the Job**

Activity	No.	(%)
Teaching	111	71.2
Health Sciences	12	7.7
Consulting	15	9.6
Sales/Marketing	4	2.6
R&D	137	87.8
Management/Administration	26	16.7
Product Development	8	5.1
Other	6	3.8
Total <sup>1</sup>	319	-

1. Multiple replies give more responses than the number of respondents. Percentages are calculated on the basis of number of respondents, i.e. 156.

The title of the respondents' current or most recent position was also requested. The open text reply allowed for a variety of responses, but categorization of a certain number of the positions was possible, and the results are presented in Table 4.8. The most common position is/was: university professor (60.3%), research scientist, engineer or manager

(19.2%), and MD (3.2%). The number of individuals holding a position outside the natural sciences and engineering (NSE) appears to be low, with only a small number of medical doctors reported. Most persons reported under the "Other" position title are or were working in the NSE, but could not be easily classified into the categories chosen.

**Table 4.8: Title of Position**

Position Title	No.	(%)
University Professor	94	60.3
Research Associate or Assistant	4	2.6
Teacher, K-12/College	5	3.2
Research Scientist, Engineer, or Manager	30	19.2
Engineer	1	0.6
Software Engineer, or Systems Analyst	3	1.9
Consultant	1	0.6
MD	5	3.2
Psychologist	1	0.6
Other	13	8.3
Unknown	2	1.3
<b>Total</b>	<b>156</b>	<b>100.0</b>

A question on the survey was related to the salaries that respondents were currently receiving. The results by discipline for employed or self-employed individuals in a full-time position are presented in Table 4.9. Respondents were asked to identify their salaries within a \$10,000 range. The most common salary range was \$55K - \$65K for more than 33% of the respondents, while more than 89% of the respondents indicated a salary of greater than \$45K.

**Table 4.9: Discipline Breakdown of Salaries**

Discipline	Salary Range (\$)													
	<25K		25K – 35K		35K – 45K		45K – 55K		55K – 65K		65K – 75K		>75K	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Life Sciences	1	1.5	0	0.0	6	9.2	16	24.6	27	41.5	6	9.2	9	13.9
Physical Sci.	0	0.0	2	3.9	2	3.9	10	19.6	13	25.5	12	23.5	12	23.5
Engineering/ Computer Sci.	0	0.0	0	0.0	0	0.0	0	0.0	1	14.3	2	28.6	4	57.1
Math./Statistics	0	0.0	1	12.5	2	25.0	1	12.5	2	25.0	1	12.5	1	12.5
Other/Unknown	0	0.0	0	0.0	1	12.5	1	12.5	3	37.5	2	25.0	1	12.5
<b>Total</b>	<b>1</b>	<b>0.7</b>	<b>3</b>	<b>2.2</b>	<b>11</b>	<b>7.9</b>	<b>28</b>	<b>20.1</b>	<b>46</b>	<b>33.1</b>	<b>23</b>	<b>16.6</b>	<b>27</b>	<b>19.4</b>

## Importance of Postdoctoral Training

When asked about the importance of postdoctoral training to their careers, a large majority of respondents believed that it was critical (see Table 4.10). The most common positions of the 34 individuals who felt that postdoctoral training was beneficial but not essential or not

important are/were: university professor (8 or 23.5%), research scientist, engineer, or manager (7 or 20.6%), teacher (4 or 11.8%), software engineer/systems analyst (3 or 8.8%), and MD (3 or 8.8%).

**Table 4.10: Importance of Postdoctoral Training**

<b>Importance</b>	<b>No.</b>	<b>(%)</b>
Critical	122	78.2
Beneficial	30	19.2
Not important	4	2.6
<b>Total</b>	<b>156</b>	<b>100.0</b>

The respondents were also asked if they would encourage a person to follow their chosen career path. The results for this question are presented in Table 4.11. A relatively low number (8.3%) would not recommend a similar career path to others.

**Table 4.11: Encourage Others to Follow Similar Career Path**

	<b>No.</b>	<b>(%)</b>
Yes	59	37.8
Yes, with reservations	69	44.2
No	13	8.3
Not sure	8	5.1
Unknown	7	4.5
<b>Total</b>	<b>156</b>	<b>100.0</b>

## **Abroad**

Concern has often been expressed over the departure of highly skilled individuals from the country. A number of survey questions were intentionally included to gather data on the controversial "brain drain" issue. Table 4.12 lists the current country of employment/study at the time of the survey. At the time of the survey, 30.1% of the respondents were living outside the country. Thirty-seven of the 98 respondents who held the award abroad and 10 of the 58 respondents who held the award in Canada were outside the country at the time of the survey. Therefore, those who held the award abroad are twice as likely to be abroad than those who held the award in Canada. Compared with general emigration levels of roughly 1% of the population for the past decade, the exodus of NSERC-funded postdoctoral fellows appears high. By far the most popular foreign destination is the United States. The discipline background of the respondents living abroad is highlighted in Table 4.13. With the small numbers available, no conclusion can be reached on a disciplinary effect, if one exists. When asked if they plan to return to Canada, 10 or 21% of the 47 persons living abroad indicated that they indeed would return (see Table 4.14). If those intentions turn into reality then the "brain drain" loss would amount to 23.7% of the respondents, still a high figure. Of

the 34 respondents who do not intend to return, 91% or 31 of them are working in an R&D capacity. The last question related to this issue addressed the reasons for leaving the country. Table 4.15 presents the main reasons persons indicated for their departure. The two most common reasons cited were better/more job opportunities and the lack of support for R&D in Canada.

**Table 4.12: Current Country of Employment or Study**

Country	No.	(%)
Canada	105	67.3
United States	38	24.4
United Kingdom	2	1.3
Denmark	2	1.3
France	1	0.6
Germany	1	0.6
Australia	1	0.6
Israel	1	0.6
Unknown	5	3.2
<b>Total</b>	<b>156</b>	<b>100.0</b>

**Table 4.13: Discipline of Respondents Living Abroad**

Discipline	No. of		
	Respondents	No. Abroad	% Abroad
Life Sciences	72	21	29.2
Physical Sciences	56	20	35.7
Engineering	5	1	20.0
Math./Statistics	10	2	20.0
Computer Sciences	2	1	50.0
Other/Unknown	11	2	18.2
<b>Total</b>	<b>156</b>	<b>47</b>	<b>30.1</b>

**Table 4.14 Intend to Return to Canada**

Intend to Return	No.	(%)
Yes	10	21.2
No	34	72.3
Unknown	3	6.4
<b>Total</b>	<b>47</b>	<b>100.0</b>

**Table 4.15: Reasons for Leaving Canada**

Reason for Leaving	No.	(%)
Better/More job opportunities	32	68.1
Variety of experience, exposure to new people & ideas	6	12.8
Better facilities, technology, researchers abroad	8	17.0
Lack of support for R&D in Canada	13	27.7
Personal	3	6.4
Financial	3	6.4
Other	6	12.8
<b>Total<sup>1</sup></b>	<b>71</b>	<b>-</b>

1. Multiple replies give more responses than the number of respondents. Percentages are calculated on the basis of number of respondents in the abroad category, i.e. 47.

## 4.2 Role of NSERC Funding

NSERC funding is an important source of revenue for a select number of postdoctoral fellows. A number of survey questions were therefore included to obtain a better understanding of the value that these fellows place on this funding. The importance fellows attach to NSERC funding is presented in Table 4.16. The question asked was "How important a factor was NSERC postdoctoral funding in your decision to remain in an academic research environment?" (Appendix C). In total, 88.5% of the respondents said that NSERC funding was moderately important to essential to remaining in an academic research environment.

**Table 4.16: Importance of NSERC Funding in Your Decision to Remain in an Academic Research Environment**

Ranking of Importance	No.	(%)
1 Not important	11	7.1
2	5	3.2
3 Moderately important	24	15.4
4	36	23.1
5 Essential	78	50.0
Unknown	2	1.3
<b>Total</b>	<b>156</b>	<b>100.0</b>

The percentage that NSERC postdoctoral support represented in a fellow's total funding and earnings during their fellowship years is presented in Table 4.17. On average, roughly 90% of postdoctoral earnings were from the NSERC fellowship. Therefore, the importance fellows place on NSERC funding (Table 4.16) is understandable considering the high percentage of total funding that this support represents.

**Table 4.17: NSERC Postdoctoral Support as a Percentage of Total Earnings**

Location of Tenure of Award	No. Supported	% NSERC Support
Canada	58	94.1
Abroad	98	91.6
<b>Total</b>	<b>156</b>	<b>92.5</b>

## **NSERC Postdoctoral Fellowship Profile**

### **Dr. Susan McCall**

*(Dr. McCall is now Chairman of the Board and owner of Stellar Optics Research International, a Toronto-based company she founded in 1993.)*

"I've always been interested in doing research. The thought of discovering new things was always really exciting to me."

Dr. McCall found that the only way to satisfy her curiosity was to pursue her interests in graduate school. "In undergraduate, you only get about a half course in optics, and I really wanted to learn about lasers and higher level concepts and those courses were only offered in grad school. I knew I would end up in industry sooner or later, but I wanted that extra level of understanding."

Holding an NSERC Postdoctoral Fellowship enabled her to study with some of the foremost researchers in her field, a special opportunity she would not have otherwise enjoyed. "I went to the Optical Sciences Centre in Arizona, one of the US's top two optics schools. The contacts I made there were just phenomenal. The only reason I was able to go down to that institution was because I came with my own money. They've got enough students from all over the States that they would rather pay for, so Canadians would not be chosen first. Without government support, most students wouldn't have the invitation to go to those world-class places."

That opportunity has had long lasting benefits for Dr. McCall, now the Chairman and owner of her own company. "I still have the NSERC PDF on my resume for my company. It's pinnacle. The biggest thing the NSERC fellowship did for me was broaden my horizons and it helped me to make contacts that really launched what I did after grad school - which was set up my own company. I couldn't do this job without the knowledge and training I got through the PDF."

Dr. McCall's company, Stellar Optics Research International, provides tools and consulting in the aerospace, space, defence, and science markets. "We spent pretty much the good part of five years developing these products. And now we're selling them all over the world (USA, Europe, Japan, South America, New Zealand, Canada, etc.). What I most like about my work is the independence. I think anybody who owns their own business would tell you that."

The people she met during her fellowship continue to be valued contacts. "I have a customer in Sweden who asked a question that I didn't know the answer to, so I just phoned a friend in Arizona, and he gave me the answer. So that's where contacts come in, and without that postdoc, there's no way I could do this."

### 4.3 The Postdoctoral Experience

A number of questions on the survey were included to understand the postdoctoral experience NSERC fellows had undertaken. The length of time that fellows spent as a postdoctoral fellow is presented in Table 4.18 (Note: the NSERC fellowship provides funding for up to two years as a postdoctoral fellow). A duration of two to three years was the most common length of postdoctoral work, with a large majority (86.7%) of that group finding that length “just right”. Of course at the longer time periods the proportion of fellows who found the period “too long” started to climb. The average length of postdoctoral positions by discipline is presented in Table 4.19. Fellows in the life sciences experienced the longest average stay in a postdoctoral position.

Table 4.18: Length of Postdoctoral Positions

Length (Years)	No.	(%)	% Who Thought Period Was		
			Too Short	Just Right	Too Long
<2	20	12.8	25.0	75.0	0.0
2 – 3	61	39.1	5.0	86.7	8.3
3 – 4	31	19.9	6.6	63.3	30.0
4 – 5	20	12.8	0.0	65.0	35.0
>5	24	15.4	0.0	12.5	87.5
Total	156	100.0	6.5	66.2	27.3

Table 4.19: Average Length of Postdoctoral Positions by Discipline

Discipline	No.	Avg. Length (Years)
Life Sciences	72	3.7
Physical Sciences	56	3.4
Engineering	5	2.7
Math./Statistics	9	2.3
Computer Sciences	3	2.2
Other/Unknown	11	2.7
Total	156	3.2

Respondents also provided their assessments on the research capabilities of the lab in which they held their NSERC fellowship. The ratings for the people, equipment and infrastructure of the labs are presented in Tables 4.20, 4.21 and 4.22, respectively. For all the categories the assessments tended to be more favourable for those fellows who held the award abroad. Similarly, the overall rating for the postdoctoral experience (see Table 4.23) was more positive for those fellows who held the award abroad. But, both groups did rate their experiences very positively with more than 86% of the respondents providing a rating of 4 or 5 on a scale of 5.

Table 4.20: Rating the Research Capability - People

Ranking	Held in Canada		Held Abroad	
	No.	(%)	No.	(%)
1 Poor	0	0.0	1	1.0
2	4	6.9	0	0.0
3 Good	12	20.7	9	9.2
4	18	31.0	12	12.2
5 World class	23	39.7	76	77.6
Unknown	1	1.7	0	0.0
Total	58	100.0	98	100.0

Table 4.21: Rating the Research Capability - Equipment

Ranking	Held in Canada		Held Abroad	
	No.	(%)	No.	(%)
1 Poor	1	1.7	0	0.0
2	6	10.3	0	0.0
3 Good	18	31.0	17	17.3
4	18	31.0	33	33.7
5 World class	14	24.1	48	49.0
Unknown	1	1.7	0	0.0
Total	58	100.0	98	100.0

Table 4.22: Rating the Research Capability – Infrastructure

Ranking	Held in Canada		Held Abroad	
	No.	(%)	No.	(%)
1 Poor	3	5.2	0	0.0
2	5	8.6	1	1.0
3 Good	20	34.5	18	18.4
4	18	31.0	31	31.6
5 World class	10	17.2	48	49.0
Unknown	2	3.4	0	0.0
Total	58	100.0	98	100.0

Table 4.23: Rating the Postdoctoral Experience

Ranking	Held in Canada		Held Abroad		Total	
	No.	(%)	No.	(%)	No.	(%)
1 Poor	1	1.7	1	1.0	2	1.3
2	3	5.2	1	1.0	4	2.6
3 Fair	6	10.3	7	7.1	13	8.3
4	33	56.9	47	48.0	80	51.3
5 Outstanding	14	24.1	41	41.8	55	35.3
Unknown	1	1.7	1	1.0	2	1.3
Total	58	100.0	98	100.0	156	100.0



## 4.4 Key Findings

The first postdoctoral survey conducted has provided NSERC with some important information previously unavailable. The results clearly indicate that the NSERC Postdoctoral Fellowship program is achieving some of the desired impacts. The major findings of the survey can be summarized as follows:

- The unemployment rate for respondents is very low, estimated to be between 1.7% and 2.1%. This compares very favourably with the general unemployment rate of 7.6% during the time period of the survey.
- A high percentage (88%) of respondents are active in a research and development capacity, using their training for one of the primary purposes of the Fellowship program.
- 78% of respondents feel that their postdoctoral training was "critical" to their careers.
- More than 86% of respondents rated their postdoctoral experience from good to outstanding.
- 47 respondents (30% of the total) were living outside the country at the time of the survey. One fifth of these respondents intend to return to Canada.
- 88% of the respondents said that NSERC funding was at least moderately important to continue with their research in an academic environment.
- 89% of the respondents (employed or self-employed individuals in a full-time position) indicated a salary of greater than \$45K.



**Appendix A**  
**Undergraduate Student Research Award Survey**  
**Methodology and Questionnaire**

It was decided to collect the information from recent NSERC Undergraduate Student Research Award (USRA) winners by means of a mailed-out questionnaire. NSERC undertook an exit survey of USRA winners at the end of their work terms in the summer of 2000. The questionnaires were sent out using the mailing addresses on file with NSERC. The USRA can be held at a university or an industrial laboratory. Both groups who held an award during the summer of 2000 were surveyed.

### **Questionnaire Design**

Staff analysts developed in conjunction with Scholarship program managers two different questionnaires (only differing by one question) for the university USRA and the industry USRA award holders. The final drafts were field-tested by a sample of eight current holders of the award for each award type, i.e. eight University USRA and eight Industry USRA.

Note: Respondents could remain anonymous if they chose. This measure made analysis of results more difficult but it may have increased the response rate. Besides being saturated with questionnaires, respondents generally have a heightened awareness of the issue of "privacy" and the potential uses of "databases."

### **Capturing the Data**

The data from the returned questionnaires (excluding names and comments) were captured in a FoxPro database, mostly as code but with some text fields. As stated in the letter to the respondents, the completed survey response sheet will be destroyed in two years. The electronic data, with no personal information, will be stored for as long as required.



Natural Sciences and Engineering  
Research Council of Canada

Conseil de recherches en sciences  
naturelles et en génie du Canada

### NSERC UNDERGRADUATE STUDENT RESEARCH AWARD (UNIVERSITY) SURVEY

The Natural Sciences and Engineering Research Council is conducting a survey of students who recently completed an Undergraduate Student Research Award (USRA). We will use the results to help us shape program policies and report on the outcome of program funding. We greatly appreciate your assistance, and look forward to receiving your reply.

1. How many USRAs have you held?

- 1     2     3

2. Have you received a bachelor's degree?

- Yes     No (Please list current year of study below, e.g. 2<sup>nd</sup>, 3<sup>rd</sup>.)
- \_\_\_\_\_

3. In what field of study is/was your bachelor's degree? (Please specify below.)

\_\_\_\_\_

4. How did you first hear about the USRA program?

- Professor or department  
 Friends  
 School placement office  
 NSERC material (e.g. poster, brochure, web)  
 Other (Please specify below.)
- \_\_\_\_\_

5. Which of the following, if any, were important considerations when you accepted the USRA? (Please check all appropriate boxes.)

- Only offer received  
 Offered a high wage/salary  
 Was linked to career goal  
 Provided opportunity to work in R&D environment  
 Was related to education  
 Close to home  
 Prestige of award  
 Other (Please specify below.)
- \_\_\_\_\_

6. Gender

- Male     Female

7. During the USRA, what were your total earnings per month, before deductions?

\$ \_\_\_\_\_ / month

8. What were the main skills that you either acquired or improved as a result of your recent USRA? (Please check all appropriate boxes.)

- Research and Development  
 Theoretical/knowledge of the discipline  
 Analytical techniques/Experimental methods  
 Use of laboratory equipment or instruments  
 Management (e.g. time, organization, presentation)  
 Writing  
 None  
 Other (Please specify below.)
- \_\_\_\_\_

9. In general, how challenging was the job during your recent USRA? (Please circle the appropriate number.)

Not at All	Moderately			Extremely
1	2	3	4	5

10. Do you think the experience gained on this job will improve your prospects for getting a permanent job?

- Yes     No     Do not know

11. On the whole, do you feel you received adequate supervision and instruction?

- Yes     No

If "No", please comment.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

12. What is the highest level of education you plan to attain?

- Bachelor's degree  
 Master's degree  
 Doctorate degree  
 Other (Please specify below.)
- \_\_\_\_\_

13. Did this work experience have any effect on your educational plans?

- Yes
- No (Go to question 15.)
- Not sure (Go to question 15.)

14. How did this work experience affect your educational plans?

- Will stay in university longer than originally planned
- Will leave university earlier than originally planned
- Will change field of study
- Other (Please specify below.)

\_\_\_\_\_

15. The sector in which you would like to be employed in the future is? (Please check one only.)

- Industry                       Government
- University                       Non-profit
- Does not matter               Undecided

16. Has the USRA changed your career goals?

- Yes     No     Do not know

If "Yes", please comment.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

17. Has the USRA changed your interest in R&D? (Please check one only.)

- Increased my interest
- Maintained my high level of interest
- Maintained my low level of interest
- Decreased my interest
- Do not know

18. In general, how satisfactory was your most recent USRA experience? (Please circle the appropriate number.)

Poor		Fair		Outstanding
1	2	3	4	5

19. Do you plan to stay in Canada after you receive your bachelor's degree?

- Yes (Go to question 21.)
- No
- Do not know

20. What will be your main reasons for leaving Canada?

- Graduate school
- Better/more job opportunities
- Personal
- Financial
- Other (Please specify below.)

\_\_\_\_\_

21. Comments/suggestions for improving the program:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

[Question 22 is optional.]

22. Your responses to the above questions will be captured in an electronic database in an anonymous format. However, at some point NSERC may want to highlight to the government the career achievements of former USRA holders. You can assist us with this by providing your name, current address and telephone number voluntarily in the space below. NSERC would use this to contact you for further information. This form will be kept on file for two years.

Name and current address:

Telephone: (    ) \_\_\_\_\_  
 E-mail address: \_\_\_\_\_

23. Would you like to receive a copy of the report on this survey?

- Yes     No

**Thank you for your cooperation.**



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### NSERC UNDERGRADUATE STUDENT RESEARCH AWARD (INDUSTRY) SURVEY

The Natural Sciences and Engineering Research Council is conducting a survey of students who recently completed an industry based Undergraduate Student Research Award (USRA). We will use the results to help us shape program policies and report on the outcome of program funding. We greatly appreciate your assistance, and look forward to receiving your reply.

1. How many USRAs have you held?  
 1     2     3
2. What was the name of the hosting company for your most recent USRA?  
 \_\_\_\_\_
3. Have you received a bachelor's degree?  
 Yes     No (Please list current year of study below, e.g. 2<sup>nd</sup>, 3<sup>rd</sup>.)  
 \_\_\_\_\_
4. In what field of study is/was your bachelor's degree? (Please specify below.)  
 \_\_\_\_\_
5. How did you first hear about the USRA program?  
 Professor or department  
 Friends  
 School placement office  
 NSERC material (e.g. poster, brochure, web)  
 Other (Please specify below.)  
 \_\_\_\_\_
6. Which of the following, if any, were important considerations when you accepted the USRA? (Please check all appropriate boxes.)  
 Only offer received  
 Offered a high wage/salary  
 Was linked to career goal  
 Provided opportunity to work in R&D environment  
 Was related to education  
 Close to home  
 Prestige of award  
 Other (Please specify below.)  
 \_\_\_\_\_
7. Gender  
 Male     Female
8. During the USRA, what were your total earnings per month, before deductions?  
 \$ \_\_\_\_\_ / month
9. What were the main skills that you either acquired or improved as a result of your recent USRA? (Please check all appropriate boxes.)  
 Research and Development  
 Theoretical/knowledge of the discipline  
 Analytical techniques/Experimental methods  
 Use of laboratory equipment or instruments  
 Management (e.g. time, organization, presentation)  
 Writing  
 None  
 Other (Please specify below.)  
 \_\_\_\_\_
10. In general, how challenging was the job during your recent USRA? (Please circle the appropriate number.)  

Not at All	Moderately			Extremely	
1	2	3	4	5	
11. Do you think the experience gained on this job will improve your prospects for getting a permanent job?  
 Yes     No     Do not know
12. On the whole, do you feel you received adequate supervision and instruction?  
 Yes     No  
 If "No", please comment.  
 \_\_\_\_\_  
 \_\_\_\_\_
13. What is the highest level of education you plan to attain?  
 Bachelor's degree  
 Master's degree  
 Doctorate degree  
 Other (Please specify below.)  
 \_\_\_\_\_

14. Did this work experience have any effect on your educational plans?

- Yes
- No (Go to question 16.)
- Not sure (Go to question 16.)

15. How did this work experience affect your educational plans?

- Will stay in university longer than originally planned
- Will leave university earlier than originally planned
- Will change field of study
- Other (Please specify below.)

16. The sector in which you would like to be employed in the future is? (Please check one only.)

- Industry                       Government
- University                       Non-profit
- Does not matter               Undecided

17. Has the USRA changed your career goals?

- Yes     No     Do not know

If "Yes", please comment.

\_\_\_\_\_

\_\_\_\_\_

18. Has the USRA changed your interest in R&D? (Please check one only.)

- Increased my interest
- Maintained my high level of interest
- Maintained my low level of interest
- Decreased my interest
- Do not know

19. Has the Industrial USRA changed your interest in a career in industry? (Please check one only.)

- Increased my interest
- Maintained my high level of interest
- Maintained my low level of interest
- Decreased my interest
- Do not know

20. In general, how satisfactory was your most recent USRA experience? (Please circle the appropriate number.)

Poor		Fair		Outstanding
1	2	3	4	5

21. Do you plan to stay in Canada after you receive your bachelor's degree?

- Yes (Go to question 23.)
- No
- Do not know

22. What will be your main reasons for leaving Canada?

- Graduate school
- Better/more job opportunities
- Personal
- Financial
- Other (Please specify below.)

23. Comments/suggestions for improving the program:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

[Question 24 is optional.]

24. Your responses to the above questions will be captured in an electronic database in an anonymous format. However, at some point NSERC may want to highlight to the government the career achievements of former USRA holders. You can assist us with this by providing your name, current address and telephone number voluntarily in the space below. NSERC would use this to contact you for further information. This form will be kept on file for two years.

Name and current address:

Telephone: (    ) \_\_\_\_\_

E-mail address: \_\_\_\_\_

25. Would you like to receive a copy of the report on this survey?

- Yes     No

**Thank you for your cooperation.**



**Appendix B**  
**Postgraduate Scholarship Survey Methodology and**  
**Questionnaire**

It was decided to collect the information from the former NSERC Postgraduate Scholarship winners by means of a mailed-out questionnaire. The main risk in undertaking such a survey is the difficulty in finding the mailing addresses of former scholars. Fortunately through the help and co-operation of the university alumni associations in mailing the questionnaires, NSERC was able to carry-out the surveys.

The number of students and the year in which they received their awards were the two factors considered in determining the sample population. Postgraduate Scholarship (PGS) and 1967 Science and Engineering (1967) award winners were selected. To deal with a more manageable population size (a potential of over 2000) and a more homogeneous group, only a subset of all PGS award winners was finally selected. This subset was the PGS 1 group, students who entered the first year of postgraduate training. The entire class of 1967 Science and Engineering award winners was selected for the first survey, and only new 1967 scholars were selected in subsequent years. The "over-sampling" of the 1967 scholars was necessary to get a large enough pool for this much smaller program (approximately 50 awards per year, compared with approximately 500 for the PGS 1 award). In selecting the year in which these students received their awards it was necessary to allow for a sufficient amount of time to pass to allow for their careers to progress, but short enough to minimize the chances of not being able to contact them. Therefore, a nine-year time period for career development was selected, resulting in scholars from 1985 to 1989 being surveyed to date.

### Questionnaire Design

Staff analysts developed the questionnaire in conjunction with Scholarship program managers. The final draft was field-tested by a sample of fourteen former scholarship holders, (three 1967, eleven PGS) from various disciplines. After an analysis of the results from the first and second surveys, minor changes to the questionnaires were made in subsequent years.

Note: Respondents could remain anonymous if they chose. This measure made analysis of results more difficult but it may have increased the response rate. Besides being saturated with questionnaires, respondents generally have a heightened awareness of the issue of "privacy" and the potential uses of "databases."

### University Selection

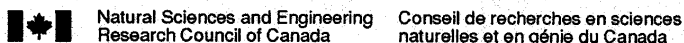
To minimize costs and expedite the survey, not all award winners of the identified group were sampled. A university selection was conducted in order to deal with the logistics in an efficient manner. Universities with less than five award winners or who did not wish to participate were excluded from the sample. In addition, students who held their award abroad were pooled with the Canadian university affiliation of their bachelor's degree. The reduction in the sample as a result of the above procedures was fairly small, with a loss of less than 7% of the original sample.

### Mail-out

The participating alumni associations undertook to mail out the questionnaire packages consisting of an explanatory letter plus the form to the former scholars. In this way, NSERC did not acquire the addresses of the former scholarship holders (unless they themselves subsequently volunteered them on their completed questionnaires).

### Capturing the Data

The data from the returned questionnaires (excluding names and comments) were captured in a FoxPro database, mostly as code but with some text fields. Data were subsequently downloaded into a Lotus spreadsheet for analysis. As stated in the letter to the respondents, the completed survey response sheet will be destroyed in two years. The electronic data, with no personal information, will be stored for as long as required.



### NSERC POSTGRADUATE SCHOLARSHIP SURVEY

The Natural Sciences and Engineering Research Council is conducting a survey of past Postgraduate Scholarship award winners. We intend to use the results of the survey to help us shape program policies and report on the end result of program funding. Your assistance is greatly appreciated, and we look forward to receiving your reply.

1. Which NSERC Scholarship did you hold?

- Regular PGS
- 1967 Science & Engineering

2. Did you complete the degree for which you received NSERC scholarship support?

- Yes     No

3. Please list all the degrees you have completed (with or without NSERC support) and indicate the discipline, the location of study (country), and the month/year in which they were started and completed.

Degree	Discipline	Country
<input type="checkbox"/> Bachelor's	_____	_____
	Month/Year Started ___/___	Completed ___/___
<input type="checkbox"/> Master's (1)	_____	_____
	Month/Year Started ___/___	Completed ___/___
<input type="checkbox"/> Master's (2)	_____	_____
	Month/Year Started ___/___	Completed ___/___
<input type="checkbox"/> Doctorate	_____	_____
	Month/Year Started ___/___	Completed ___/___
<input type="checkbox"/> Other	_____	_____
	Month/Year Started ___/___	Completed ___/___

4. Gender

- Male             Female

5. How important a factor was NSERC scholarship funding in your decision to undertake/continue graduate studies? (please circle the appropriate number)

<b>Not Important</b>	<b>Moderately Important</b>	<b>Very Important</b>
1	2	3
		4
		5

6. Did you receive NSERC scholarship support and approximately what percentage of your total funding and earnings did this represent for the following degrees?

Degree	NSERC Support	NSERC Funded
<input type="checkbox"/> Master's (1)	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____ %
<input type="checkbox"/> Master's (2)	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____ %
<input type="checkbox"/> Doctorate	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____ %
<input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____ %

7. Your current status is?

- Employed
- Self-employed
- Unemployed
- Postdoctoral Fellow
- Student
- Other (please specify below)

[Please answer questions 8 to 12 for your current or most recent employment.]

8. The sector in which you are/were employed is?

- Industry                     Government
- University                 Non-profit

9. The position is/was?

- Full-time
- Part-time (one job)
- Part-time (multiple jobs)

10. What are/were the main activities related to your job? (please check all appropriate boxes)

- Teaching
- Research and Development
- Health Sciences
- Management/Administration
- Consulting
- Product Development
- Sales/Marketing
- Other (please specify below)





**Appendix C**  
**Postdoctoral Fellowship Survey Methodology and**  
**Questionnaire**

The Postdoctoral Fellowship survey was conducted at the same time and through the same means as the Postgraduate Scholarship survey. See Appendix B for details on university selection, mailing and data capture.

In selecting the year in which fellows received their awards it was necessary to allow for a sufficient amount of time to pass to allow for their careers to progress, but short enough to maximise the chances contacting them. Therefore, a seven-year time period for career development was selected, resulting in fellows from 1992 being surveyed to date. All fellows who held an award in 1992 were surveyed to generate a larger sample. In the future only new Postdoctoral Fellowship winners in a given year, such as 1993, will be surveyed.

### Questionnaire Design

Staff analysts developed the questionnaire in conjunction with Scholarship program managers. Given the previous good experiences with the Postgraduate survey, many of the questions on the Postdoctoral Fellowship survey were identical. The final draft was field-tested by a sample of eight former fellowship holders from various disciplines.

Note: Respondents could remain anonymous if they chose. This measure made analysis of results more difficult but it may have increased the response rate. Besides being saturated with questionnaires, respondents generally have a heightened awareness of the issue of "privacy" and the potential uses of "databases."





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Research Council of Canada

Conseil de recherches en sciences  
naturelles et en génie du Canada

### NSERC POSTDOCTORAL FELLOWSHIP SURVEY

The Natural Sciences and Engineering Research Council is conducting a survey of past Postdoctoral Fellowship (PDF) award winners. We intend to use the results of the survey to help us shape program policies and report on the impacts of program funding. Your assistance is greatly appreciated, and we look forward to receiving your reply.

1. Where did you hold your NSERC Postdoctoral Fellowship?  
 Canada  
 Abroad: Country \_\_\_\_\_

2. Please list the degree(s) you have completed (with or without NSERC support) and indicate the discipline, the location of study (country), and the month/year in which they were started and completed.

Degree	Discipline	Country
Master's	_____	_____
Month/Year Started	___/___	Completed ___/___
Doctorate	_____	_____
Month/Year Started	___/___	Completed ___/___

3. In total, how long were you in postdoctoral position(s)?  
 Years \_\_\_ Months \_\_\_

4. Was this period of postdoctoral training  
 too short?  just right?  too long?

5. Gender  
 Male  Female

6. How important a factor was NSERC postdoctoral funding in your decision to remain in an academic research environment? (please circle the appropriate number)

Not Important		Moderately Important		Very Important
1	2	3	4	5

7. During the two years of your NSERC Postdoctoral Fellowship, approximately what percentage of your total funding and earnings did the NSERC PDF represent?  
 \_\_\_\_\_%

8. How would you rate the research capability of the lab in which you did your NSERC Postdoctoral Fellowship (i.e. quality of people, equipment, infrastructure)? (Please circle the appropriate number.)

	Poor		Good		World Class
People	1	2	3	4	5
Equipment	1	2	3	4	5
Infrastructure	1	2	3	4	5

9. Your current status is?  
 Employed  
 Self-employed  
 Unemployed  
 Postdoctoral Fellow  
 Student  
 Other (please specify below)

[Please answer questions 10 to 14 for your current or most recent employment.]

10. The sector in which you are/were employed is?  
 Industry  Government  
 University  Non-profit

11. The position is/was?  
 Full-time  
 Part-time (one job)  
 Part-time (multiple jobs)

12. What are/were the main activities related to your job? (please check all appropriate boxes)  
 Teaching  
 Research and Development  
 Health Sciences  
 Management/Administration  
 Consulting  
 Product Development  
 Sales/Marketing  
 Other (please specify below)

13. The title of the position is/was?

\_\_\_\_\_

If you hold/held a research and development or a teaching position, please specify the field below.

\_\_\_\_\_

14. Please check the box that most accurately reflects your current salary. If you have more than one part-time job, please check the box appropriate for your total income.

- Under \$25,000
- From \$25,000 to \$34,999
- From \$35,000 to \$44,999
- From \$45,000 to \$54,999
- From \$55,000 to \$64,999
- From \$65,000 to \$74,999
- \$75,000 and over

15. In your opinion, how important was postdoctoral training to your career?

- Critical, essential employment requirement
- Beneficial, but not essential to current career
- Not important

16. Would you encourage a young person to follow in your chosen career path?

- Yes
- Yes, with reservations
- No
- Not sure

(Please comment)

\_\_\_\_\_

\_\_\_\_\_

17. In general, how satisfactory was your postdoctoral experience? (Please circle the appropriate number.)

Poor		Fair		Outstanding
1	2	3	4	5

18. In which country are you currently employed/studying?

- Canada (go to question 21)
- Other (please specify below)

\_\_\_\_\_

[Please answer questions 19 and 20 if you are not currently residing in Canada.]

19. Do you intend to return to Canada as a resident in the foreseeable future?

- Yes
- No

20. What was your main reason for leaving Canada?

- Better/more job opportunities
- Variety of experience/exposure to new people and ideas
- Better facilities/technology/researchers abroad
- Lack of support for R&D in Canada
- Personal
- Financial
- Other (please specify below)

\_\_\_\_\_

21. Comments:

\_\_\_\_\_

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\_\_\_\_\_

[Question 22 is optional.]

22. Your responses to the above questions will be captured in an electronic database in an anonymous format. However, at some point NSERC may want to highlight to the government the important career achievements of former scholarship holders. You can assist us with this by providing your name, current address and telephone number voluntarily in the space below. NSERC would use this to contact you for further information. This form will be kept on file for two years.

Name and current address:

Telephone: ( ) \_\_\_\_\_

23. Would you like to receive a copy of the report on the survey?

- Yes
- No

**Thank you for your cooperation.**



