Science and technology

27

Overview

Science fiction is not what it used to be. In our technology-dependent world, it is no longer part of an inaccessible dream world—science is central to daily Canadian life.

Biotechnology and chemistry deliver new drugs, high-tech firms release the newest must-have gadgets at an unprecedented pace, and research programs regularly generate leading-edge innovations in artificial intelligence, nanotechnology, robotics, photonics, geomatics and aeronautics.

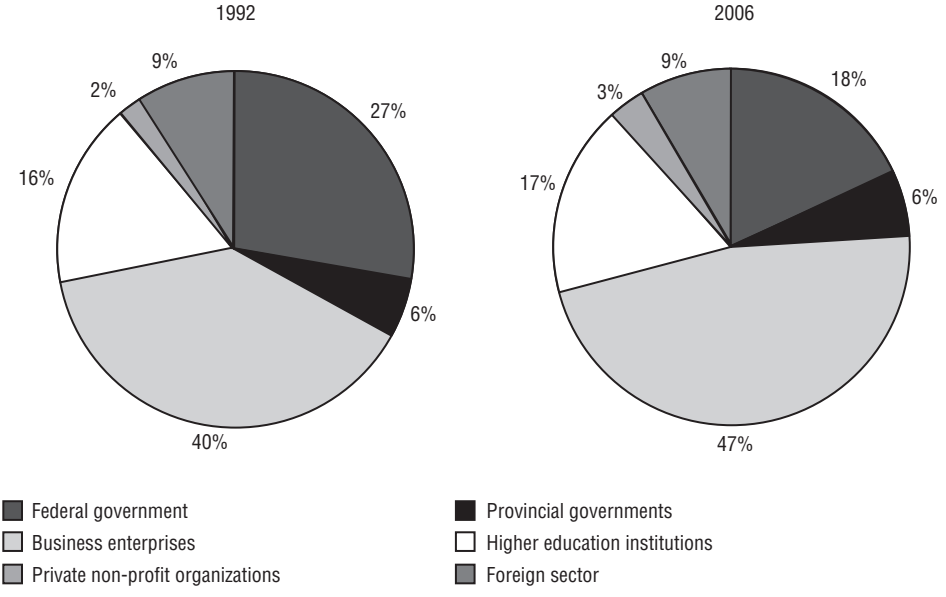
Less noticeable in daily life are the ways that industry uses science to improve how our resources are extracted, refined, delivered and sustained. In a world where science has drastically changed our understanding of our impact on the environment, science also helps us to develop alternative energy sources, more sustainable growth and healthier products.

The impact of science is huge. It improves our quality of life, boosts our economy and strengthens our industries. Today, hundreds of thousands of talented Canadians across the country—in private industry, government labs and university research programs—are pushing science in new directions.

Who funds science?

Canada invests significantly in scientific research and development (R&D). In 2006, Canadian universities, hospitals, government laboratories and businesses planned to spend $28.4 billion on R&D, more than double the spending of a decade earlier. This total—the gross domestic expenditures on research and development (GERD)—refers to all money spent on R&D performed within the country in a given year.

Chart 27.1
Gross domestic expenditures on research and development, by sector



Source: Statistics Canada, CANSIM table 358-0001.

GERD represents the total spending on R&D performed within a country from all funding sources, as well as funding from abroad. It excludes payments sent abroad for R&D performed in other countries.

GERD is a key benchmark for determining the research intensity in a given country and for making national and international comparisons. More GERD funding generally reflects the creation of more scientific knowledge.

In 2006, business enterprises were expected to account for $13.2 billion, or nearly half of total planned funding of GERD. The federal government was projected to fund $5.2 billion, and higher education institutions, $4.9 billion. Another $900 million was anticipated from private, non-profit organizations, a sector that has increased its R&D funding almost 300% since 1992. The remaining funding was expected to come from provincial governments ($1.6 billion) and from abroad ($2.4 billion).

In 2004, Canada ranked 12 out of 30 member countries of the Organisation of Economic Co-operation and Development (OECD) in terms of the percentage of gross domestic product (GDP) spent on R&D. Canada spent 2.0% of its GDP, compared with an OECD average of 2.3%. Some of the biggest spenders were Finland at 3.5% and Japan at 3.1%.

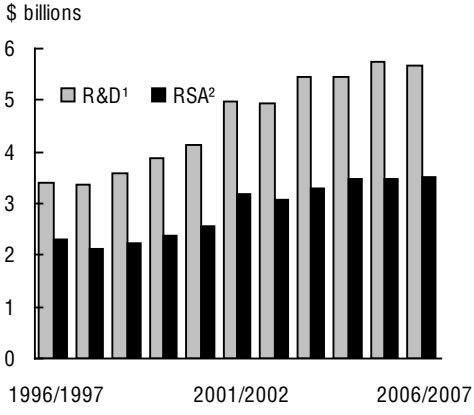
Table 27.a
Biotechnology revenues and research and development expenditures by sector, 2005

	Firms	Revenues	Research and development expenditures
	number	$ millions	
All innovative biotech firms	**532**	**4,191**	**1,703**
Human Health	303	2,955	1,486
Agriculture and food processing	130	1,075	157
Environment	54	121	34
Other	45	41	27

Source: Statistics Canada, Catalogue no. 88-003-XIE.

In the 2006/2007 fiscal year, the federal government planned to spend $9.2 billion on science and technology (S&T), including $5.7 billion on research and experimental development.

Chart 27.2
Federal spending on science and technology activities



1. Research and experimental development.
2. Related scientific activities.
Source: Statistics Canada, Catalogue no. 88-001-XIE.

Spending grows

The share of federal science and technology (S&T) spending allocated to the natural sciences and engineering was $6.9 billion in 2006/2007, or 74% of total spending, down from a high of 78% in 2002/2003. Only 30% of the $2.4 billion allocated to the social sciences is allocated to R&D, with the rest going to related scientific activities, such as data collection, maintaining national standards and testing, feasibility studies and policy research.

From 2000/2001 to 2006/2007, Canadian federal government spending on S&T advanced 39% (in current dollars). Most of this gain came in 2001/2002, when the federal government invested an additional $1.5 billion, up 22% from the previous fiscal year.

University institutions and research hospitals are also expanding funding of their science programs. In 2000, higher education was responsible for 14% of GERD; by 2006, their share was 17%. During the same period, the business sector increased its share of GERD from 45% to 47%.

Who's minding the lab?

More than 36,000 full-time federal government jobs were devoted to science and technology (S&T) activities in 2006/2007, 3% more than in 2005/2006. Sixty-one percent of those jobs were involved in related scientific activities in 2006/2007.

The natural sciences and engineering field accounted for 68% of the estimated total personnel spending in 2006/2007, of which 54% were engaged in R&D. Personnel in the social sciences and humanities accounted for 32% of the total, of which only 7% were engaged in R&D.

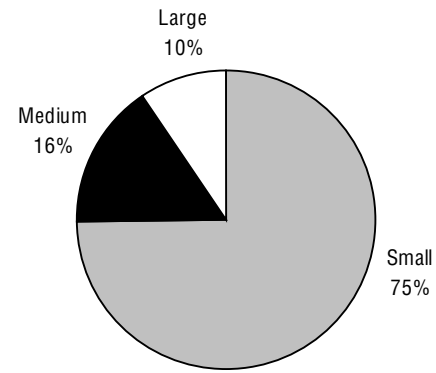
Canadian scientists are also pushing the frontiers of knowledge and are major players in cutting-edge sciences such as biotechnology, where they develop virus-resistant crops or produce new burn treatments.

In 2005, more than 13,400 Canadians were involved in biotechnology activities at 532 innovative biotech firms in Canada—firms that are developing new products or processes. More than three out of four of these companies are in the three provinces that account for more than 90% of biotechnology revenues: Quebec, Ontario and British Columbia.

Altogether, Canada's biotech firms generated $4.2 billion in 2005 and spent $1.7 billion on R&D. Most are fairly small, employing fewer than 50 people. However, the 50 largest companies—those with at least 150 employees—accounted for more than two-thirds of the revenues.

Biotechnology related to human health remains the most significant biotechnology sector in terms of number of firms, employment, R&D and revenues.

Chart 27.3
Biotechnology firms, by size, 2005



Notes: Small (0 to 50 employees)
Medium (50 to 149 employees)
Large (more than 150 employees)
Percentages may not add to 100 due to rounding.
Source: Statistics Canada, Catalogue no. 88-003-XWE.

Selected sources

Statistics Canada

- *Federal Scientific Activities.* Annual. 88-204-XIE
- *Innovation Analysis Bulletin.* Irregular. 88-003-XIE
- *Science, Innovation and Electronic Information Division Research Papers.* Irregular. 88F0017MIE
- *Science, Innovation and Electronic Information Division Working Papers.* Occasional. 88F0006XIE
- *Science Statistics.* Irregular. 88-001-XIE

Functional foods and nutraceuticals

As Canadians age and face rising health care costs, many are considering the link between health and diet. The functional food and nutraceutical industry is seizing the opportunity—389 firms in Canada generated $2.9 billion in revenues from these products in 2004/2005 and employed 13,000 people.

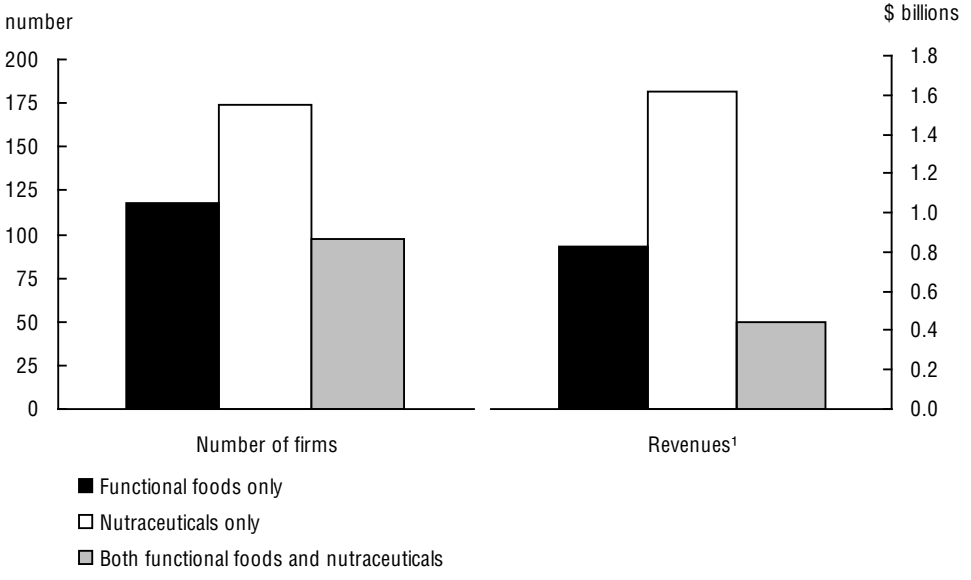
These firms develop products—which are taken as foods or supplements—directly from natural sources to benefit human health. Of those total revenues, $1.6 billion came from companies selling just nutraceuticals, $824 million was from firms specializing in functional foods and $443 million from companies selling both.

Today, 10,000 functional foods and nutraceutical products are available on store shelves, and R&D is expanding the product line. The industry spent $75 million in 2004 on R&D specifically for functional foods or nutraceuticals. This amounted to 46% of the total funds these firms spent on R&D.

The share of funds devoted to functional foods and nutraceuticals R&D was lowest, 39%, among firms that only sell nutraceuticals. Yet these firms also had the highest share of sales from functional foods and nutraceuticals, 57%. This indicates that most nutraceutical products are already on the market and generating revenues.

The number of Canadian firms producing functional foods or nutraceuticals grew from 294 in 2002 to 389 in 2004. These products pose not just a domestic opportunity but also a chance for international growth. The United States is a major market for the $545 million worth of functional foods and nutraceutical products these firms export.

Chart 27.4
Firms with functional food or nutraceutical-related activities, 2004



1. The estimate for revenues for firms with both functional food and nutraceutical-related activities should be used with caution.
Source: Statistics Canada, Catalogue no. 88-003-XIE.

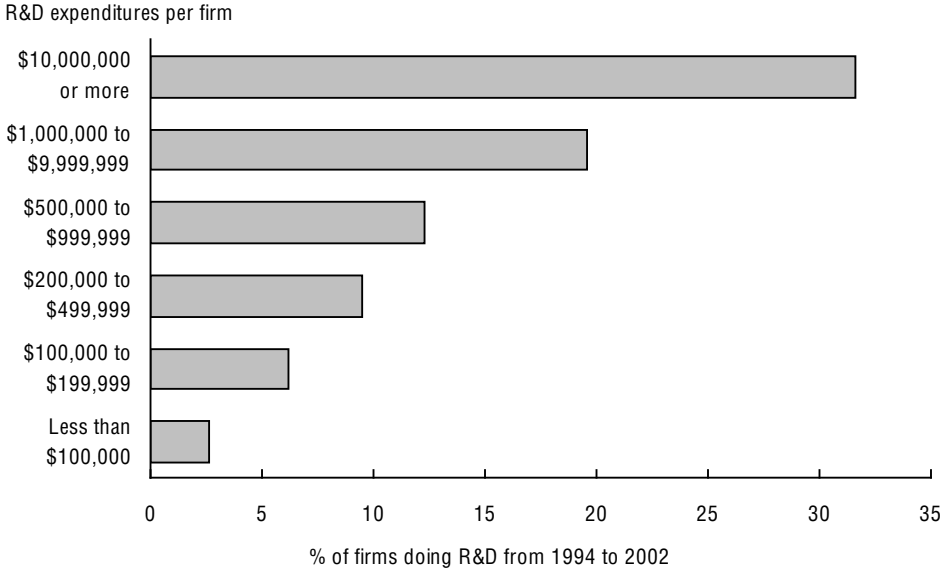
Persistence pays off

Every year, thousands of companies across Canada take on R&D projects to advance science and develop new products and services. But according to the Research and Development in Canadian Industry Survey, only a minority of these companies maintain R&D programs over long periods.

Of the 31,200 companies doing some form of R&D from 1994 to 2002, only 5% (1,700 firms) were 'persistent' R&D performers. The survey grouped firms according to their annual R&D spending—a gauge of the strength of a firm's R&D program. It found that the R&D spending group a firm belonged to influenced their persistence with R&D. Firms that spent $10 million or more on R&D in 1994 had longer-lasting programs than firms that spent less than $100,000 that year. Nearly one-third of the highest annual spenders reported R&D activity in all nine years from 1994 to 2002; only 3% of the lowest spending group—less than $100,000—reported undertaking R&D for that long. This pattern reflects different R&D approaches firms take—large spenders view R&D as a program, whereas small spenders see it as a short-term project.

Average annual R&D spending by all firms was $1.7 million in 2001 and $1.6 million in 2002—a reflection of the market setbacks in the 'dot-com' and telecommunications equipment sectors. Still, this was nearly triple the average annual spending in 1994. Moreover, the total spent on R&D by industry was projected to reach $14.8 billion in 2006, 86% more than in 1996. From 1994 to 2002, the number of firms spending $10 million or more per year on R&D nearly doubled.

Chart 27.5
Persistence of R&D performance, by selected amount of expenditures, 1994 to 2002



Source: Statistics Canada, Catalogue no. 88-003-XIE.

The researchers and developers

Scientific researchers and technicians are in demand. From 1980 to 2004, the number of full-time researchers, technicians and support staff engaged in R&D in Canada grew 140%, from 83,000 to 199,000. The number of researchers more than tripled; the number of technicians nearly doubled.

Canada has 7.2 researchers per 1,000 workers—above the OECD average of 6.9. The United States has 9.6 per 1,000 workers, and Japan has the highest, 10.4 per 1,000.

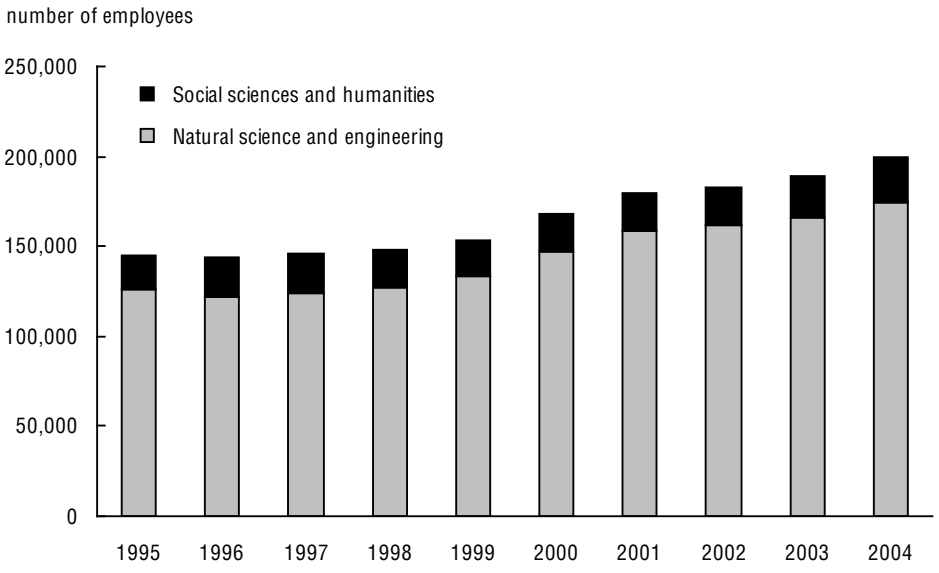
Natural sciences and engineering attract by far the most R&D employees—almost 90% of researchers, technicians and support staff in 2004. Business enterprises employed 73%, higher education institutions, 18% and federal and provincial governments, 9%.

At postsecondary institutions, R&D spending climbed from $5.1 billion in 1999 to $9.0 billion in 2004. The number of R&D personnel in higher education surged 6% from 2003 to 2004. Since 2002, Canada's ranks of R&D personnel in higher education have grown slightly faster than in many OECD countries.

The concentration of R&D personnel across Canada reflects regional spending patterns. Ontario and Quebec are home to most of Canada's research facilities. These provinces accounted for 76% of all R&D personnel in 2004. About 10% of R&D personnel worked in British Columbia that year, while another 7% worked in Alberta.

In Newfoundland and Labrador, two out of three R&D personnel work in the higher education and private non-profit sectors, as do one out of two in Nova Scotia and New Brunswick. The majority (62% to 70%) of R&D personnel in Quebec, Ontario and British Columbia work in the business sector.

Chart 27.6
Employment in research and development



Source: Statistics Canada, Catalogue no. 88-001-XIE.

Unveiling the inventions

Canadian universities and research hospitals are commercializing more of the inventions coming from their laboratories. They are also capitalizing on those with the highest potential via spin-off companies, creating 50 of them in 2003 and 2004 alone.

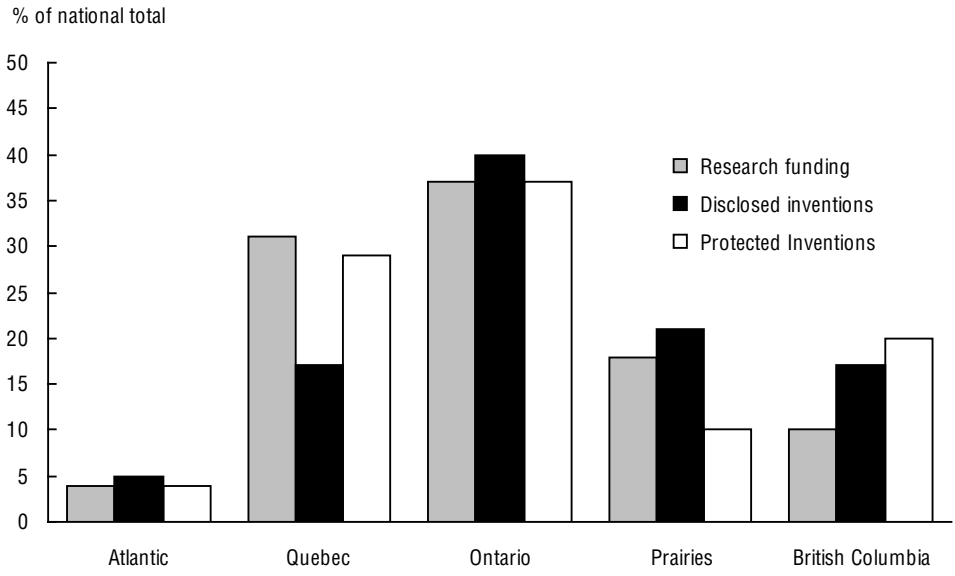
Universities and research hospitals unveiled 1,432 inventions in 2004, up 26% from 2003. They also received nearly 400 patents for these new technologies. At the end of 2004, 50% of the patents they held in Canada had been licensed, assigned or otherwise commercialized, compared with 35% at the end of 2003.

As of the end of 2004, universities and their research hospitals had created 968 spin-off firms. They cover many industries and focus on high-tech inventions such as engineering and medical devices manufacturing and computer systems design. One in three spin-offs was incorporated from 1995 to 1999; 64% of them are still going concerns in their early active stages. In 2004, 33 universities and hospitals provided space to 87 start-up companies. In 2003, 25 institutions provided space to 74 start-ups.

Sponsored research funding totalled $5.0 billion in 2004, of which 68% went to institutions in Ontario and Quebec. Those two provinces accounted for 57% of the inventions disclosed in 2004.

Prairie universities received 18% of sponsored research dollars, unveiled 21% of the nation's inventions and accounted for 26% of patents issued. British Columbia's institutions also overachieved, using 10% of total research funding and generating 17% of all inventions. Atlantic Canada's institutions account for 7% of all spin-off companies created to date.

Chart 27.7
Universities and teaching hospitals' share of research funding and inventions, by region, 2004



Source: Statistics Canada, Catalogue no. 88F0006XIE.

Table 27.1 Federal expenditures on science and technology, by province and territory, 1999/2000 to 2004/2005

	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005
	$ millions					
Canada (including the National Capital Region)	**5,640**	**6,084**	**7,476**	**7,300**	**7,976**	**8,156**
National Capital Region[1]	1,981	2,130	2,603	2,608	2,642	2,708
Canada (excluding the National Capital Region)	**3,659**	**3,954**	**4,873**	**4,692**	**5,333**	**5,448**
Newfoundland and Labrador	87	101	95	117	121	137
Prince Edward Island	20	29	26	24	33	39
Nova Scotia	197	220	225	247	257	294
New Brunswick	72	68	82	102	100	122
Quebec[2]	833	1,017	1,381	1,243	1,328	1,352
Ontario[2]	1,309	1,347	1,653	1,582	2,038	1,967
Manitoba	161	190	211	214	194	226
Saskatchewan	131	148	165	151	159	157
Alberta	301	327	476	395	469	474
British Columbia	528	479	525	582	588	645
Yukon, Northwest Territories and Nunavut	20	28	34	35	46	35

1. Federal intramural expenditures only.
2. Includes extramural expenditures of the National Capital Region executed within the province.

Source: Statistics Canada, Catalogue no. 88-001-XIE.

Table 27.2 Federal expenditures on research and development, by activity, 2001/2002 to 2006/2007

	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006[p]	2006/2007[p]
	$ millions					
Research and development and related scientific activities	**8,169**	**8,014**	**8,765**	**8,935**	**9,228**	**9,185**
Research and development	4,989	4,927	5,462	5,455	5,751	5,663
Current expenditures	4,571	4,492	5,033	5,033	5,314	5,259
Administration of extramural programs	213	227	257	269	282	275
Capital expenditures	205	208	172	152	154	128
Related scientific activities	3,180	3,087	3,303	3,480	3,477	3,523
Data collection	1,611	1,498	1,618	1,702	1,699	1,717
Information services	618	679	663	679	708	717
Special services and studies	513	588	615	666	644	655
Education support	286[1]	177	206	230	253	267
Administration of extramural programs	49	54	56	58	58	61
Capital expenditures	103	91	145	146	115	106

1. Includes a $125 million grant to the Pierre Elliott Trudeau Foundation.

Source: Statistics Canada, Catalogue no. 88-001-XIE.

Table 27.3 Gross domestic expenditures on research and development, by the performing and funding sectors, 1990 to 2006

	Total[1]	Federal government	Provincial governments	Business enterprises	Higher education	Foreign sources
			$ millions			
Performing sector						
1990	**10,260**	1,654	302	5,169	3,033	...
1991	**10,770**	1,685	328	5,355	3,292	...
1992	**11,338**	1,716	293	5,742[2]	3,519	...
1993	**12,184**	1,757	269	6,424	3,660	...
1994	**13,341**	1,753	260	7,567[2]	3,675	...
1995	**13,754**	1,727	254	7,991	3,691	...
1996	**13,817**	1,792	242	7,997	3,697	...
1997	**14,634**	1,720	214	8,739	3,879	...
1998	**16,088**	1,743	216	9,682	4,370	…
1999	**17,637**	1,859	233	10,400	5,082	…
2000	**20,580**	2,080	255	12,395	5,793	…
2001	**23,169**	2,103	307	14,272	6,424	…
2002	**23,539**	2,190	315	13,516	7,455	…
2003	**24,337**	2,083	315	13,704	8,143	…
2004	**26,003**	2,083	326	14,441	9,037	…
2005[p]	**27,174**	2,162	336	14,655	9,900	…
2006[p]	**28,357**	2,145	345	14,850	10,890	…
Funding sector						
1990	**10,260**	2,859	641	3,960	1,618	949
1991	**10,770**	2,946	696	4,113	1,735	1,013
1992	**11,338**	3,109	644	4,445[2]	1,867	1,049
1993	**12,184**	3,156	665	5,025	1,892	1,170
1994	**13,341**	3,094	663	5,874[2]	1,914	1,498
1995	**13,754**	2,989	652	6,288	1,926	1,590
1996	**13,817**	2,815	629	6,396	1,905	1,714
1997	**14,634**	2,813	658	7,031	1,971	1,794
1998	**16,088**	2,831	639	7,354	2,339	2,553
1999	**17,637**	3,216	770	7,917	2,649	2,705
2000	**20,580**	3,560	878	9,224	2,892	3,580
2001	**23,169**	4,096	1,048	11,643	2,928	2,918
2002	**23,539**	4,254	1,185	12,086	3,462	1,924
2003	**24,337**	4,533	1,396	12,057	3,589	2,125
2004	**26,003**	4,666	1,407	12,743	4,126	2,332
2005[p]	**27,174**	4,978	1,520	13,004	4,498	2,375
2006[p]	**28,357**	5,227	1,644	13,245	4,948	2,416

1. Includes private non-profit organizations.
2. Estimates, as a complete survey was not conducted.

Source: Statistics Canada, Catalogue no. 88-001-XIE.

Table 27.4 Federal expenditures on research and development, by the performing and funding provinces, 1990 to 2004

	Canada[1]	National Capital Region	Canada[2]	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec[3]	Ontario[3]	Manitoba	Saskatchewan	Alberta	British Columbia
							$ millions						
Performing province													
1990	**1,654**	711	**943**	35	10	81	36	215	249	94	50	77	95
1991	**1,685**	733	**952**	35	10	81	37	217	251	95	51	78	96
1992	**1,716**	753	**963**	35	9	73	36	234	274	81	56	78	86
1993	**1,757**	774	**983**	36	11	75	33	250	276	83	54	75	88
1994	**1,753**	789	**964**	33	11	84	28	225	253	79	48	93	103
1995	**1,727**	805	**922**	27	9	77	29	218	259	71	52	98	81
1996	**1,792**	771	**1,021**	25	10	79	32	226	348	77	47	94	78
1997	**1,720**	757	**963**	23	10	70	29	212	302	59	74	96	83
1998	**1,743**	812	**931**	26	10	77	31	226	276	49	54	94	85
1999	**1,859**	808	**1,051**	25	12	72	32	250	322	58	60	108	106
2000	**2,080**	889	**1,191**	30	16	88	27	350	314	69	62	116	111
2001	**2,103**	926	**1,177**	27	16	70	26	373	328	77	63	98	96
2002	**2,190**	1,015	**1,175**	32	8	76	46	370	324	72	53	92	99
2003	**2,083**	999	**1,084**	23	12	65	30	314	351	63	54	87	80
2004	**2,083**	960	**1,123**	23	10	81	26	320	329	73	54	110	91
Funding province													
1990	**2,859**	711	**2,148**	56	11	133	56	550	730	131	78	162	240
1991	**2,946**	733	**2,213**	54	12	135	54	568	746	133	84	168	258
1992	**3,109**	748	**2,361**	62	10	125	54	634	848	119	89	167	252
1993	**3,156**	767	**2,388**	59	12	120	63	660	849	121	87	164	251
1994	**3,094**	784	**2,310**	52	12	127	60	592	799	119	82	190	270
1995	**2,989**	796	**2,193**	42	11	113	60	580	756	108	81	207	234
1996	**2,815**	755	**2,060**	42	12	112	44	546	719	108	75	191	206
1997	**2,813**	740	**2,073**	40	11	107	41	547	741	88	96	195	200
1998	**2,831**	798	**2,033**	44	12	113	44	540	737	82	77	183	198
1999	**3,216**	796	**2,420**	48	14	113	49	665	868	98	103	218	238
2000	**3,560**	872	**2,688**	54	19	129	42	806	899	113	121	234	263
2001	**4,096**	907	**3,189**	52	20	121	45	999	1,126	126	123	284	290
2002	**4,254**	994	**3,260**	63	13	134	68	994	1,118	132	113	282	340
2003	**4,533**	983	**3,550**	59	20	132	61	1,056	1,289	132	121	325	349
2004	**4,666**	945	**3,721**	60	19	157	58	1,057	1,327	148	124	339	427

1. Includes the National Capital Region, Yukon, Northwest Territories and Nunavut.
2. Includes the Yukon, Northwest Territories and Nunavut; excludes the National Capital Region.
3. Quebec and Ontario figures exclude federal government expenditures performed in the National Capital Region.

Source: Statistics Canada, Catalogue no. 88-001-XIE.

Table 27.5 Gross domestic expenditure on research and development, by province, 1992, 1996, 2000 and 2004

	1992	1996	2000	2004
	$ millions			
Canada (including the National Capital Region)[1]	**11,338**	**13,817**	**20,580**	**26,003**
National Capital Region	753	771	889	960
Canada (excluding the National Capital Region)[1]	**10,585**	**13,046**	**19,691**	**25,043**
Newfoundland and Labrador	110	103	138	169
Prince Edward Island	14	17	36	40
Nova Scotia	233	257	363	446
New Brunswick	122	150	161	222
Quebec[2]	3,113	3,801	5,680	7,161
Ontario[2]	4,818	6,176	9,564	11,720
Manitoba	281	295	412	519
Saskatchewan	235	233	376	422
Alberta	779	1,007	1,337	2,053
British Columbia	879	1,002	1,616	2,282

1. Includes the Yukon, Northwest Territories and Nunavut.

2. Quebec and Ontario figures exclude federal government expenditures performed in the National Capital Region.

Source: Statistics Canada, Catalogue no. 88-001-XIE.

Table 27.6 Gross domestic expenditures on research and development, health sector compared with all sectors, 1988 to 2005

	All sectors	Health sector		
	$ millions	$ millions	% of all sectors	$ per capita
1988	**9,045**	1,221	13.5	46
1989	**9,516**	1,365	14.3	50
1990	**10,260**	1,551	15.1	56
1991	**10,767**	1,665	15.5	59
1992	**11,338**	1,783	15.7	63
1993	**12,184**	2,006	16.5	70
1994	**13,342**	2,105	15.8	73
1995	**13,754**	2,196	16.0	75
1996	**13,816**	2,317	16.8	78
1997	**14,634**	2,447	16.7	82
1998	**16,088**	2,692	16.7	89
1999	**17,637**	2,967	16.8	98
2000	**20,635**	3,560	17.3	116
2001	**23,206**	4,159	17.9	134
2002	**23,382**	5,050	21.6	161
2003	**23,992**	5,234	21.8	165
2004	**25,259**	5,574	22.1	174
2005[p]	**26,268**	5,953	22.7	184

Source: Statistics Canada, CANSIM tables 051-0001, 358-0001 and 384-0036, and Catalogue no. 88-001-XIE.

Table 27.7 Business enterprises' research and development expenditures, by province and territory, 1999 to 2004

	1999	2000	2001	2002	2003	2004
	$ millions					
Canada	**10,400**	**12,395**	**14,272**	**13,516**	**13,704**	**14,441**
Newfoundland and Labrador	18	20	21	21	26	26
Prince Edward Island	3	5	6	4	7	6
Nova Scotia	62	67	91	95	77	89
New Brunswick	39	40	45	64	62	75
Quebec	3,047	3,642	4,158	4,131	4,154	4,308
Ontario	5,799	6,856	7,900	7,064	7,241	7,457
Manitoba	148	133	173	150	136	165
Saskatchewan	78	76	87	112	84	111
Alberta	490	583	710	782	790	892
British Columbia	714	973	1,080	1,092	1,127	1,309
Yukon, Northwest Territories and Nunavut	2	0	1	0	1	3

Note: Expenditures on performing research and development.
Source: Statistics Canada, Catalogue no. 88-001-XIE.

Table 27.8 Intellectual property management at universities and research hospitals, 1999 to 2005

	1999	2001	2003	2004	2005[p]
			%		
Institutions engaged in intellectual property management	61	66	72	76	..
			number		
Full-time equivalent employees engaged in intellectual property management	178	221	255	280	..
Research contracts	5,748	8,247	11,432	14,324	..
Invention disclosures	893	1,105	1,133	1,432	1,475
Inventions protected[1]	549	682	527	629	744
Inventions declined by the institution	..	..	256	355	323
Patent applications	656	932	1,252	1,264	1,427
Patents issued	349	381	347	397	374
Patents held	1,915	2,133	3,047	3,827	3,953
New licences and options	232	354	422	494	577
Active licences and options	1,165	1,424	1,756	2,022	2,216
			$ thousands		
Operational expenditures for intellectual property management	22,018	28,505	36,419	36,927	..
Value of research contracts	393,358	527,051	810,431	940,993	..
Income from intellectual property	24,745	52,510	55,525	51,210	55,127
Value of remaining equity held by the institution in publicly traded spin-offs	54,560	45,120	52,351	49,872	..
Investment in spin-offs raised with the assistance of the institution	..	..	54,640	56,421	..

Note: Data were not collected for 2000 and 2002 since the Survey of Intellectual Property Commercialization in the Higher Education Sector was conducted on an occasional basis from 1998 to 2003.
1. Resulted in protection activity.
Source: Statistics Canada, CANSIM table 358-0025.

Table 27.9 University enrolment in natural and applied science and technology programs, by sex, 2000/2001 to 2004/2005

	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005
			number		
All instructional programs					
Both sexes[1]	**850,572**	**886,605**	**933,870**	**993,246**	**1,014,486**
Men	362,271	376,884	397,167	419,463	429,006
Women	488,145	509,586	536,640	573,531	585,249
Physical and life sciences and technologies					
Both sexes[1]	**79,140**	**80,553**	**83,616**	**91,719**	**96,441**
Men	35,766	36,396	37,329	40,692	42,738
Women	43,368	44,154	46,284	51,015	53,697
Mathematics, computer and information sciences					
Both sexes[1]	**43,527**	**46,377**	**45,897**	**44,190**	**40,929**
Men	30,801	32,958	33,165	32,304	29,880
Women	12,723	13,419	12,732	11,865	11,004
Architecture, engineering and related technologies					
Both sexes[1]	**70,023**	**74,817**	**81,087**	**85,776**	**86,451**
Men	53,640	57,432	62,376	66,522	67,332
Women	16,380	17,385	18,708	19,242	19,116
Agriculture, natural resources and conservation					
Both sexes[1]	**15,420**	**14,841**	**14,487**	**14,613**	**14,640**
Men	7,491	6,930	6,666	6,579	6,588
Women	7,929	7,908	7,821	8,028	8,052

Notes: Figures are rounded to the nearest five.
Historical data coded with the University Student Information System classification have been converted to the Classification of Instructional Programs 2000.

1. Figures may not add up to the totals because of the exclusion of the 'sex unknown' category in the table or because of rounding.

Source: Statistics Canada, CANSIM table 477-0013.

Abbreviations and symbols

Provinces and territories	
Newfoundland and Labrador	N.L.
Prince Edward Island	P.E.I.
Nova Scotia	N.S.
New Brunswick	N.B.
Quebec	Que.
Ontario	Ont.
Manitoba	Man.
Saskatchewan	Sask.
Alberta	Alta.
British Columbia	B.C.
Yukon	Y.T.
Northwest Territories	N.W.T.
Nunavut	Nvt.

Measurements	
centimetre	cm
metre	m
kilometre	km
gram	g
kilogram	kg
litre	L
millilitre	mL
hour	h
watt	W
kilowatt	kW
degrees Celsius	°C

The symbols described in this document apply to all data published by Statistics Canada from all origins, including surveys, censuses and administrative sources, as well as straight tabulations and all estimations.

.	not available for any reference period
..	not available for a specific reference period
…	not applicable
0	true zero or a value rounded to zero
0^s	value rounded to zero where there is a meaningful distinction between true zero and the value that was rounded
^{p}	preliminary
^{r}	revised
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E}	use with caution
^{F}	too unreliable to be published

Note: In some tables, figures may not add to totals because of rounding.

When the figure is not accompanied by a data quality symbol, it means that the quality of the data was assessed to be 'acceptable or better' according to the policies and standards of Statistics Canada.

The statistics in this edition are the most up-to-date available at the time of its preparation. For more recent data, visit Canadian Statistics at www.statcan.ca