

# CANCER RESEARCH INVESTMENT IN CANADA, 2013

## HIGHLIGHTS

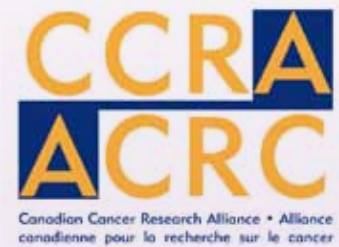
- A total of \$498.2M was invested in cancer research in 2013, higher than the first four years (2005 to 2007), but the lowest annual amount since 2008. Much of the decline from 2009 to 2013 was attributable to reduced investment in equipment/infrastructure from the Canada Foundation for Innovation and from provincial sources in Ontario.
- The investment in operating grants, however, continued its year-upon-year increase. As has been reported in previous publications, the trend towards greater investment in “focused” as opposed to “open” operating grant programs continued unabated. This trend was found for both national and regional research funders.
- From 2005 to 2013, more research dollars flowed to the treatment and early detection, diagnosis and prognosis areas. The investment in research focused on cancer biology steadily declined over the nine years.
- Investments for 17 of the 24 cancer sites tracked were highest during the last three years (2011 to 2013). Over \$5M more was invested in 2013 than 2005 for research relating to breast cancer, prostate cancer, brain cancer, leukemia, pancreatic cancer, lung cancer, and ovarian cancer.
- After eight straight years of increased funding, 2013 marked the first year that the cancer research investment fell for Canada’s largest cancer research funder—the Canadian Institutes of Health Research. Further monitoring is required in order to determine if this is a one-off change or the start of a longer-term trend.
- The data suggests that the number of cancer researchers has grown over the past nine years and that a core contingent of over 1,100 researchers has been steadily supported by the research funder community.

This summary report describes the nature of the investment in cancer research in Canada for 2013, building on previous work published by the CCRA. Data come from the Canadian Cancer Research Survey (CCRS). The CCRS was designed to help inform CCRA members on how to optimize their research investment by addressing gaps, capitalizing on opportunities to partner on funding, and reducing duplication. The CCRS was the first joint activity undertaken by the CCRA.

Funding information is captured from 42 organizations/programs. The CCRS captures most of the peer-reviewed research from the governmental and voluntary sectors. It does not, however, include institution-specific funding from hospital foundations, research supported by private foundations or industry R&D unless

part of funding partnerships of projects captured in the CCRS. It is estimated that the coverage by the CCRS represents 60–80% of the overall cancer research funding in Canada.

This report was made possible by the Canadian Partnership Against Cancer, an independent, not-for-profit organization funded to accelerate action on cancer control for all Canadians, through a financial contribution from Health Canada. The views expressed herein are those of the CCRA.



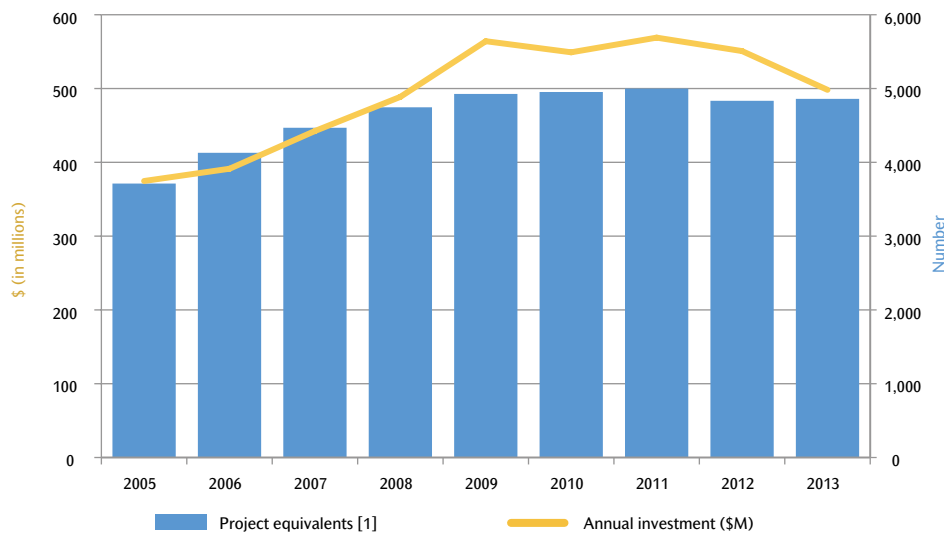
We are an alliance of organizations that collectively fund most of the cancer research conducted in Canada – research that will lead to better ways to prevent, diagnose, and treat cancer and improve survivor outcomes. Our members include federal research funding programs/agencies, provincial research agencies, provincial cancer care agencies, cancer charities, and other voluntary associations.

We are motivated by the belief that, through effective collaboration, Canadian cancer research funding organizations can maximize their collective impact on cancer control and accelerate discovery for the ultimate benefit of Canadians affected by cancer.

NOVEMBER 2015



**FIGURE 1**  
**CANCER RESEARCH INVESTMENT, 2005 TO 2013**

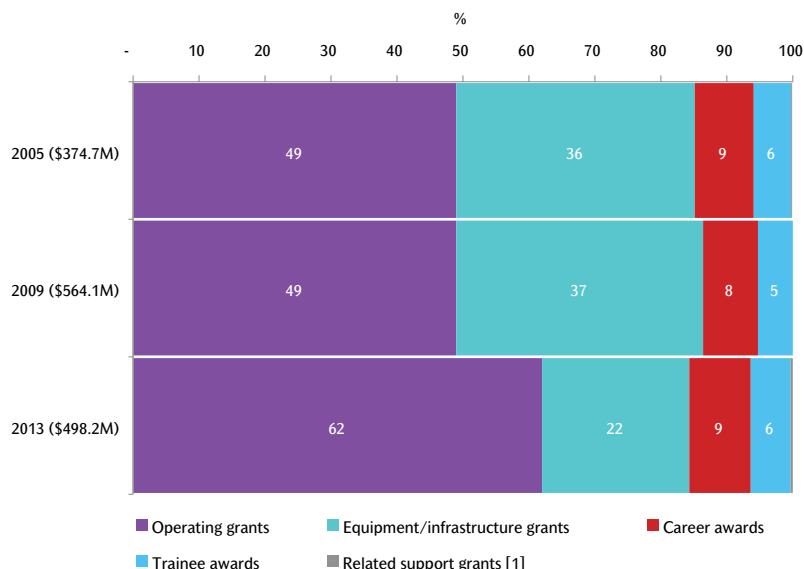


[1] Number of projects funded at some point in the calendar year and weighted by cancer relevance.

## DEFINITIONS OF FUNDING MECHANISMS

**Operating grants** support all the direct costs involved in conducting specific research projects including salaries for laboratory staff and research assistants, costs of supplies, samples, etc. The funding programs supporting these grants may be open (non-focused) or focused on specific cancer sites and/or research areas. **Equipment/infrastructure grants** cover the cost of new research facilities, equipment, software, databases, etc. needed for the research activities of one or more researchers. **Career awards**, also known as salary awards, provide protected time for research. **Trainee awards** support exceptional trainees during their undergraduate, graduate, or post-graduate training. **Related support grants** cover conference travel, workshops costs as well as researcher time for proposal development. For detailed definitions of funding mechanisms, please consult our 2005–2009 trends report.

**FIGURE 2**  
**DISTRIBUTION OF CANCER RESEARCH INVESTMENT BY FUNDING MECHANISM, 2005, 2009 AND 2013**



[1] Related support grants account for less than one percent of the funding so figures are not shown.

- Overall, \$498.2M was invested in cancer research in 2013 (Figure 1). A similar trend was found for the number of projects. Albeit higher than the first four years (2005 to 2008), the 2013 investment was the lowest in the 2009–2013 timeframe.
- In terms of funding mechanisms, investment in operating grants was relatively flat from 2011 to 2013. Investment in equipment/infrastructure, however, dropped by \$100M since 2009 largely due to decreased cancer-related equipment/infrastructure funding from Canada Foundation for Innovation (CFI) and a drop in infrastructure/platform support by the Ontario Institute for Cancer Research after its ramp up funding during the 2009–2012 period.
- Given the stalled investment level and the drop in equipment/infrastructure support over the last five years, operating grants formed a larger proportion of the overall investment in 2013 (Figure 2). Since 2010, the investment in focused operating grants has exceeded the investment in open (non-focused) operating grants. This pattern is found for national funding programs, largely due to increased investment in focused programs by Canadian Institutes of Health Research (CIHR), the Canadian Cancer Society, The Terry Fox Research Institute, and Prostate Cancer Canada as well as regional funding programs, largely due to increased investment in focused programs by the Ontario Institute for Cancer Research, the Canadian Breast Cancer Foundation, the Ontario Ministry of Research and Innovation, and Alberta Innovates – Health Solutions (Figure 3).
- With the exception of Saskatchewan and New Brunswick, per capita cancer research investment had an inverted U-shaped pattern, with the highest investment in 2009 when looking at three years—2005, 2009 (mid-point) and 2013 (Figure 4). The investment in Saskatchewan was highest in 2005; for New Brunswick, the highest investment was in 2013.
- The investment reductions in Ontario and Quebec were pronounced from 2009 to 2013. Ontario's reflects decreased provincial funding as well as reduced CFI funding. For Quebec, the reduction was largely due to less funding from the CIHR and CFI.

FIGURE 3

CANCER RESEARCH INVESTMENT IN OPERATING GRANTS BY PROGRAM REACH AND FOCUS, 2005 TO 2013

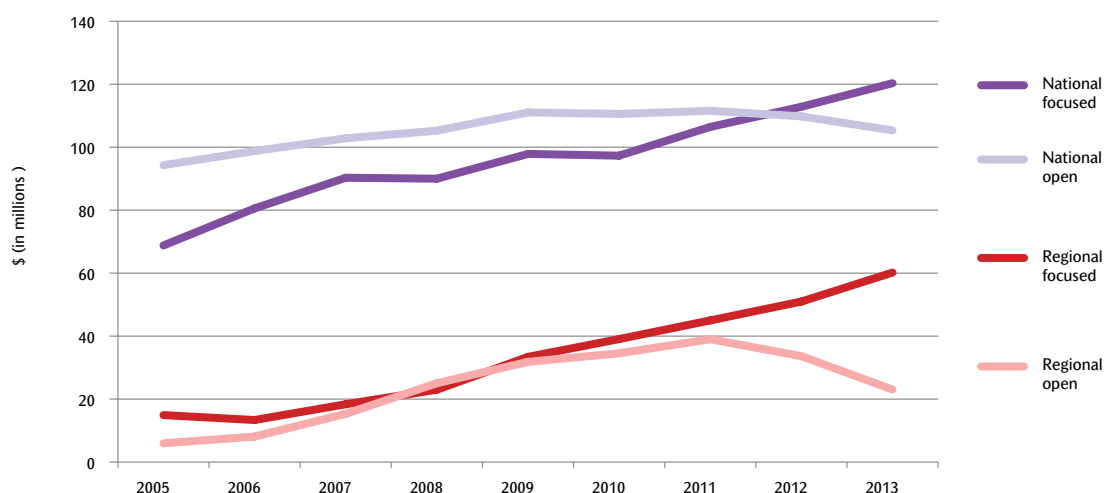
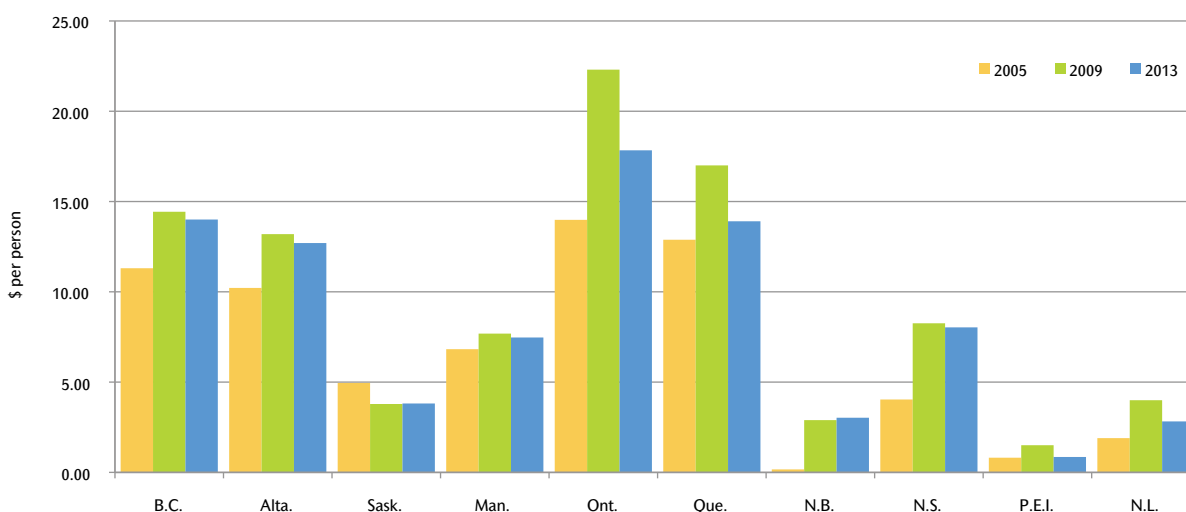


FIGURE 4

PER CAPITA CANCER RESEARCH INVESTMENT BY PROVINCE OF NOMINATED PRINCIPAL INVESTIGATOR, 2005, 2009 AND 2013 [1]



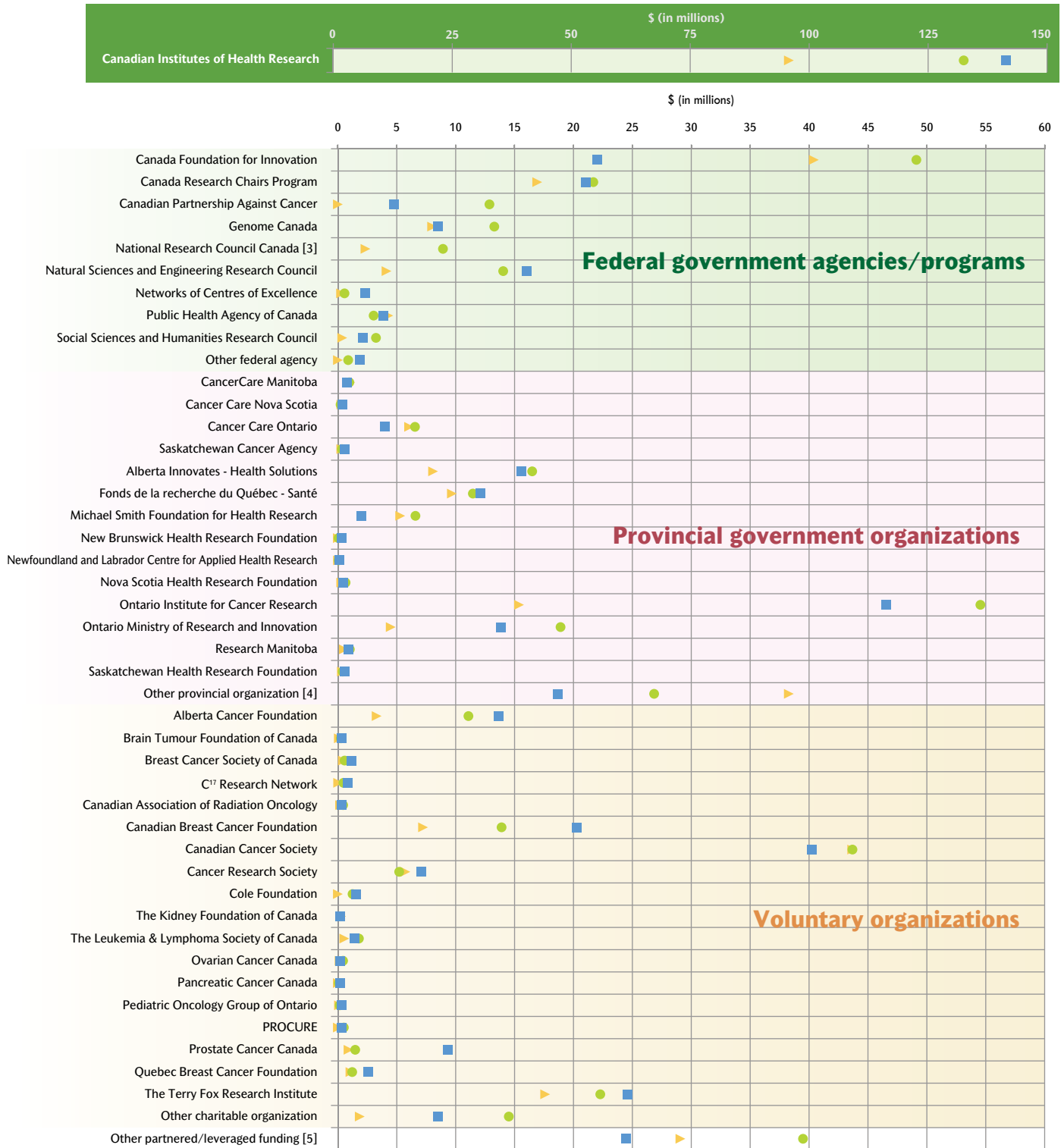
[1] Excludes trainee awards for trainees studying outside Canada.

- Figure 5 (next page) shows the investment for 2005, 2009, and 2013 for the 42 organizations tracked. Twenty-one of the 42 organizations tracked had higher investments in 2013 than in either 2009 or 2005. CIHR (shown at the top of the figure with a different range on the x-axis) accounted for the largest proportion of the overall investment (28%) in 2013 and its investment totalled \$141.4M. Whereas the CIHR investment rose year-upon-year from 2005 to 2012, 2013 was the first year where the investment was lower than the year before.
- There were material increases (increases of more than \$5M) in the investments from the baseline year of 2005 (yellow triangle) to 2013 (blue square) for nine organizations: CIHR (\$45.6M); Ontario Institute for Cancer Research (\$31.2M), Canadian Breast Cancer Foundation (\$13.0M), Natural Sciences and Engineering Research Council (\$11.9M), Alberta Cancer Foundation (\$10.3M), Ontario Ministry of Research and Innovation (\$9.4M), Quebec Breast Cancer Foundation (\$8.4M), Alberta Innovates - Health Solutions (\$7.5M), and The Terry Fox Research Institute (\$7.0M).
- In terms of the voluntary sector, the Canadian Cancer Society had the highest investment (\$40.3M) in 2013. Investments by the Canadian Breast Cancer Foundation, Prostate Cancer Canada, and the Alberta Cancer Foundation showed a steady upward trajectory and these organizations combined represented 32% of the voluntary sector investment in 2013 compared to 14% in 2005.

FIGURE 5

CANCER RESEARCH INVESTMENT BY PARTICIPATING ORGANIZATIONS/PROGRAMS, 2005, 2009 AND 2013 [1, 2]

▶ 2005  
● 2009  
■ 2013



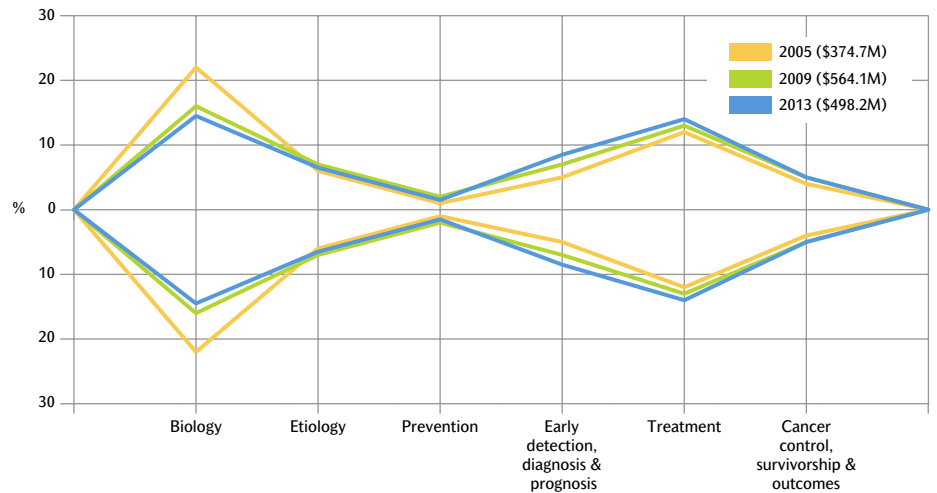
[1] Changes among funders with less than \$5M annually are difficult to see in this graph. Readers are referred to the supplementary data file available on the CCRA website.  
 [2] Data markers that overlap show the most recent year on top.  
 [3] Data were unavailable for 2013.  
 [4] Includes provincial support for CFI grants as well as other provincial funding.  
 [5] Co-funding of projects supported by CCRA participating organizations by institutional, industry, and foreign sources.

- Figure 6 shows the changing distribution of the investment in terms of the Common Scientific Outline (CSO), Vers. 2.

- The most notable shift is in the shrinking proportion of investment in Biology—a similar pattern was found when only operating grants were examined. All other areas had higher investments in 2013 than they did in 2005. Only for the Early Detection, Diagnosis and Prognosis category was the 2013 investment higher than in 2009.

- Figure 7 shows how the investments changed from 2005 to 2013 in terms of the CSO categories for the 10 organizations that collectively represented 70% of the total 2005–2013 investment. Differences of \$10M or more were found for CFI (reduced investment in Biology), CIHR (increased investment in Treatment and Biology), and Ontario Institute for Cancer Research (increased investment in the Etiology and the Early Detection, Diagnosis and Prognosis categories).

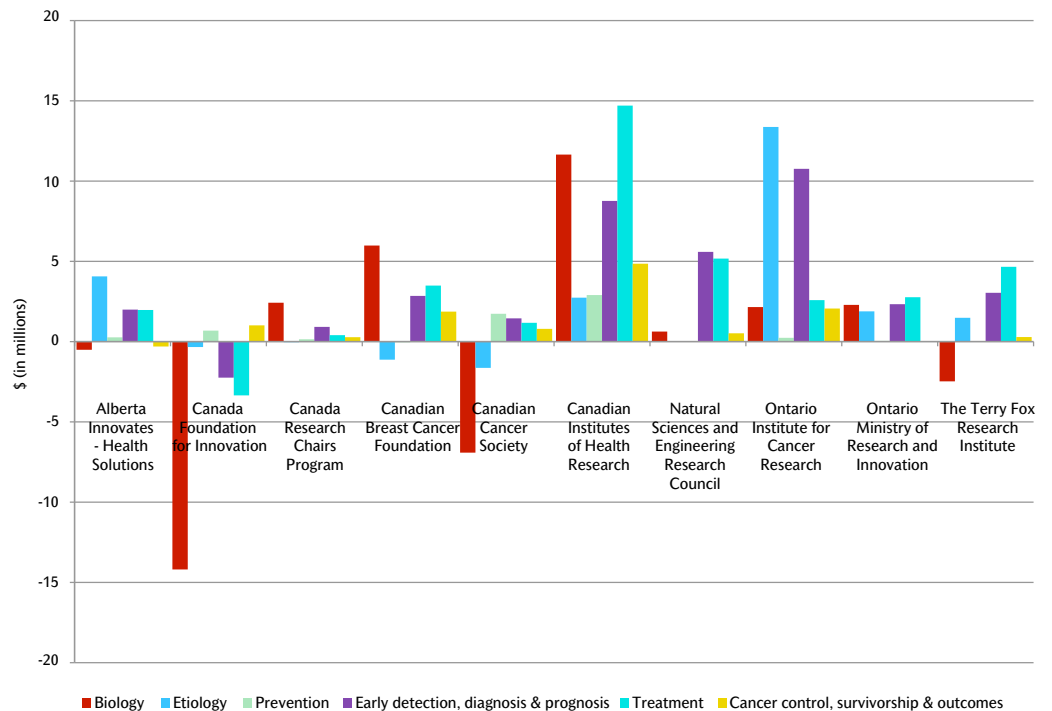
**FIGURE 6**  
**DISTRIBUTION OF CANCER RESEARCH INVESTMENT BY CSO V.2 CATEGORY, 2005, 2009 AND 2013 [1]**



Proportion of investment (%)	2005	44	12	2	11	24	7
	2009	32	15	3	13	27	10
2013	29	13	3	17	28	9	
Investment (\$M)	2005	164.6	43.1	8.8	39.5	91.3	27.4
	2009	182.6	83.2	17.7	75.4	151.6	53.6
	2013	146.6	65.8	15.4	85.6	139.0	45.8

[1] For further information about the Common Scientific Outline (CSO), V.2, please see <http://www.icrpartnership.org/CSO.cfm>.

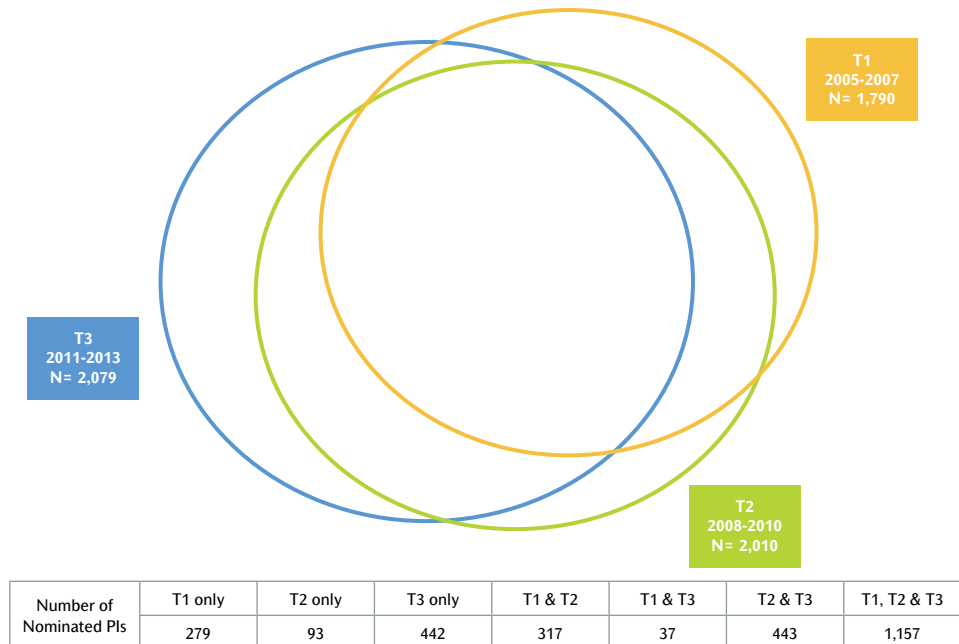
**FIGURE 7**  
**DIFFERENCE IN INVESTMENT BY CSOV2 CATEGORY FROM 2005 TO 2013 FOR TEN FUNDERS [1]**



[1] Collectively, these ten funders represented 70% of the cancer research investment for the 2005–2013 period. Funders are listed in alphabetical order.

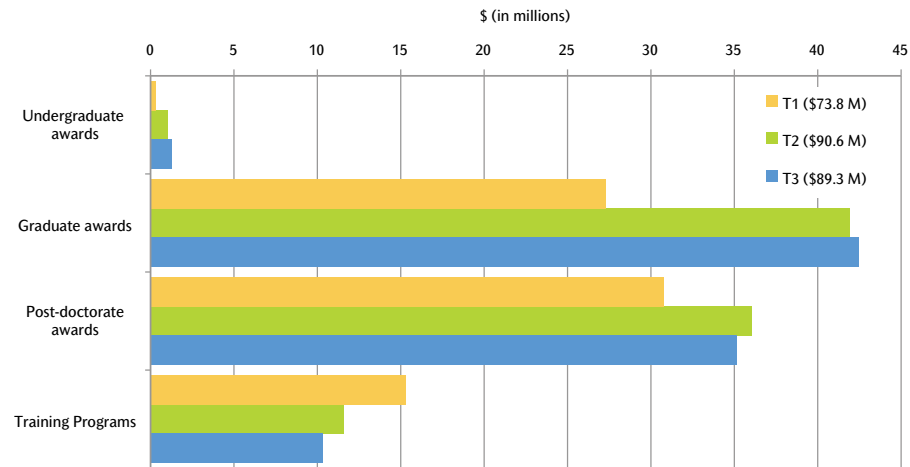
- There were 2,768 nominated principal investigators (PIs) supported at some time over the nine years. They were grouped in terms of their support over three triennia (Figure 8). These data show a core group of 1,157 researchers (42% of the total) who were funded during all three periods. The data also show that there were 442 PIs supported in T3, who had not previously been supported. This may suggest new entrants/expanded capacity in the cancer research field.
- Since 2008, the overall investment in trainee awards/programs did not change materially. When examined by the three triennia (Figure 9), however, the investment in training program grants (i.e., block grants given to centres in order to support trainees) decreased and there were higher investments in T2 and T3 for trainee level awards. The increased investment by CIHR in graduate awards was substantial—it climbed from \$9.9M in T1 to \$21.4M in T3. The Natural Sciences and Engineering Research Council and Canadian Breast Cancer Foundation also had higher graduate award investments in T2 and T3 than T1.

**FIGURE 8**  
**NUMBER OF NOMINATED PRINCIPAL INVESTIGATORS BY FUNDING PERIOD [1]**



[1] Represents 2,768 nominated principal investigators who had at least one operating grant, equipment award or career award in the 2005 to 2013 period with a cancer weight of 80% or higher. Investigators were grouped according to the triennia in which they received funding.

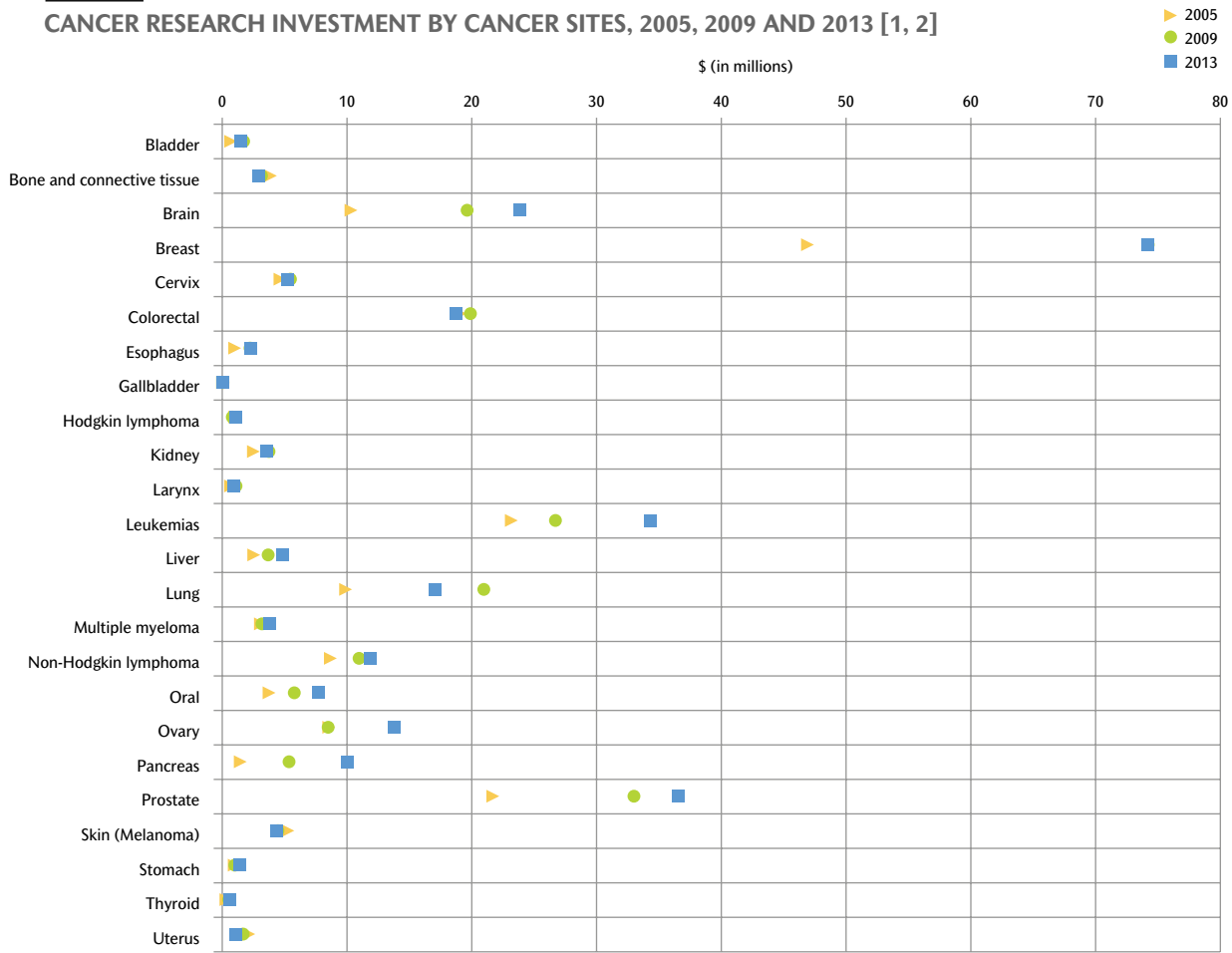
**FIGURE 9**  
**CANCER RESEARCH INVESTMENT IN TRAINEE AWARDS/PROGRAMS FOR THE THREE TRIENNA**



- Overall, site-specific cancer research investment represented 58% of the overall cancer research investment in 2013, the highest proportion in the nine years of data captured and a proportion that has increased as a result of the growth in focused operating grant funding previously described. Twenty of the 24 cancer sites tracked had higher investments in 2013 than in 2005 (Figure 10 next page) and, for 17 cancer sites, the highest investments over the nine years tracked occurred in T3. The investment in breast cancer research was fairly flat from 2009 on, although the breast cancer investment still represented the largest proportion of the overall site-specific investment (26% in 2013).
- There were material increases (increases of more than \$5M) from 2005 to 2013 for seven cancer sites: breast cancer (\$27.3M), prostate cancer (\$14.8M), brain cancer (\$13.5M), leukemia (\$11.6M), pancreatic cancer (\$8.6M), lung cancer (\$7.2M), and ovarian cancer (5.3M).
- For a number of cancers, there is a poor correlation between the relative cancer burden and the cancer research investment (Figure 11). Most notably, lung cancer, which accounts for 14% of new cases and 27% of cancer deaths, and colorectal cancer, which accounts for 12% of new cases and 12% of cancer deaths, represented 6% and 7% of the 2013 site-specific research investment, respectively.

**FIGURE 10**

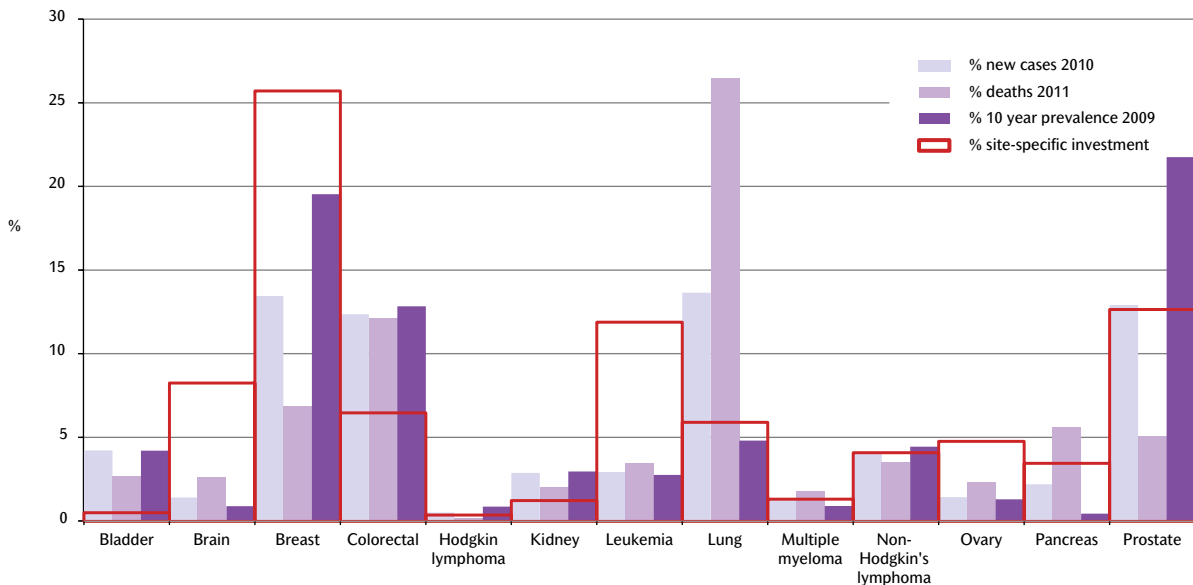
**CANCER RESEARCH INVESTMENT BY CANCER SITES, 2005, 2009 AND 2013 [1, 2]**



[1] Changes among cancer site funding where that funding is less than \$5M annually is difficult to see in this graph. Readers are referred to the supplementary data file available on the CCRA website.  
 [2] Data markers that overlap show the most recent year on top.

**FIGURE 11**

**DISTRIBUTION OF 2013 SITE-SPECIFIC CANCER RESEARCH INVESTMENT (\$288.7M) BY NEW CANCER CASES IN 2010, CANCER DEATHS IN 2011 AND 10-YEAR PREVALENCE, SELECTED CANCER SITES**



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Alberta Innovates – Health Solutions	The Leukemia & Lymphoma Society of Canada
Brain Tumour Foundation of Canada	Michael Smith Foundation for Health Research
Breast Cancer Society of Canada	National Research Council Canada
BC Cancer Agency	New Brunswick Cancer Network
C <sup>17</sup> Research Network	Nova Scotia Health Research Foundation
Canadian Association of Provincial Cancer Agencies	Ontario Institute for Cancer Research
Canadian Association of Radiation Oncology	Ovarian Cancer Canada
Canadian Breast Cancer Foundation	Pancreatic Cancer Canada
Canadian Cancer Society	PROCURE
Canadian Institutes of Health Research	Prostate Cancer Canada
Canadian Partnership Against Cancer	Public Health Agency of Canada
CancerCare Manitoba	Quebec Breast Cancer Foundation
Cancer Care Nova Scotia	Research Manitoba
Cancer Care Ontario	Saskatchewan Cancer Agency
Cancer Research Society	Saskatchewan Health Research Foundation
Fonds de recherche du Québec – Santé	The Terry Fox Research Institute
Genome Canada	

For details on the methodology used for this report, please consult our 2008–2012 trends report at <http://www.ccra-acrc.ca/index.php/publications-en>. A series of detailed tables and a slide deck based on the results of the 2013 analysis are also available at that link on our website. For additional copies of this publication, please contact us at [info@ccra-acrc.ca](mailto:info@ccra-acrc.ca).

## ACKNOWLEDGEMENTS

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