

Survey of Intellectual Property Commercialization in the Higher Education Sector



2006 and 2005, 2008



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- . 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 0 (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

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Highlights

- The number of educational institutions (Canadian universities and teaching hospitals) engaged in intellectual property management increased 3.3% in 2005 and 2.1% in 2006 (Table 1-1).
- Between 2005 and 2006 total operational expenditures for intellectual property management rose 2.3% to \$42.5 million (current dollars) (Table 2-1).
- Total income from intellectual property rose 8.2% in 2006 to \$59.7 million from \$55.2 million (current dollars) in 2005 (Table 18-1).
- There were 1,881 fewer research contracts in 2006 compared to 2005, but the value of this smaller number of contracts was 15.3% higher (Table 9-1).
- Between 2005 and 2006 the number of inventions developed by researchers and reported to educational institutions dropped from 1,452 to 1,356 (-6.6%) (Table 13-1).
- The number of patents issued to Canadian universities and teaching hospitals fell from 376 to 339 (-9.8%), while the total number of patents held ascended from 3,961 to 4,784 (20.8%) (Tables 15-1 and 16-1).
- In 2005 and 2006 a total of 43 spin-off companies launched by educational institutions were incorporated. As of 2006 over one-third of reported spin-offs were located in Ontario (Tables 21-1 and 25-1).

Analysis

Introduction

Intellectual property commercialization is the processes of transferring new technologies, in the form of products or knowledge, from the lab to the market place. There are various indicators to measure this process, for example: the number of institutions engaged in intellectual property (IP) management (Table 1-1), IP income (Table 18-1), number and value of research contracts (Table 9-1), number of inventions, patents and licenses (Tables 13-1, 14-1, 15-1, 16-1 and 17-1).

Technology production at Canadian universities and teaching hospitals in 2005 and 2006 increased at a slower rate than in 2004. However, income from IP rebounded in 2005 and this progression continued in 2006. The latter indicator was developed by the Association of Universities and Colleges (AUC) in consultation with Industry Canada and Statistics Canada as part of the 2002 Framework of Agreed Principles on Federally Funded University Research.¹

Among other indicators, the number of research contracts fell 12% between 2005 and 2006. Meanwhile, the value of these contracts increased with more Canadian businesses and organizations contributing domestically. The number of applications and patents held in Canada and other countries (Table 16-1) continued to expand. However, for the first time in 2006, the number of new IP disclosures fell 6.6% as 96 fewer inventions were made (Table 13-1). This 6.6% drop may be due, in small part, to a decrease in the number of institutions reporting.²

Technology production

Technology production activity at Canadian universities and teaching hospitals (educational institutions) was up in 2005 and 2006 but the pace of increase was successively slower than in 2004 (Table 1-1). The number of patents issued, declined 5.3% in 2005 and further declined 9.8% to a count of 339 in 2006 (Table 15-1). However, the patent portfolio held by Canadian universities and hospitals at the end of 2005 stood at 3,961 and advanced to 4,784 by the end of 2006 (Table 16-1). There exists a time lag between applying for a patent or copyright and its approval.

The pool of discoveries and patent applications influence the number of technologies protected. In 2006 the number of inventions fell 6.6%, while discoveries that are more likely to be legally protected dropped 7.1% to 707 (Table 13-1). These are disclosures which, after evaluation, universities and hospitals determined to contain enough novelty to represent an advance over existing technologies and offer economic potential. Another indicator, patent applications in the pipeline at various stages of progress, increased slightly, by 2.3%, accompanied by a noted shift in the patent application field of study away from agricultural and biological sciences towards engineering and applied sciences (Table 14-1).

The number of full-time equivalent employees engaged in IP management from 2005 to 2006 more than doubled the rate of increase experienced over the 2004 to 2005 year period. The number of technology transfer personnel also expanded with the percentages of this group holding bachelor, masters and doctorate degrees increasing slightly (Table 5-1). Despite these employment increases, total operational expenditures for IP management increased 2.3% between 2005 and 2006 offset by the drop in patent and regular legal expenditures (Table 2-1).

1. The target income from commercialization activities in 2010 is projected at \$70.2 million or more. Source: *Measuring Success in Relation to Federal Investments in University Research: An AUC Discussion Paper*. November 17, 2006 p.p. 14.

2. One less educational institution responded in 2006: 118 reported in 2005 versus 117 in 2006.

Commercialization

Patents

University and hospital technologies are generally commercialized in two ways: they are either licensed out to established business organizations or universities may set up new companies.³

Over one-half (54.7%) of the patent portfolio held by universities and hospitals had been licensed out, assigned or otherwise commercialized at the end of 2006 as compared with 48.4% at the end of 2005 and 44.0% at the end of 2004 (Table 16-1). In particular, there was a significant effort to take technologies to the market in the United States (U.S.). The commercialization ratio of patents held in the U.S. notably increased although it was still below the overall ratio.

Income from IP increased 8.2% in 2006 to \$59.7 million (current dollars) as the percentage of income received from Canadian sources fell 4.4%. Overall the percentage of IP income attributed to milestone payments and one time sales of IP strengthened while funds from running royalties diminished (Table 18-1).

Spin-offs

In addition to licensing technologies, educational institutions and teaching hospitals spun off companies to commercialize their respective technologies. In 2006 there were 14 additional spin-off companies, bringing the total number of spin-off companies incorporated prior to 1981 to 1,103 (Table 21-1). The regional distribution of spin-off companies generated to date is: Ontario (37%), British Columbia (22%), Quebec and the Prairies (both 17%) and the Atlantic provinces (7%) (Table 25-1).

The spin-offs are largely built upon leading-edge technologies mostly in the field of health sciences, engineering and applied sciences, informatics and biotechnologies. More than one-third of all spin-offs are built upon technologies directly related to health sciences, a not surprising result in light of the fact medical technologies are on the leading edge of technological advancement and 33 of the 117 institutions covered in the 2006 survey are hospitals (Table 1-1).

3. These companies are set up to: (a) license the institution's technology; (b) fund research at the institution in order to develop technology that will be licensed by the company; and/or (c) provide a service that was originally offered through a department or unit of the institution.

Statistical tables

Table 1-1
Institutions engaged in intellectual property management — 2006

	Hospitals	Universities	Responding institutions
	number		
Institutions	33	84	117
Institutions engaged in intellectual property management	24	72	96
Institutions with intellectual property offices	13	55	68
Count of intellectual property offices	13	69	82
	percent		
Institutions engaged in intellectual property management	73	86	82
Institutions with intellectual property offices	54	76	71

Note(s): Intellectual property management includes identification, protection, promotion or commercialization of intellectual property. Institutions: Educational institutions. The percentage of institutions with intellectual property offices is calculated as follows: (Institutions with intellectual property offices/Institutions engaged in intellectual property management)x100. Previously this indicator was calculated: (Institutions with intellectual property offices/Respondents)x100.

Table 1-2
Institutions engaged in intellectual property management — 2005

	Hospitals	Universities	Responding institutions
	number		
Institutions	33	85	118
Institutions engaged in intellectual property management	24	70	94
Institutions with intellectual property offices	14	62	76
Count of intellectual property offices	14	79	93
	percent		
Institutions engaged in intellectual property management	73	82	80
Institutions with intellectual property offices	58	89	81

Note(s): Intellectual property management includes identification, protection, promotion or commercialization of intellectual property. Institutions: Educational institutions. The percentage of institutions with intellectual property offices is calculated as follows: (Institutions with intellectual property offices/Institutions engaged in intellectual property management)x100. Previously this indicator was calculated: (Institutions with intellectual property offices/Respondents)x100.

Table 2-1
Expenditures on intellectual property management — 2006

	Expenditures
	thousands of dollars
Total operational expenditures for intellectual property management	42,492
Salaries and benefits corresponding to full-time equivalents	23,899
Patent and regular legal expenditures ¹	12,434
Litigation expenditures ²	575
Other operational expenditures	5,585
	number
Full-time equivalent employees engaged in intellectual property management	323

1. Patent and regular legal expenditures include those for patent filings, patent searches, registration of copyright, etc.

2. Litigation expenditures are those related to disputes over patents or other intellectual property and include settlements.

Note(s): Based on response from 68 institutions with intellectual property offices, engaged in intellectual property management. Full-time equivalent is an estimate of the number of person-years.

Table 2-2
Expenditures on intellectual property management — 2005

	Expenditures
	thousands of dollars
Total operational expenditures for intellectual property management	41,544
Salaries and benefits corresponding to full-time equivalents	21,266
Patent and regular legal expenditures ¹	14,339
Litigation expenditures ²	454
Other operational expenditures	5,485
	number
Full-time equivalent employees engaged in intellectual property management	292

1. Patent and regular legal expenditures include those for patent filings, patent searches, registration of copyright, etc.

2. Litigation expenditures are those related to disputes over patents/other intellectual property and include settlements.

Note(s): Based on response from 76 institutions with intellectual property offices, engaged in intellectual property management. Full-time equivalent is an estimate of the number of person-years.

Table 3-1
Source of operational expenditures for intellectual property management — 2006

	Canada	Atlantic	Quebec	Ontario	Prairies	British Columbia
	percent					
Institutional base funding	49	27	64	42	82	38
Institutional one-time allocations	8	7	12	9	3	6
Intellectual property commercialization revenues	17	2	10	25	8	32
External sources	26	65	14	24	8	24

Note(s): Based on response of 68 institutions with intellectual property offices, engaged in intellectual property management. Components may not add to total due to rounding.

Table 3-2
Source of operational expenditures for intellectual property management — 2005

	Canada	Atlantic	Quebec	Ontario	Prairies	British Columbia
	percent					
Institutional base funding	45	34	64	46	50	22
Institutional one-time allocations	9	5	14	9	7	5
Intellectual property commercialization revenues	20	8	12	24	29	29
External sources	26	53	11	21	14	44

Note(s): Based on response of 76 institutions with intellectual property offices, engaged in intellectual property management. Components may not add to total due to rounding.

Table 4-1
Years of experience of technology transfer personnel — 2006

	Personnel	
	number	percent
Total	333	100
Less than 2 years	86	26
3 to 4 years	64	19
5 to 9 years	102	31
10 to 14 years	32	10
15 to 19 years	20	6
over 20 years	20	6
Not stated	9	3

Note(s): Based on response from 68 institutions with intellectual property offices, engaged in intellectual property management.

Table 4-2
Years of experience of technology transfer personnel — 2005

	Personnel	
	number	percent
Total	310	100
Less than 2 years	68	22
3 to 4 years	71	23
5 to 9 years	77	25
10 to 14 years	33	11
15 to 19 years	20	6
over 20 years	21	7
Not stated	20	6

Note(s): Based on response from 76 institutions with intellectual property offices, engaged in intellectual property management.

Table 5-1
Highest educational attainment of technology transfer personnel — 2006

	Personnel
	number
Total technology transfer personnel	333
Bachelor's degree	87
Master's degree	132
Doctorate	77
Other	37

Note(s): Based on response from 68 institutions with intellectual property offices, engaged in intellectual property management.

Table 5-2
Highest educational attainment of technology transfer personnel — 2005

	Personnel
	number
Total technology transfer personnel	310
Bachelor's degree	79
Master's degree	121
Doctorate	68
Other	42

Note(s): Based on response from 76 institutions with intellectual property offices, engaged in intellectual property management.

Table 6-1
Legal services used for intellectual property matters by institutions with central offices engaged in intellectual property management — 2006

	Responding institutions
	number
Total institutions with intellectual property offices engaged in intellectual property management	68
In-house legal counsel	31
Outside legal counsel	47
In-house patent agent	4
Outside patent agent	39
Not stated	6

Note(s): Based on response of 68 institutions with intellectual property offices, engaged in intellectual property management. Institutions: Educational institutions.

Table 6-2
Legal services used for intellectual property matters by institutions with central offices engaged in intellectual property management — 2005

	Responding institutions
	number
Total institutions with intellectual property offices engaged in intellectual property management	76
In-house legal counsel	34
Outside legal counsel	56
In-house patent agent	3
Outside patent agent	48
Not stated	7

Note(s): Based on response of 76 institutions with intellectual property offices, engaged in intellectual property management. Institutions: Educational institutions.

Table 7-1
Policy requirements for researcher to report intellectual property created at the institution — 2006

	Always	Sometimes	Never	No reporting policy	No such intellectual property
	percent				
Inventions	55	11	5	19	10
Intellectual property protected by copyright					
Software or databases	35	25	9	21	10
Educational materials	25	24	19	24	9
Other materials	27	22	12	23	15
Industrial designs	30	13	11	21	25
Trademarks or official marks	32	14	9	22	24
New plant varieties	24	11	7	19	40

Note(s): Based on the questionnaires received representing 117 responding institutions. Values do not include research contracts. Due to rounding, components may not add to the total.

Table 7-2
Policy requirements for researcher to report intellectual property created at the institution — 2005

	Always	Sometimes	Never	No reporting policy	No such intellectual property
	percent				
Inventions	42	17	7	28	6
Intellectual property protected by copyright					
Software or databases	29	25	8	32	5
Educational materials	23	26	15	33	3
Other materials	22	25	13	36	4
Industrial designs	25	16	9	35	14
Trademarks or official marks	26	16	9	36	13
New plant varieties	16	15	8	31	31

Note(s): Based on the questionnaires received representing 118 responding institutions. Values do not include research contracts. Due to rounding, components may not add to the total.

Table 8-1
Ownership policy of intellectual property created at the institution — 2006

	Institution owns	Researcher owns	Joint ownership	No policy on ownership	Other ownership policy	No such intellectual property
	percent					
Inventions	17	34	23	15	2	9
Intellectual property protected by copyright						
Software or databases	14	39	19	12	4	12
Educational materials	14	52	12	9	4	10
Other materials	11	38	10	14	3	24
Industrial designs	13	30	13	25	3	16
Trademarks or official marks	21	28	9	25	2	15
New plant varieties	6	26	12	28	1	28

Note(s): Based on the questionnaires received representing 117 responding institutions.

Table 8-2
Ownership policy of intellectual property created at the institution — 2005

	Institution owns	Researcher owns	Joint ownership	No policy on ownership	Other ownership policy	No such intellectual property
	percent					
Inventions	19	34	20	19	2	7
Intellectual property protected by copyright						
Software or databases	15	36	19	19	6	6
Educational materials	12	50	14	18	4	3
Other materials	11	44	11	26	3	4
Industrial designs	14	31	14	26	1	14
Trademarks or official marks	21	27	12	25	3	13
New plant varieties	8	28	7	25	2	31

Note(s): Based on the questionnaires received representing 118 responding institutions.

Table 9-1
Research contracts by sponsor — 2006

	Contracts	
	number	thousands of dollars
Total	13,996	1,154,268
Federal government	1,705	148,157
Provincial and other levels of government	2,442	184,839
Other Canadian sources (business enterprises or organizations)	5,975	286,667
Foreign sources (government, business enterprises or organizations)	2,092	198,507
Other	1,782	336,097

Note(s): Research contracts do not include research grants (e.g. SSHRC, NSERC, CIHR) and multi-year contracts have been prorated for the reference year.
 Based on the questionnaires received representing 117 responding institutions.

Table 9-2
Research contracts by sponsor — 2005

	Contracts	
	number	thousands of dollars
Total	15,877	1,001,270
Federal government	2,340	180,804
Provincial and other levels of government	2,881	201,822
Other Canadian sources (business enterprises or organizations)	5,922	263,150
Foreign sources (government, business enterprises or organizations)	1,651	241,735
Other	3,083	113,759

Note(s): Research contracts do not include research grants (e.g. SSHRC, NSERC, CIHR) and multi-year contracts have been prorated for the reference year.
 Based on the questionnaires received representing 118 responding institutions.

Table 10-1
Research contracts by type of research — 2006

	Contracts
	thousands of dollars
Total value of research contracts	1,154,268
Clinical trials	270,393
Service contracts	22,760
Collaborative research and development	95,175
Sponsored research contracts	193,444
Other	572,496
Unclassified	0

Note(s): Based on the questionnaires received representing 117 responding institutions. Unclassified: Respondents provided totals but were unable to breakdown components as requested.

Table 10-2
Research contracts by type of research — 2005

	Contracts
	thousands of dollars
Total value of research contracts	1,001,270
Clinical trials	327,031
Service contracts	20,811
Collaborative research and development	93,332
Sponsored research contracts	243,923
Other	50,152
Unclassified	266,021

Note(s): Based on the questionnaires received representing 118 responding institutions. Unclassified: Respondents provided totals but were unable to breakdown components as requested.

Table 11-1
Research contracts by type of intellectual property provision of research contracts — 2006

	Contracts
	thousands of dollars
Total response	861,115
The sponsor owns the intellectual property	43,906
The sponsor has a license to the intellectual property	51,424
The sponsor has an option to acquire a license to the intellectual property under commercially reasonable terms	42,526
The intellectual property is unrestricted	25,941
Other/Unknown	697,318

Note(s): Based on the questionnaires received representing 117 responding institutions. These values do not include research grants (e.g. SSHRC, NSERC, CIHR), clinical trial and service contracts.

Table 11-2
Research contracts by type of intellectual property provision of research contracts — 2005

	Contracts
	thousands of dollars
Total response	337,276
The sponsor owns the intellectual property	33,952
The sponsor has a license to the intellectual property	18,943
The sponsor has an option to acquire a license to the intellectual property under commercially reasonable terms	153,566
The intellectual property is unrestricted	29,081
Other/Unknown	101,734

Note(s): These values do not include research grants (e.g. SSHRC, NSERC, CIHR), clinical trial and service contracts. Based on the questionnaires received representing 118 responding institutions.

Table 12-1
Types of intellectual property protection engaged in from 2002 to 2006

	Responding institutions
	number
Filing of patent applications	64
Registration of copyright	30
Registration for industrial designs, trademarks, official marks or integrated circuit topographies	31
Filing of applications for plant breeders' rights	9
Executing non-disclosure or confidentiality agreements	69
Administration of material transferred agreements inbound	42
Administration of material transferred agreements outbound	46
Other	8

Note(s): Based on the questionnaires received representing 117 responding institutions. Institutions: Educational institutions.

Table 12-2
Types of intellectual property protection engaged in from 2001 to 2005

	Responding institutions
	number
Filing of patent applications	61
Registration of copyright	39
Registration for industrial designs, trademarks, official marks or integrated circuit topographies	40
Filing of applications for plant breeders' rights	9
Executing non-disclosure or confidentiality agreements	69
Administration of material transferred agreements inbound	48
Administration of material transferred agreements outbound	49
Other	3

Note(s): Based on the questionnaires received representing 118 responding institutions. Institutions: Educational institutions.

Table 13-1
Intellectual property resulting in protection activity and new intellectual property disclosed during 2006

	Intellectual property protected	New intellectual property
	number	
Inventions	707	1,356
Intellectual property protected by copyright	38	547
Industrial designs, trademarks, official marks and new plant varieties	76	182
Other	x	115

Note(s): Based on the questionnaires received representing 117 responding institutions.

Table 13-2
Intellectual property resulting in protection activity and new intellectual property disclosed during 2005

	Intellectual property protected	New intellectual property
	number	
Inventions	761	1,452
Intellectual property protected by copyright	253	796
Industrial designs, trademarks, official marks and new plant varieties	45	227
Other	2	x

Note(s): Based on the questionnaires received representing 118 responding institutions.

Table 14-1
Patents status by field of study — 2006

	Patent applications			Total
	Initiating	Follow-on	Unclassified	
	number			
Total	719	715	8	1,442
Agriculture and biological sciences	49	102	0	151
Engineering and applied sciences	144	139	6	289
Health professions and sciences	203	179	0	382
Mathematics and physical sciences	55	46	2	103
Unclassified	268	249	0	517

Note(s): Based on the questionnaires received representing 117 responding institutions. Unclassified: Respondents provided totals but were unable to breakdown components as requested. For international patent applications the parent Patent Cooperation Treaty (PCT) is counted as one application and each entry into national phase as one application.

Table 14-2
Patents status by field of study — 2005

	Patent applications			Total
	Initiating	Follow-on	Unclassified	
	number			
Total	495	832	83	1,410
Agriculture and biological sciences	50	148	..	198
Engineering and applied sciences	98	107	..	205
Health professions and sciences	143	199	..	342
Mathematics and physical sciences	36	93	..	129
Unclassified	168	285	83	536

Note(s): Based on the questionnaires received representing 118 responding institutions. Unclassified: Respondents provided totals but were unable to breakdown components as requested. For international patent applications the parent Patent Cooperation Treaty (PCT) is counted as one application and each entry into national phase as one application.

Table 15-1
Patents status issued by field of study and country — 2006

	Canada	United States	Other	Unclassified	Total
		number			
Total	42	133	164	..	339
Agriculture and biological sciences	2	12	36	..	50
Engineering and applied sciences	14	34	18	..	66
Health professions and sciences	6	35	38	..	79
Mathematics and physical sciences	2	11	1	..	14
Unclassified	18	41	71	..	130

Note(s): Based on the questionnaires received representing 117 responding institutions. Unclassified: Respondents provided totals but were unable to breakdown components as requested. For international patent applications the parent Patent Cooperation Treaty (PCT) is counted as one application and each entry into national phase as one application.

Table 15-2
Patents status issued by field of study and country — 2005

	Canada	United States	Other	Unclassified	Total
		number			
Total	26	157	160	33	376
Agriculture and biological sciences	6	20	42	..	68
Engineering and applied sciences	3	20	5	..	28
Health professions and sciences	5	26	30	..	61
Mathematics and physical sciences	2	17	9	..	28
Unclassified	10	74	74	33	191

Note(s): Based on the questionnaires received representing 118 responding institutions. Unclassified: Respondents provided totals but were unable to breakdown components as requested. For international patent applications the parent Patent Cooperation Treaty (PCT) is counted as one application and each entry into national phase as one application.

Table 16-1
Patents held and commercialized — 2006

	Canada	United States	Other countries	Unclassified	Total
	number				
Total Patents held at the end of 2006, including patents issued that year	594	2,061	2,129	0	4,784
For institutions that licensed, assigned or commercialized at least one patent this year:					
Total patents held, including patents issued at the end of 2006	465	1,360	1,281	0	3,106
Number of patents licensed, assigned or otherwise commercialized at the end of 2006	247	548	857	48	1,700

Note(s): Based on the questionnaires received representing 117 responding institutions. Unclassified: Respondents provided totals but were unable to breakdown components as requested.

Table 16-2
Patents held and commercialized — 2005

	Canada	United States	Other countries	Unclassified	Total
	number				
Total Patents held at the end of 2005, including patents issued that year	393	1,542	1,685	341	3,961
For institutions that licensed, assigned or commercialized at least one patent this year:					
Total patents held, including patents issued at the end of 2005	319	1,166	x	x	2,703
Number of patents licensed, assigned or otherwise commercialized at the end of 2005	130	412	652	115	1,309

Note(s): Based on the questionnaires received representing 118 responding institutions. Unclassified: Respondents provided totals but were unable to breakdown components as requested.

Table 17-1
Licenses and options — 2006

	Exclusive and sole licenses	Non-exclusive licenses	Unclassified	Total
	number			
Total new licenses	219	214	4	437
Total new licenses executed with Canadian licensees	169	58	3	230
Total new licenses executed with foreign licensees	50	156	1	207
Unclassified new licenses	..	..	..	..
Total active licenses	897	987	154	2,038
Total active licenses with Canadian licensees	665	204	17	886
Total active licenses with foreign licensees	232	783	11	1,026
Unclassified active licenses	..	..	126	126

Note(s): Based on the questionnaires received representing 117 responding institutions. Unclassified: Respondents provided totals but were unable to breakdown components as requested. Counts include stand-alone licenses and options only and excludes those embedded in research contracts and non-commercial (royalty free) licenses.

Table 17-2
Licenses and options — 2005

	Exclusive and sole licenses	Non-exclusive licenses	Unclassified	Total
	number			
Total new licenses	185	360	76	621
Total new licenses executed with Canadian licensees	137	77	..	214
Total new licenses executed with foreign licensees	48	283	..	331
Unclassified new licenses	..	..	76	76
Total active licenses	994	713	1,129	2,836
Total active licenses with Canadian licensees	732	178	47	957
Total active licenses with foreign licensees	262	535	4	801
Unclassified active licenses	..	..	1,078	1,078

Note(s): Based on the questionnaires received representing 118 responding institutions. Unclassified: Respondents provided totals but were unable to breakdown components as requested. Counts include stand-alone licenses and options only and excludes those embedded in research contracts and non-commercial (royalty free) licenses.

Table 18-1
Income received from intellectual property — 2006

	Canadian sources	Foreign sources	Unclassified	Total
	thousands of dollars			
Total	8,560	25,627	25,501	59,689
Running royalties	3,913	19,679	17,617	41,209
Milestone payments	810	x	x	2,955
From one time sales of intellectual property	1,001	x	x	4,483
Reimbursement of patent, legal and related costs	1,518	621	3,216	5,355
License income received from another Canadian institution under a revenue-sharing agreement	392	x	x	461
Other	926	401	3,898	5,225

Note(s): Based on the questionnaires received representing 117 responding institutions. Unclassified is the category used when respondents provided totals but were unable to breakdown components as requested.

Table 18-2
Income received from intellectual property — 2005

	Canadian sources	Foreign sources	Unclassified	Total
	thousands of dollars			
Total	10,362	23,204	21,607	55,173
Running royalties	6,533	19,424	17,721	43,678
Milestone payments	513	x	x	1,404
From one time sales of intellectual property	519	x	x	2,728
Reimbursement of patent, legal and related costs	2,138	886	2,791	5,815
License income received from another Canadian institution under a revenue-sharing agreement	377	x	x	519
Other	282	330	417	1,029

Note(s): Based on the questionnaires received representing 118 responding institutions. Unclassified is the category used when respondents provided totals but were unable to breakdown components as requested.

Table 19-1
Distribution of income from intellectual property — 2006

	Income	
	thousands of dollars	percent
Total	53,944	100
To individuals (inventors and co-inventors)	20,466	38
To this institution or to administrative units therein	24,039	45
To other institutions	3,093	6
Other/Unknown	6,346	12

Note(s): Based on the questionnaires received representing 117 responding institutions. Components may not add to total due to rounding.

Table 19-2
Distribution of income from intellectual property — 2005

	Income	
	thousands of dollars	percent
Total	51,046	100
To individuals (inventors and co-inventors)	20,705	41
To this institution or to administrative units therein	23,814	47
To other institutions	2,585	5
Other/Unknown	3,942	8

Note(s): Based on the questionnaires received representing 118 responding institutions. Components may not add to total due to rounding.

Table 20-1
Spin-off companies, purpose and link to institution — 2006

	Spin-off companies	
	number	percent
Total	1,103	100
License ¹	431	39
Research and development ²	128	12
Service ³	38	3
License and research and development	50	5
Other	33	3
Not stated	423	38

1. Obtain a license to utilize the institution's technology.

2. Fund research at the institution in order to develop technology that will be licensed by the company.

3. Provided a service that was originally offered through a department or unit of the institution.

Note(s): Based on the questionnaires received representing 117 responding institutions. Components may not add to total due to rounding.

Table 20-2
Spin-off companies, purpose and link to institution — 2005

Spin-off companies		
	number	percent
Total	1,027	100
License ¹	405	39
Research and development ²	122	12
Service ³	33	3
License and research and development	46	4
Other	33	3
Not stated	388	38

1. Obtain a license to utilize the institution's technology.

2. Fund research at the institution in order to develop technology that will be licensed by the company.

3. Provided a service that was originally offered through a department or unit of the institution.

Note(s): Based on the questionnaires received representing 118 responding institutions. Components may not add to total due to rounding.

Table 21-1
Year of incorporation of spin-off companies — 2006

Spin-off companies		
	number	percent
Total	1,103	100
Before 1980	44	4
1980 to 1984	63	6
1985 to 1989	90	8
1990 to 1994	181	17
1995 to 1999	358	32
2000 to 2004	289	26
2005	29	3
2006	14	1
Not stated	35	3

Note(s): Based on the questionnaires received representing 117 responding institutions. Components may not add to total due to rounding.

Table 21-2
Year of incorporation of spin-off companies — 2005

Spin-off companies		
	number	percent
Total	1,027	100
Before 1980	44	4
1980 to 1984	63	6
1985 to 1989	89	9
1990 to 1994	177	17
1995 to 1999	345	34
2000 to 2004	269	26
2005	16	2
Not stated	24	2

Note(s): Based on the questionnaires received representing 118 responding institutions. Components may not add to total due to rounding.

Table 22-1
Technology field or sector of spin-off companies — 2006

	Spin-off companies	
	number	percent
Total	1,103	100
Agriculture or biology	132	12
Health sciences	380	34
Engineering or applied sciences	194	18
Information	184	17
Mathematics or physical sciences	99	9
Business or management	12	1
Other	96	9
Not stated	6	1

Note(s): Based on the questionnaires received representing 117 responding institutions. Components may not add to total due to rounding.

Table 22-2
Technology field or sector of spin-off companies — 2005

	Spin-off companies	
	number	percent
Total	1,027	100
Agriculture or biology	115	11
Health sciences	369	36
Engineering or applied sciences	180	18
Information	181	18
Mathematics or physical sciences	98	10
Business or management	12	1
Other	66	6
Not stated	6	1

Note(s): Based on the questionnaires received representing 118 responding institutions. Components may not add to total due to rounding.

Table 23-1
Dividends, equity disposition, remaining equity and venture capital investment of spin-off companies — 2006

	Spin-off companies
	thousands of dollars
Cash dividends received by institutions	98
Equity holdings, options and warrants disposed of by institutions	4,824
Remaining equity held by the institutions in publicly traded spin-offs	41,524
Investment in spin-offs raised with the assistance of the institution	x

Note(s): Based on the questionnaires received representing 117 responding institutions. Institutions: Educational institutions.

Table 23-2
Dividends, equity disposition, remaining equity and venture capital investment of spin-off companies — 2005

	Spin-off companies
	thousands of dollars
Cash dividends received by institutions	x
Equity holdings, options and warrants disposed of by institutions	1,235
Remaining equity held by the institutions in publicly traded spin-offs	41,336
Investment in spin-offs raised with the assistance of the institution	23,002

Note(s): Based on the questionnaires received representing 118 responding institutions. Institutions: Educational institutions.

Table 24-1
Regional differences in intellectual property commercialization, part 1 — 2006

	Sponsored research ¹	Income from intellectual property	Expenditures on intellectual property management	Research contracts	Responding institutions
	millions of dollars				number
Total Canada	5,449	60	42	1,154	117
Atlantic	286	1	3	90	18
Quebec	1,404	x	9	140	29
Ontario	2,229	15	14	433	36
Prairies	935	7	8	358	20
British Columbia	595	x	8	134	14
	percent				
Total Canada	100	100	100	100	100
Atlantic	5	2	7	8	15
Quebec	26	x	21	12	25
Ontario	41	25	33	37	31
Prairies	17	11	19	31	17
British Columbia	11	x	19	12	12

1. Values for sponsored research are taken from Report 3.1 on the Canadian Association of University Business Offices (CAUBO) data for the year ended 2006.
Note(s): Based on the questionnaires received representing 117 responding institutions. Institutions: Educational institutions. Atlantic: Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick. Prairies: Manitoba, Saskatchewan and Alberta. Components may not add to total due to rounding.

Table 24-2
Regional differences in intellectual property commercialization, part 1 — 2005

	Sponsored research ¹	Income from intellectual property	Expenditures on intellectual property management	Research contracts	Responding institutions
	millions of dollars				number
Total Canada	5,215	55	42	1,001	118
Atlantic	257	0 ^s	2	85	18
Quebec	1,381	x	11	162	29
Ontario	2,097	12	13	506	37
Prairies	973	9	6	131	20
British Columbia	507	x	9	118	14
	percent				
Total Canada	100	100	100	100	100
Atlantic	6	0	5	8	15
Quebec	18	x	26	16	25
Ontario	48	22	32	51	31
Prairies	26	16	15	13	17
British Columbia	2	x	22	12	12

1. Values for sponsored research are taken from Report 3.1 on the Canadian Association of University Business Offices (CAUBO) data for the year ended 2005.
Note(s): Based on the questionnaires received representing 118 responding institutions. Institutions: Educational institutions. Atlantic: Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick. Prairies: Manitoba, Saskatchewan and Alberta. Components may not add to total due to rounding.

Table 25-1
Regional differences in intellectual property commercialization, part 2 — 2006

	Inventions disclosed	Inventions protected	Patent applications filed	Inventions declined	New licenses and options	Total active licenses and options	Spin-off companies created to date	Responding institutions
	number							
Total Canada	1,356	707	1,442	353	437	2,038	1,103	117
Atlantic	49	21	59	31	7	23	77	18
Quebec	296	169	366	78	100	616	185	29
Ontario	525	226	518	102	221	716	405	36
Prairies	168	65	184	26	59	321	190	20
British Columbia	318	226	315	116	50	362	246	14
	percent							
Total Canada	100	100	100	100	100	100	100	100
Atlantic	4	3	4	9	2	1	7	15
Quebec	22	24	25	22	23	30	17	25
Ontario	39	32	36	29	51	35	37	31
Prairies	12	9	13	7	14	16	17	17
British Columbia	23	32	22	33	11	18	22	12

Note(s): Based on the questionnaires received representing 117 responding institutions. Institutions: Educational institutions. Atlantic: Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick. Prairies: Manitoba, Saskatchewan and Alberta. Components may not add to total due to rounding.

Table 25-2
Regional differences in intellectual property commercialization, part 2 — 2005

	Inventions disclosed	Inventions protected	Patent applications filed	Inventions declined	New licenses and options	Total active licenses and options	Spin-off companies created to date	Responding institutions
number								
Total Canada	1,452	761	1,410	322	621	2,836	1,027	118
Atlantic	42	22	26	24	5	40	73	18
Quebec	279	189	403	54	89	598	170	29
Ontario	577	243	426	129	386	1,275	372	37
Prairies	266	100	190	20	79	522	178	20
British Columbia	288	207	365	95	62	401	234	14
percent								
Total Canada	100	100	100	100	100	100	100	100
Atlantic	3	3	2	7	1	1	7	15
Quebec	19	25	29	17	14	21	17	25
Ontario	40	32	30	40	62	45	36	31
Prairies	18	13	13	6	13	18	17	17
British Columbia	20	27	26	30	10	14	23	12

Note(s): Based on the questionnaires received representing 118 responding institutions. Institutions: Educational institutions. Atlantic: Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick. Prairies: Manitoba, Saskatchewan and Alberta. Components may not add to total due to rounding.

Table 26-1
Spin-offs companies grouped by North American Industry Classification System (NAICS) — 2006

	Spin-off companies	
	number	percent
Total spin-offs	1,103	100
Service industries	649	59
Manufacturing industries	126	11
Other industries	9	1
Industry information not available	319	29

Note(s): Based on the questionnaires received representing 117 responding institutions. Components may not add to total due to rounding.

Table 26-2
Spin-offs companies grouped by North American Industry Classification System (NAICS) — 2005

	Spin-off companies	
	number	percent
Total spin-offs	1,027	100
Service industries	621	60
Manufacturing industries	117	11
Other industries	9	1
Industry information not available	280	27

Note(s): Based on the questionnaires received representing 118 responding institutions. Components may not add to total due to rounding.

Data sources and methodology

The universe is comprised of all members of the Association of Universities and Colleges of Canada (AUCC), as well as the university-affiliated research hospitals. The latter includes some members of the Association of Canadian Teaching Hospitals (ACTH) and some other hospitals reporting research and development activity in the Annual Hospital Survey.

This survey is a census with a cross-sectional design. Data are collected for all units of the target population; no sampling is done.

Surveys are subject to certain types of errors: coverage, non-response, interpretation and processing errors. The methodology of this survey has been designed to minimize errors and to reduce their potential impact.

It is impossible at this point to determine the non-response rates (weighted by size measures) and adjust for the non-response or other coverage issues. This release as in previous years will only cover the respondent population.

Both micro and macro-editing are performed. As questionnaires are returned the information is captured onto a screen containing the previous response. This forces a comparison of the previous and current responses. In addition, internal inconsistencies are noted and followed up by telephone.

Limited imputation or estimation of missing information is conducted for this survey. Due to the small number of institutions and the uniqueness of the institutions in the sample, imputation is completed manually. Imputation is closely tied to editing. Any missing information that can be estimated is imputed based on related answers. For larger institutions some of the information is available from public sources such as: university websites, the Association of University Technology Managers (AUTM) survey, the Canadian Association of University Business Offices (CAUBO), annual reports, press releases and conference presentations.

At the end of these procedures a certain amount of information is still missing. In one of the most common cases information is only provided in aggregate and not broken down into the categories requested. For these cases, an "unclassified" category was created. If no information is available, the field is left blank and no estimation is done.

Response rates for 2006:

- 135 questionnaires mailed out.
- 117 responding institutions (this includes combined reporters).

Further details on the methodology of the survey can be found at:

<http://www.statcan.ca/english/sdds/index.htm>