

PAN-CANADIAN CANCER RESEARCH STRATEGY, 2010-2014

FINAL REPORT



Canadian Cancer Research Alliance • Alliance
canadienne pour la recherche sur le cancer

CANADIAN PARTNERSHIP
AGAINST CANCER



PARTENARIAT CANADIEN
CONTRE LE CANCER

MARCH 2015

AT A GLANCE

Priority	Action Item	Action	Lead Agency(ies)	Participating Organization(s)	Status
Cancer Prevention	1	Develop a cancer prevention research plan	CCRA Executive Office, CCS, CPAC	ACF, AIHS, BCCA, BTFC, CBCF, CCAN, CCMB, CCNS, CCO, CIHR-ICR, CRS, MSHRF, OCC, OICR, PCC, PHAC, PROCURE, TFRI	Completed and Resulting in New Initiatives
	2	Complete the enrolment phase of the Canadian Partnership for Tomorrow Project and develop a plan for sustainability	CPAC	ACF, AIHS, BCCA, CCNS, CCO, GC, OICR	Completed with Continuing Activity
	3	Provide funding opportunities to support projects utilizing the cohort dataset	All CCRA members		Completed with Continuing Activity
Basic Discovery Research	4	Launch new ICGC sequencing project in prostate cancer	OICR, PCC		Completed with Continuing Activity
	5	Provide project funding for cancer genomic studies	CIHR, Genome Canada		Completed
	6	Promote the value of ICGC datasets to the Canadian cancer research community	OICR	GC	Completed with Continuing Activity
	7	Study cancer initiating cells with new technologies, reagents and tools	CSCC	CFI, CIHR, CIHR-ICR, GC, OICR	Completed with Continuing Activity
Research to Translate Discoveries into Benefits for Patients and High Risk Populations	8	Establish a funding mechanism for projects that move from target discovery to clinical application through new agent development	OICR, CDRD, NRC		Completed with Continuing Activity
	9	Monitor progress of TFRI/CPAC Pan-Canadian Cancer Biomarker Initiative	TFRI	CPAC	Completed with Continuing Activity
	10	Develop biomarkers and novel imaging technologies for early detection, treatment prediction and prognosis	CIHR-ICR, TFRI	ACF, CBCF, CCO, CCS, CRS, FRQS, GC, Genome BC, NCI, NSERC, OICR, PCC	Completed with Continuing Activity
	11	Report and make recommendations on cancer clinical trials in Canada	CCRA Executive Office, CPAC	ACF, AHS, BCCA, CBCF, CCMB, CCNS, CCO, CCS, CIHR-ICR, FRQS, MSFHR, OICR, PCC, SCA	Completed and Resulting in New Initiatives
Research to Meet the Needs of Cancer Survivors and to Enhance Cancer Health Services Delivery	12	Develop research on late effects of treatment	CIHR-ICR	C ¹⁷ Research Network, CCS, CRS, OICR, POGO	Completed
	13	Highlight strengths and identify gaps in survivorship research in Canada	CCRA Executive Office	All CCRA members	Completed
	14	Increase support for health economics research to study cost/benefit of new interventions for treatment, prevention and early detection	CCO, CCS, OICR	CPAC	Completed
Tumour Specific Partnered Initiatives	15	Monitor adoption of the National Breast Cancer Research Framework	CBCRC	CBCF, CCS, CIHR-ICR, QBCF	Completed with Continuing Activity
Enabling Activities and Resources	16	Establish national standards for biobanking for cancer research	CIHR-ICR as funder of CTRNet	AHS, BCCA, CBCF, CCMB, CCS, FRQS, OICR	Completed
	17	Enhance banking of cancer initiating cells	CSCC	CIHR, GC, OICR as part of CSCC, CTRNet, PCC	Discontinued
	18	Improve access to cancer-relevant administrative datasets	CAPCA	AHS, BCCA, CCO, CCNS, CCS, CPAC, DQC	Completed
	19	Convene national cancer research conference, combining the annual meetings of several cancer research funding agencies	CCRA Executive Office, CIHR-ICR, OICR, TFRI	All CCRA Members	Completed with Continuing Activity
Creating an Optimal Cancer Research System	20	Continue to release Annual Cancer Research Investment Report	CCRA Executive Office	All CCRA Members	Completed with Continuing Activity
	21	Provide an analysis of Canada's research human resources	CCRA Executive Office	All CCRA Members	Completed
	22	Encourage appropriate academic recognition for individual researchers in large multidisciplinary teams	CCRA Executive Office	All CCRA Members	Completed
	23	Establish a task force to discuss opportunities for collaboration in peer review	CCRA Executive Office		Discontinued
Evaluating and Monitoring Strategy	24	Monitor progress of the strategy and prepare an annual report to the CCRA	CCRA Executive Office		Completed

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For additional copies of this publication, please contact:

Canadian Cancer Research Alliance (CCRA)
1 University Avenue, Suite 300
Toronto, Ontario M5J 2P1 CANADA
Tel.: (416) 915-9222, ext. 5752
Fax: (416) 915-9224
Email: info@ccra-acrc.ca

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ICON MAP



Conference/Workshop



Continued activity



Funding partnership



Monitoring



New initiative



Platform



Report



Training

FOREWARD BY DR. HEATHER BRYANT, VICE PRESIDENT, CANCER CONTROL, CPAC

This document, reporting on the completion of the first strategic plan of the Canadian Cancer Research Alliance (CCRA), summarizes the successes that were realized over the course of the past several years. It also clearly demonstrates the continued willingness of leaders and funders in the Canadian cancer research community to work together to maximize impact. The strategy was product of collaborative work of many groups and individuals, with the hope that it would guide cancer research investment, and accelerate discovery so that the goal of reducing incidence and mortality from cancer, and improving the quality of life of those affected by cancer, is realized as quickly as possible.



The many successes achieved in delivering on the first strategic plan are a testament to its value, but beyond that, they have helped to establish a new way of working together in cancer research. Collaboration is the ‘new normal’; to the benefit of all of our stakeholders. The Alliance has grown in membership (from 23 members when the strategy was developed to 35 members today), and has also increased the impact of research through a number of collective activities.

A key example of this is the establishment of the Canadian Cancer Research Conference, first held in 2011, providing the opportunity for knowledge exchange and connection to be made across the country, and among new and established researchers. This has become a biennial event, with a second successful conference in 2013 and plans well underway for one later this year. This conference was identified as a strategic priority in the plan, was nurtured and supported by many CCRA members, and was and is ably led by the CCRA staff in the Canadian Partnership Against Cancer (CPAC) offices.

The Canadian Partnership for Tomorrow Project (CPTP), a national cohort study that was recommended as a priority by CCRA, has also shown great energy and collaboration, successfully reaching its goal of enrolling over 300,000 Canadians aged 35 to 69, and following them over time. Many organizations have contributed to this success, and CPAC has been pleased to host the National Coordinating Centre in this building phase. In 2015, we expect to be opening CPTP, an unprecedented resource, to other researchers so that this concept of a ‘population laboratory’ becomes a reality.

The groundwork established through the strategy resulted in new initiatives such as the Canadian Cancer Clinical Trials Network. With seed funding provided by CPAC, this has developed into a multimillion dollar initiative involving at least 12 funding organizations including CPAC and participating centres in eight provinces. This promises to bring cancer clinical trials to many more eligible patients in Canada over the next few years, and broaden our understanding of key clinical research questions.

The Pan-Canadian Cancer Research Strategy, while ambitious, was grounded in the common desire to ensure that research done in Canada is optimized so that it can have more impact more quickly. It is gratifying to see this ambitious undertaking come to a successful completion and lay the foundation for continued collaborative action by the CCRA members.

INTRODUCTION BY THE CCRA CO-CHAIRS



*Elizabeth Eisenhauer,
MD, FRCPC, Expert Lead,
CCRA and Partnerships for
the Canadian Partnership
Against Cancer, Head,
Department of Oncology,
at Queen's University, and
Program Medical Director,
Oncology at Kingston
General Hospital*



*Christine Williams,
PhD, Vice-President,
Research and Policy, of
the Canadian Cancer
Society*

In 2010, after 18 months of planning, extensive consultation with researchers, funding agencies, patients and policy makers, the Canadian Cancer Research Alliance (CCRA) launched the first ever Pan-Canadian Cancer Research Strategy. The plan identified priorities, in terms of 24 Action Items, for collaborative investment by Canada's cancer research funders with a goal of maximizing impact on cancer control and accelerating discovery. CCRA's then 23 organizations committed to working together by building on existing momentum and extending collaborative efforts in new and exciting areas to accelerate progress in cancer control.

Then and now, there are compelling reasons for cancer research funding agencies to collaborate. These include maximizing the impact of targeted funding, to fill gaps and move quickly to invest in emerging areas of promise, investing in shared infrastructures, platforms and resources to ensure researchers have access to the resources needed to perform 21st century cancer research and finally improving how the Canadian cancer research funding system functions. By working together, CCRA agencies can tackle overarching issues to optimize Canada's cancer research funding system to have a greater, faster impact on cancer control.

The 24 Action Items of the 2010 plan spanned the continuum of research, from fundamental science to population science, and also included themes that responded to specific issues, opportunities or concerns – such as the need for greater connectivity across the Canadian cancer research community. Each Action Item had an accountable, lead agency and partner agency(ies) as well as a timeline for deliverables.

As the plan draws to a close in 2014, this document summarizes the results of the plan – each of the 24 Action Items is tracked and the subsequent impact documented. Icons are used throughout the report to highlight outcomes such as funding partnerships, new initiatives and so on. An icon map explaining symbol usage is provided after the table of contents. In addition, a list of abbreviations is available in the appendix at the end of the report.

It is evident that this plan has truly transformed many aspects of cancer research in Canada. Of the 24 Action Items, 21 are completed and/or have been completed with continuing emerging actions, and from them a number of new multi-partnered initiatives have been launched. These include but are not limited to:

- The highly successful biennial Canadian Cancer Research Conference. Following the first successful conference in 2011, the 2013 conference was attended by just over 1000 cancer researchers from across the spectrum of research.

- Two multi-million dollar Canadian cancer genome sequencing projects in prostate and pancreatic cancer as Canada's contribution to the International Cancer Genome Consortium.
- The first Pan-Canadian Framework for cancer prevention research, which in turn has spawned new collaborative funding for cancer prevention grants and capacity building awards, as well as an increased focus on, and inclusion of, prevention within the Canadian cancer research funding environment.
- The Canadian Cancer Clinical Trials Network has been created and launched in order to facilitate cancer clinical trial activity and increase patient accrual rates across Canada.
- A consortium coordinating cancer stem cell research was formed through actions supported by the strategy. Through subsequently expanded collaborations, a new funding opportunity for a pan-Canadian 'dream team' in cancer stem cell biology will be launched in 2015 which will further build on Canadian strengths in this field of research.

An analysis of cancer research investment in Canada shows a substantial increase in the number of multi-agency funded research programs or projects coincident with the implementation of the strategy – another important metric of collaboration enabled by CCRA. Between 2009 and 2011, one year before the strategy and one year following implementation, there was a greater than 60% increase in funding to projects involving two or more CCRA members. Some of these projects also included non-CCRA member organizations. Collaborative funding data for subsequent years is being gathered and will be published as part of the research investment reports released by CCRA.

Perhaps most importantly, the success of this collaborative strategy is a strong motivation for CCRA members, now numbering 35 agencies, to continue to work together on common research priorities that will result in better cancer prevention and treatment outcomes for Canadians. Building on the momentum of this collective impact, a second Pan-Canadian cancer research strategy is in development and will be launched in 2015.

We close with some words of thanks and acknowledgement. Firstly, to the member organizations of CCRA who worked together not only to create the plan but who delivered on the plan's promise by collaborating in its successful execution. Special thanks go to the Co-Chairs of CCRA over the past 5 years – Dr Morag Park, Dr. Mario Chevrete, and Dr. Jacques Magnan. Secondly, to the wonderful staff of the CCRA Executive office – Dr. Robin Harkness, current CCRA Executive Director and Dr. Stuart Edmonds, Executive Director at the time of the plan launch, Ms. Kim Badovinac, Manager, Canadian Cancer Research Survey, Ms. Melissa Cheung, Coordinator, Research, and Ms. Pauline Walsh, Administrative Assistant. And finally, to the Canadian Partnership Against Cancer, which is not only a member of CCRA but has taken a leadership role in supporting the work of this Alliance by funding and housing the Executive office of CCRA in addition to supporting several collaborative projects including the Canadian Partnership for Tomorrow Project and the Canadian Cancer Clinical Trials Network (3CTN).

We see evidence of a transformation in cancer research funding in Canada as a result of the collaborative work of CCRA members, and this will auger well as the members develop the next strategy.

PRIORITY: CANCER PREVENTION			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 1	Develop a cancer prevention research plan	CCRA Executive Office, CCS, CPAC	COMPLETED AND RESULTING IN NEW INITIATIVES

Description

Publish a report on the scope and nature of the investment in cancer prevention research in Canada. The report will include information on the funding of cancer etiology studies, risk identification, risk reduction research, population interventions and other types of prevention research. It will assess the extent to which Canada has the research capacity to effectively utilize increased funding in prevention research. Following the publication of the report, CPAC, PHAC, CCS and other relevant parties will meet to discuss implications for the future of prevention research and start developing a pan-Canadian cancer prevent research agenda.

Key Accomplishments



- As background, *Investment in Cancer Risk & Prevention Research* report was published, which detailed projects funded from 2005-2007 using a novel three-dimensional classification scheme (the “cube”) (May 2010).
- A draft strategic framework was developed by a working group of interested CCRA members and other organizations, under the leadership of CCS and CPAC (September 2011). A consultation workshop to discuss this draft report was held in conjunction with the inaugural Canadian Cancer Research Conference (November 2011).



- *Cancer Prevention Research in Canada: A Strategic Framework for Collaborative Action* was finalized, presented to the CCRA Board, distributed to all CCRA members, and posted to the CCRA website. The strategic framework includes 10 recommendations or approaches to fulfill the mandate for increasing prevention research activities in Canada (March 2012).

- Eighteen CCRA member organizations convened to discuss implementing the 10 recommendations set forth in the Framework. The recommendations were divided into four themes. Agencies were self-identified to look at further developing the themes and coordinate funding opportunities.
- Co-funding of grants took place as a result of the collaborative framework priorities. The Prevention Capacity Development Grants were co-funded by CCS and CBCF (August 2014) and the Prevention Research Grant competition was co-funded by CCS and CIHR-ICR (August 2014).



- Prevention research will continue to be an area of focus for CCRA members as strategies addressing funding and training capacity will be components of the next CCRA strategy.

PRIORITY: CANCER PREVENTION			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 2	Complete the enrolment phase of CPTP and develop a plan for sustainability	CPAC	COMPLETED WITH CONTINUING ACTIVITY

Description

Establish the governance structure for CPTP, complete enrolment of 300,000 participants, and develop a funding model to cover the ongoing project maintenance costs post-2017, which will include opportunities for additional cancer and non-cancer funding agencies to be engaged in this legacy project.

Key Accomplishments



- CPAC has been the sole national funder of CPTP to date, and by the middle of 2017 it will have provided funding of close to \$80M to help develop the platform. In addition, sponsors and funders in the five participating regions combined have committed approximately \$70M during the same period. These investments will now need to be leveraged to trigger further long term financial and operational support to sustain the platform, enrich it and provide for its research utilization.
- The power and potential of a pan-Canadian cohort on cancer and chronic disease research is widely recognized by CPAC, its participants, the regional leaders, and the broader scientific community. The platform provides opportunities to ask complex questions about the differences in health and disease patterns within populations, to look into the causes of particular diseases, especially chronic diseases such as cancers, which are among the leading causes of morbidity and mortality in populations that are globally growing ever older. The future development of new technologies may also unlock areas of inquiries that can only now be imagined.
- Although each region has evolved differently and is at a different stage in the development of their respective initiatives as of October 2014, they have collectively recruited and consented over 300,000 participants aged 35 to 69 (close to 2% of the Canadian population in the age bracket) and gathered extensive core questionnaire data on these participants' health and lifestyle.
- The regions have also collected a significant number of biological specimens, notably about 125,000 venous blood samples as well as urine, saliva, blood spots, and toe nail clippings. Data and samples are collected and stored in all five regions.
- All regions intend to maintain and further enhance the data and bio-sample repositories over time and ultimately to link this core information to health system data to gather information about participant health outcomes.
- Plans are now being developed to engage the research community in making use of the CPTP platform, which will be accessible for use nationally by mid-2015.



PRIORITY: CANCER PREVENTION			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 3	Provide funding opportunities to support projects utilizing the cohort dataset	ALL CCRA MEMBERS	COMPLETED WITH CONTINUING ACTIVITY

Description	
Make mechanisms available to fund projects that utilize the dataset collected in the CPTP or that augment variable collection through nested cohorts. This will be achieved through existing operating grant programs or the launch of specific research funding opportunities.	
Key Accomplishments	
 	- A Request for Proposals was issued for the Canadian Alliance for Healthy Hearts and Minds, an initiative to add cardiovascular disease data to the CPTP cohort (July 2012). Funding was announced for a national research team from McMaster University, Montreal Health Institute, and the Institute for Clinical Evaluative Sciences. The Canadian Alliance for Healthy Hearts and Minds was launched by CPAC and the Heart & Stroke Foundation (October 2013). - As the CPTP platform opens up to broader access, action will be required to engage research and funder communities to support research projects utilizing the cohort dataset. CCRA will carry forward this action item into its next pan-Canadian research strategy.

PRIORITY: BASIC DISCOVERY RESEARCH			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 4	Launch new ICGC sequencing project in prostate cancer	OICR, PCC	COMPLETED WITH CONTINUING ACTIVITY

Description

Request a formal application in prostate cancer to add to Canada's contribution to this important international endeavour, based on the response to the call for Expressions of Interest and the eagerness of CCRA members to direct funds.

Key Accomplishments



- A Request for Applications was issued for a sequencing project on the prostate cancer genome. An international peer review of received proposals was coordinated by Cancer Research UK (August 2010).
- The CPC-GENE was officially announced in 2011. The purpose of this ICGC project is to decode the prostate cancer genome and translate results into clinical application within a five-year timeframe (February 2011).
- International collaborations were established for CPC-GENE with funders and researchers from the United Kingdom, France, Australia, and Germany (June 2011). Over 13 Canadian institutes are now involved.
- The Project Steering Committee was established, comprised of experts from all major Canadian research institutions (October 2011). Meetings of the Project Steering Committee and International Project Advisory Panel were held in conjunction with the inaugural Canadian Cancer Research Conference (November 2011).
- An International Project Advisory Panel was established (January 2013).
- Workshops were held at the Canadian Cancer Research Conference to promote the platform to the broader research community (November 2013).
- As of November 2014, over 275 tumour genomes have been sequenced, with a minimum of 500 to be sequenced by December 2015. Papers on the work to date have been published in *Nature Methods* (October 2014) and *Lancet Oncology* (December 2014). At the request of the Scientific Advisory Board, the study sample has been expanded in order to enhance statistical power.



PRIORITY: BASIC DISCOVERY RESEARCH			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 5	Provide project funding for cancer genomic studies	CIHR, Genome Canada	COMPLETED

Description	
Ensure funding mechanisms are in place to support individual operating and/or team grants to utilize and translate knowledge generated from large-scale cancer genome initiatives, such as the ICGC and The Cancer Genome Atlas. Research will be investigator-initiated but should involve clinicians in relating genomics to clinical outcomes (predictive and prognostic).	
Key Accomplishments	
	• A Request for Proposals was issued for large-scale research projects focused on the application of genomics in an area of personalized health, including cancer, by Genome Canada, CIHR, and CSCC (January 2012). • Six projects focused on developing tools for cancer research were selected for a total of \$54.4M in funding (March 2013).

PRIORITY: BASIC DISCOVERY RESEARCH			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 6	Promote the value of ICGC datasets to the Canadian cancer research community	OICR	COMPLETED WITH CONTINUING ACTIVITY

Description

Ensure a rapid dissemination of bioinformatics tools and the nature of ICGC datasets to the Canadian cancer research community. In addition, articulate the value of ICGC datasets and how to link them to other datasets for the acceleration of translational research. Provide researcher and trainee education through workshops, including both face-to-face meetings and webinars. Organize an educational session as part of the national cancer research conference placed for 2011 (see Action Item #19).

Key Accomplishments



- Beginning in 2011, an advanced topic, five-day Canadian Bioinformatics Workshop entitled “Bioinformatics for Cancer Genomics” was developed and convened. ICGC portal and datasets were highlighted throughout the workshop. Workshops were held from 2011–2014 and future workshops are scheduled for 2015.
- A Canadian Bioinformatics Workshop entitled “Introduction to Bioinformatics for Cancer Genomics” was held in conjunction with the inaugural Canadian Cancer Research Conference to promote the value of ICGC datasets (November 2011).
- A Canadian Bioinformatics Workshop entitled “Cancer Data and its Analysis” was held in conjunction with the second Canadian Cancer Research Conference to promote the use of the ICGC data portal, and datasets (November 2013).
- A future workshop is planned for the 2015 Canadian Cancer Research Conference.
- The “Cancer Data and its Analysis” workshop has attracted attention from the National Cancer Research Institute (UK), where the workshop will be held during its annual cancer conference in 2015.

PRIORITY: BASIC DISCOVERY RESEARCH			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 7	Study cancer initiating cells with new technologies, reagents and tools	CSCC	COMPLETED WITH CONTINUING ACTIVITY

Description

Develop new technologies, reagents and tools to study cancer initiating cells. Part of this activity may be the creation of a network of resource and technology platforms that could spearhead methods development and provide scientists working on cancer initiating cells access to the tools and technologies needed to advance research. The analysis being done by the CSCC in the form of a resource position paper will inform development of the precise mechanism needed to address this. In general terms, this action item may eventually be pursued through a Request for Applications process.

Key Accomplishments



- CSCC was created to coordinate a strategy for Canadian stem cell research, with funding originally from Genome Canada, CIHR, and CIHR-ICR. Its members included the Canada Foundation for Innovation, CIHR, Genome Canada, OICR, and the Stem Cell Network.
- CSCC and the California Institute for Regenerative Medicine announced a Disease Team I competition to fund Canadian-Californian teams that would develop therapies based on cancer stem cells or derived from cancer stem cell assays (February 2009). The funded projects aimed to improve cancer treatment and file an Investigational New Drug application at the end of the four-year grant period to enable Phase I clinical testing. Two projects were selected for a total of \$40M in funding from CIHR and Genome Canada.
- A plan for a C4Resource (Canada-California Collaborative Cancer Stem Cell Resource and Technology Platform Network) was proposed with the goal to more efficiently and effectively coordinate cancer stem cell research resources and platform technologies for the advancement of research and discovery and the acceleration of clinical translation of new findings (February 2012).
- The CSCC strategic plan was refreshed to determine how the remaining investment should best be used. Guidelines for use of the investment included leveraged monies, major focus on translation of clinical applications, and industry partnerships. Genome Canada and CIHR engaged with other CCRA members to identify collaborative funding opportunities (March 2012). A meeting of key stakeholders (e.g., researchers, industry, funding organizations) was convened (October 2013).



- A new organizational model for CSCC was developed, seeking to engage stakeholders and secure funding to meet CSCC objectives. The organizational model was presented to Genome Canada and CSCC Boards for acceptance (March 2014).
- A new call for funding opportunities in cancer stem cell biology was announced for a pan-Canadian dream team with SU2C Canada (October 2014), with funding to begin in 2015.

PRIORITY: RESEARCH TO TRANSLATE DISCOVERIES INTO BENEFITS FOR PATIENTS AND HIGH RISK POPULATIONS			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 8	Establish a funding mechanism for projects that move from target discovery to clinical application through new agent development	OICR, CDRD, NRC	COMPLETED WITH CONTINUING ACTIVITY

Description

A number of agencies have either interest in or have developed platforms or infrastructure relevant to the pre-clinical drug discovery pipeline including NRC, CDRD, OICR, Genome Canada, TFRI and CIHR-ICR. Convene a working group composed of the agency leads and individuals who manage the relevant drug development platforms to discuss how best to work together. The working group's initial task will be to assess the current catalogue of expertise in drug discovery, which will include not only the platforms and programs currently funded, but also analysis from the soon-to-be-published CCRA translational research investment report. Gaps and areas of complementarity will be documented and the working group will recommend to CCRA whether there is interest in proceeding to develop more formal models of collaboration. The results of these activities, including the catalogue of drug discovery platforms and the working group recommendations, will be communicated to the scientific community using appropriate communication vehicles.

Key Accomplishments

- A working group of representatives from OICR, NRC and CDRD was convened and met on several occasions. The experience, capabilities, programs and platforms to accelerate academic drug discovery and development were shared.
- It was recognized that an asset map of other Canadian platforms and programs relevant to academic new agent development needed to be developed and this was accomplished through a survey sent to nearly 130 representatives of universities, institutes and others (March 2011). This survey revealed a widespread capacity to contribute to target identification, validation and drug development.
- In general it was noted that, within the academic research environment, scientists were not well versed in the data required for target validation and that this in turn had had an impact on the numbers of new targets/agents from the academic sector brought into drug development. More rigorous education and information on target validation was recommended as a result.
- CDRD and OICR are actively working together on new initiatives to identify drug discovery projects and resource them jointly. The funding of these projects will occur through in-kind contributions from joint groups and will be supplemented through grants where appropriate. NRC continues to be interested in participating in jointly resourced projects in the area of large molecule therapeutics (biologics) as this is the focus of its Human Health Therapeutics section. NRC has initiated a small project with OICR.
- Although it was initially noted that a significant impediment to more widespread collaboration between organizations investing in academic drug development was competing Intellectual Property constraints, organizations recognize the importance of working together and are finding mechanisms to overcome this issue.



PRIORITY: RESEARCH TO TRANSLATE DISCOVERIES INTO BENEFITS FOR PATIENTS AND HIGH RISK POPULATIONS			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 9	Monitor progress of TFRI/CPAC Pan-Canadian Cancer Biomarker Initiative	TFRI	COMPLETED WITH CONTINUING ACTIVITY

Description

TFRI and CPAC are collaborating on a major biomarker initiative in lung cancer, ovarian cancer, breast cancer, prostate cancer, and possibly other types of cancer. This is one of the two legacy projects recommended by CCRA for funding when CPAC was created. These agencies will report on progress of this initiative on an annual basis to the CCRA. The report will be an update on the launch of the individual projects, the progress made in meeting the predefined milestones of each project and ultimately the success in linking these translational studies to clinical applications.

Key Accomplishments



- The Pan-Canadian Early Lung Cancer Detection Study (2008–2013, extended 2014–2015) has made key contributions to validate a lung cancer risk assessment model, develop a nodule risk index calculator, and produce evidence of the cost-effectiveness of screening high-risk individuals for lung cancer. The study was extended to produce data on the effectiveness of continuing to screen people at high-risk for lung cancer. The team is working to publish its key findings in 2015.
- The Biomarkers of Anorexia Cancer Cachexia study (2008–2011) followed 139 patients recently diagnosed with seven different advanced cancers prior to the beginning of their first therapeutic regimen. These patients were followed in a longitudinal study for 18 months to identify biomarkers from circulating white blood cells and plasma that have clinical utility. The team has continued to refine the signature motif for early cachexia detection and has published its findings of the presence of a master regulator that can serve as a signature motif that can be translated into a clinical assay and potentially novel therapeutic regimen.
- The Canadian Ovarian Cancer Research Consortium program (2010–2015) aimed to develop a fully annotated bank of 2,000 ovarian cancer samples that can then be used to validate promising biomarkers to stratify molecular sub-types of ovarian cancer. More than 1,550 biopsies have been collected to date, and microarrays made for high grade serous ovarian cancer (800 cases) are currently being used with nine biomarkers selected for validation by the project's study committee.
- The Canadian Prostate Biomarker Network (2010–2016) consists of 11 centres and has collected a fully annotated bank of 1,600 prostate cancer samples that can be used to validate promising biomarkers for prostate cancer progression requiring aggressive treatment. A smaller microarray of 250 cases has been generated to validate a number of promising biomarkers. The program has also sponsored a study of active surveillance in four provinces with the goal of establishing baseline data on which patients are being followed rather than being treated for prostate cancer in those provinces. The study has also investigated barriers to active surveillance among patients and health care professionals.
- The TFRI has continued to fund many of these programs since April 2012, in partnership with others, and has launched other biomarker programs in leukemia, colorectal cancer and brain cancers (not featured above).



PRIORITY: RESEARCH TO TRANSLATE DISCOVERIES INTO BENEFITS FOR PATIENTS AND HIGH RISK POPULATIONS			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 10	Develop biomarkers and novel imaging technologies for early detection, treatment prediction and prognosis	CIHR-ICR, TFRI	COMPLETED WITH CONTINUING ACTIVITY

Description

Assemble a think tank of key agencies and researchers to clarify the research pathway for development of tools for the early detection of cancer and prognosis or predictive information for treatment selection. Work will be focused on such things as selection of best biomarkers or imaging technologies, ways to support biomarker research in a more opportunistic way (associated with a clinical trial, for example, or based on the CPTP) and testing and validating uses of new technologies/biomarker/tools including economic analyses. Action item will likely be best accomplished by convening a national/international workshop and will be building on the planned TFRI biomarker development workshop aimed at informing the TFRI-CPAC Pan-Canadian Cancer Biomarker Initiative. The subsequent workshop will have a broad attendance including relevant scientists, clinicians, pathologists, health economists and leaders from regulatory bodies. Following the workshop, the think tank will develop a report on the optimal pathway for biomarker development and an assessment of gaps and opportunities to build on research and funding programs already ongoing in Canada.

Key Accomplishments



- The Medical Imaging Trial Network of Canada (MITNEC) was funded by CIHR (January 2011).
- An international biomarker and imaging workshop organized by CIHR-ICR, Cancer Research UK, National Cancer Institute (NCI) of the U.S. National Institutes of Health, in partnership with Canadian High Commission. The workshop was held to explore the added value of international collaboration in advancing integration and adoption of qualitative imaging as an enabling technology for discovery research, drug development, and implementation of personalized/stratified medicine approaches in cancer control (June 2011).
- Recommendations from the workshop were developed to address standardization of imaging protocols and procedures and data harmonization, complexity of image-guided radiotherapy and image-guided drug delivery, the translational pipeline, linking imaging to “omics”, and lack of capacity.
- A report on the recommended biomarker development pathway and assessment of gaps and opportunities to build on research and ongoing funding programs was published by CIHR-ICR (2011).
- Focused regional workshops were held to brainstorm ideas among the imaging, radiotherapy, and “omics” communities. A national consensus conference was convened to further develop the appropriate course of action.
- CIHR-ICR partnered with the NCI and Genome British Columbia to launch the Quantitative Imaging for Evaluation of Responses to Cancer Therapies Initiative funding opportunity, in 2013. This opportunity has led to the creation and integration of two Canadian nodes in the NCI Quantitative Imaging Network that is currently comprised of 21 U.S.-based nodes (December 2014). Cancer Research UK is expected to join in a future competition.

PRIORITY: RESEARCH TO TRANSLATE DISCOVERIES INTO BENEFITS FOR PATIENTS AND HIGH RISK POPULATIONS			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 11	Report and make recommendations on cancer clinical trials in Canada	CCRA Executive Office, CPAC	COMPLETED AND RESULTING IN NEW INITIATIVES

Description

Clearly outline the issues facing cancer clinical trials in Canada and make recommendations on how these issues can be resolved. The report should examine jurisdictions with healthy and growing cancer trials enterprises, consider how to engage the pharmaceutical industry and recommend ways to maximize the interaction with CIHR's Strategy for Patient Oriented Research (SPOR). The audience includes funding agencies, academic clinical trials groups such as CTG, provincial cancer agencies, provincial ministries of health and industry and patients.

Key Accomplishments



- A Clinical Trials Working Group was established to determine the scope of work, review preliminary data, and generate data (February 2010).
- A workshop of key stakeholders was convened to discuss the draft report and guide steps for action on the recommendations (March 2011).
- *Report on the State of Cancer Clinical Trials in Canada* report was published by CCRA (October 2011). The report addressed four recommendations:
 - to build a pan-Canadian infrastructure program to support high priority academic clinical trials, cancer trials in Canada (CPAC agreed to lead the process to develop an opportunity for this recommendation in 2011)
 - to streamline the clinical regulatory environment
 - to consolidate or develop reciprocity in research ethics boards (a teleconference was convened with research ethics boards' leaders who attended the stakeholder meeting in 2011)
 - to reduce non-value-added steps in trial development and conduct



- Three of the four recommendations have been acted on since the release of the report.
- 3CTN was launched in 2013. This pan-Canadian network that will provide funding and infrastructure to support the conduct of multi-centre academic clinical trials involving coordinated and linked regional clinical trial centres. When fully operational, 3CTN will strengthen academic-sponsored cancer clinical trial capacity, improve patient access, increase trial activity and efficiency, and endeavour to reduce trial costs. The business plan for the Network is currently being funded by 12 CCRA member organizations.
- The "Initiative to Streamline Clinical Trials" Working Group developed a specific, pragmatic and practical interpretation of current regulations, laws and guidelines and provided recommendations to facilitate Canadian academic clinical trials (see <http://n2canada.ca/ISCT>). The recommendations have been provided to all initiative participants, academic groups and investigators across Canada. Implementation of the recommendations and the resultant impact on the conduct of academic clinical trials will be followed by annual voluntary surveys.
- 3CTN has taken on leadership with respect to the recommendation regarding ethics approval by establishing a national working group whose role is to develop a plan for expedient and efficient ethics review and approval across Network centres.



PRIORITY: RESEARCH TO MEET THE NEEDS OF CANCER SURVIVORS AND TO ENHANCE CANCER HEALTH SERVICES DELIVERY			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 12	Develop research on late effects of treatment	CIHR-ICR	COMPLETED

Description

Understand late effects arising from cancer therapy requiring additional research. New funding may be made available to support research to understand further the biomedical mechanisms of treatment that can then be used to develop innovative approaches to ameliorate late effects in adult and childhood cancer survivors.

Key Accomplishments



- A Request for Applications for the late effects of childhood cancer was launched by CIHR-ICR to support multidisciplinary teams (June 2010). Nine letters of intent and eight full applications were received. Following peer review by an international panel, four projects were selected for a total of \$11.7M from a funding collaboration consisting of CIHR-ICR, the C¹⁷ Research Network, CCS, CRS, Garron Family Cancer Centre at the Hospital for Sick Children, OICR, and the Pediatric Oncology Group of Ontario (October 2011).
- A networking meeting was held with the four teams, partners, and the principal investigators of the pediatric genome sequencing consortium to encourage collaborations among these groups (September 2012).

PRIORITY: RESEARCH TO MEET THE NEEDS OF CANCER SURVIVORS AND TO ENHANCE CANCER HEALTH SERVICES DELIVERY			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 13	Highlight strengths and identify gaps in survivorship research in Canada	CCRA Executive Office	COMPLETED

Description	
Publish a report on scope and nature of the investment in survivorship research in Canada as a basis for CCRA members to consider next steps, gaps and opportunities.	
Key Accomplishments	
	• <i>Investment in Research on Survivorship and Palliative and End-of-Life Care, 2005-2008</i> report was published by CCRA (September 2011) and updated to cover the 2005 to 2010 period (April 2013). The reports were broadly distributed to decision-makers and the relevant research communities. • The Canadian Cancer Survivorship Research Consortium (www.ccsrc.ca) was launched, with support from CIHR and the Lance Armstrong Foundation, to coordinate a collaborative, pan-Canadian approach to create new knowledge, address evidence gaps, and facilitate knowledge exchange and application (April 2014). • Although not part of this action item, CIHR, CCS and PCC independently prioritized cancer survivorship research in the 2010-2014 timeframe. Fourteen one-year projects with a strategic focus on cancer survivorship were supported by CIHR's catalyst grant program for a total of \$1.3M in funding (April 2010-March 2011). CCS funded 14 projects through its Quality of Life Research Grants and 10 projects through its Innovation Grant competitions for a total of \$5.1M in funding (2012-2013). PCC launched a \$3M targeted research program in 2014 that is currently being adjudicated.

PRIORITY: RESEARCH TO MEET THE NEEDS OF CANCER SURVIVORS AND TO ENHANCE CANCER HEALTH SERVICES DELIVERY			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 14	Increase support for health economics research to study cost/benefit of new interventions for treatment, prevention, and early detection	CCO, CCS, OICR	COMPLETED

Description

Engage the Canadian Agency for Drug and Technology in Health and bodies established by provincial ministries of health, such as the Ontario Health Technology Assessment Committee, regarding the assessments of the clinical impact in terms of economics, ethics, etc., of early translational and clinical studies to inform decision making early in the development of new drugs, biomarkers and technologies. The cost of therapies is a major concern for cancer patients, particularly when it relates to unequal access. Increased efforts in health economics research are needed to conduct unbiased cost/efficacy analysis of cancer therapeutics. Because new programs are being funded to address health economics/health services issues, this area of need will be highlighted to the research community by those agencies funding the programs.

Key Accomplishments



- In advance of this strategic action, the Ontario Cancer Data Linkage Project (“cd-link”) was developed through a collaboration agreement with OICR, CCO, and the Institute for Clinical Evaluative Sciences. This initiative enabled cancer data sets to be linked, de-identified, and made available directly to researchers (2008). As of November 2014, cd-link has received 54 requests from researchers and trainees for data, and the Health Services Research program has supported 44 projects and three sub-grant projects through its seed fund.
- CPAC commissioned the development of a Cancer Risk Management Model (CRMM), a decision support tool to assess the potential benefits and costs of new healthcare interventions, in cooperation with investigators from Statistics Canada, OICR, and CCO. The CRMM can project the population health and economic impacts of cancer control programs in Canada and the impacts of major risk factors, cancer prevention, and screening programs and new cancer treatments on population health and costs to the healthcare system. It estimates both the direct costs of medical care, as well as lost earnings and impacts on tax revenues. Models of lung, colorectal, and cervical cancer have been completed and a breast cancer model is in development.



- A call to the research community for action in cost/benefit research was issued at the *Listening for Directions* exercise held by the CCS-funded Centre for Applied Research in Cancer Control (February 2011).
- The inaugural Applied Research in Cancer Control Conference was convened in May 2012 and subsequently in May 2013 and May 2014. The next conference will be held in May 2015.

PRIORITY: TUMOUR-SPECIFIC PARTNERED INITIATIVES			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 15	Monitor adoption of the National Breast Cancer Research Framework	CBCRC*	COMPLETED WITH CONTINUING ACTIVITY

*Originally the lead agency was the CBCRA, but this organization was disbanded on March 31, 2010. CBCRC, led by CBCF, was formed in partnership with CIHR-ICR, CCS, and QBCF and assumed this action item.

Description

Review new initiatives in breast cancer research to determine how they address the priority questions in the framework. CBCRA (now CBCRC) will report back to CCRA Forum annually on the adoption and impact of the National Breast Cancer Research Framework.

Key Accomplishments



- CIHR-ICR reported signature initiatives to its Institute Advisory Board in context of the Framework (March 2010) and the CBCF National Research Strategy was created with an emphasis on funding in support of the Framework. Actions included converting framework priorities into research competitions and monitoring outcomes in the context of updating the Framework (October 2011). The CBCF National Grants competition on earlier detection of breast cancer was launched to address priorities #8, #9, #10 (September 2011).



- The Canadian Breast Cancer Research Collaborative (CBCRC) was initiated with members, CBCF, CCS, CIHR-ICR, and QBCF (November 2012). Its purpose is to: 1) steward evolution and implementation of Framework; 2) create a forum to promote, encourage and coordinate cooperative research funding initiatives; and 3) facilitate ongoing sector communication and collaboration.
- CBCRC commissioned an analysis of the Framework priorities compared to CSO codes (2013-2014). This resulted in the development of a new coding system specific to the Framework's priorities to enable quantitative and qualitative reporting.
- CIHR-ICR, QBCF, Genome Canada, and Génome Québec partnered to fund a large scale genomics and personalized health project (March 2013). One project was selected for a total of \$11M. Although this opportunity was developed outside CBCRC, it aligned with a CIHR Signature Initiative, which was informed by the Framework and CBCF's in-kind involvement arose through discussions between CBCRC members.
- CBCF and CIHR-ICR launched the Breast Cancer in Young Women research program competition to support innovative and transformative research targeting breast cancer in young women 40 years of age or less (May 2013). One program with four subprojects was funded for \$5.7M.



- CCS and CBCF collaborated to co-fund Capacity Development Awards focused on prevention research in breast cancer (April 2014) [see also AI 1]. Two projects were selected for a total of \$0.5M in funding.
- CBCRC surveyed the breast cancer research community to 'prioritize the priorities' of the Framework (April 2014). The three top priorities selected were: new treatments (priority #11); metastasis (priority #3); and prevention (interventions) and detection (priorities #7 and #8 respectively).
- The highest priority, new treatments for breast cancer, was incorporated as a priority in the national competition for SU2C Canada - CBCF Breast Cancer Dream Team, supported by CIBC with supplemental funding from OICR for clinical research in Ontario (October 2014).
- QBCF, CIHR-ICR and CBCF collaborated on a Café Scientifique focused on breast cancer (October 2013). A workshop, CBCRC: Going after the Grand Challenges in Breast Cancer, was convened in conjunction with the second Canadian Cancer Research Conference (November 2013).

PRIORITY: ENABLING ACTIVITIES AND RESOURCES			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 16	Establish national standards for biobanking for cancer research	CIHR-ICR as funder of CTRNet	COMPLETED

Description

Support CTRNet in developing or refining SOPs for consistency in the collection of high quality biological samples and associated data, across Canadian tissue banks.

Key Accomplishments



- Activities focused on four main areas: 1) engagement of the Canadian research community on the issue of biobanking standards; 2) development of national standards; 3) development of a certification program; and 4) development of training/supports for researchers to adopt standards and locate quality biospecimens for research.
- Workshops were held on national biobanking standards with various national and international stakeholders.
- The Advanced Tissue Management (ATiM) software was developed by CTRNet in 2012 to enable management and standardization of data collection.
- A full review and update of Policies (10 – including three new Policies on Governance, Emergency Preparedness and Sustainability Planning) and SOPs (46) was conducted. Updated Policies and SOPs are available on the CTRNet website (www.ctrnet.ca/). There have been over 15,000 downloads of one or more Policy/SOP since they were first posted online in 2008.
- A national certification program was developed to communicate these standards and to support biobanks in adopting them with a comprehensive set of nine biobank education modules.
- The registration phase of the certification program was launched at a CTRNet workshop held in conjunction with the inaugural Canadian Cancer Research Conference (November 2011). This included an online enrolment process and education modules.
- The certification phase of the certification program was launched in April 2013. As of December 2014, 77 biobanks are registered, 23 are in the process of certifying, and 18 have successfully completed certification. Of these, the majority were Canadian tumour biobanks (55, 15, and 14, respectively) and the remainder were Canadian non-tumour biobanks and international biobanks. The education program that supports the certification program has over 353 enrolled users.
- Training workshops to educate and train the range of stakeholders (e.g., biobank staff, clinical and research investigators, and graduate students) on standards and principles of biobanking were held in Winnipeg (September 2012), Vancouver (May 2013), and Toronto (May 2013). In addition, workshops were held at the following meetings: Canadian Cancer Research Conference (November 2013), Canadian Association of Research Ethics Boards National Conference (April 2014), TFRI 5th Annual Scientific Meeting (May 2014), and Canadian Association of University Research Administrators Annual Conference (June 2014).
- The Biobank Resource Centre, an online support and consultation service developed to support researchers in setting up and operating biobanks and completing the certification program, was launched through a partnership with the University of British Columbia's Office of Biobank Education and Research (May 2012).
- As of December 2014, 21 biobanks are now using CTRNet's biobanking software, ATiM, which supports data export to the CTRNet central catalogue of Canadian biospecimens. The catalogue contains records of over 81,000 cases.



PRIORITY: ENABLING ACTIVITIES AND RESOURCES			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 17	Enhance banking of cancer initiating cells	CSCC	DISCONTINUED

Description
Engage with CSCC to improve and share understanding of how to bank cancer initiating cells, following the generation of a resource position paper as per AI 7.
Key Accomplishments
Incorporated into CSCC activities as per AI 7.

PRIORITY: ENABLING ACTIVITIES AND RESOURCES			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 18	Improve access to cancer-relevant administrative datasets	CAPCA	COMPLETED

Description

CAPCA will seek the individual policies for data access from its members and provide a current state analysis report to CCRA. Based on the findings of this report, CCRA will consider developing a position paper on the need to harmonize and/or improve data access regulations for cancer researchers.

Key Accomplishments



- A working group was established (March 2010) and a list of datasets that house cancer relevant administrative data were identified (May 2010). Databases fell into three main categories: those that specifically described aspects of individual patient care, those that housed screening and vaccination data, and other population databases.
- Semi-structured interviews were held with provincial cancer agencies were conducted regarding policies governing access to selected datasets and their effectiveness (July-October 2010). In many instances, as many of the datasets were maintained by organizations outside a provincial cancer agency, information about data access and linkage practices and policies had to be obtained by data stewards who were often located outside the provincial cancer agency. This particular requirement lengthened the time necessary to prepare for the semi-structured interviews, particularly among larger provinces. Innovative solutions that were designed to drive improved access and linkage were identified, such as cd-link (Ontario), Population Data BC, and the Manitoba Centre for Health Policy.
- *Accessing and Linking Cancer-Relevant Administrative Data: Back to the Future* was published by CAPCA (February 2011). The report examined access to cancer-relevant administrative datasets used in health services research, policy research, and CPTP. The report highlighted eight recommendations to better understand outcomes of previous initiatives in this area and how best to address the identified issues. The report was disseminated to all CCRA members and presented to the CCRA Board. In addition, the report was discussed at a dedicated session for health services and policy researchers at the inaugural Canadian Cancer Research Conference (November 2011).
- Pursuant to the completion of this item, further work to address issues with linkage of treatment data has been initiated under the leader of CPAC through the release of coordinated data development initiative pilot projects on linkage of treatment data (October 2014). The current lack of standardized cancer treatment data across jurisdictions limits the ability to understand treatment patterns and identify opportunities to improve the quality of patient care. Through the Coordinated Data Development Initiative (CDDI), CPAC aims to identify a core set of treatment data elements, seek provincial alignment to common data standards, and test the feasibility of obtaining treatment data or creating linked data sets. A call for Expressions of Interest to elicit pilot studies to address gaps in the availability of or access to one or more types of treatment data was released (November 2014).

PRIORITY: ENABLING ACTIVITIES AND RESOURCES			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 19	Convene a national cancer research conference, combining the annual meetings of several cancer research funding agencies	CCRA Executive Office, CIHR-ICR, OICR, TFRI	COMPLETED WITH CONTINUING ACTIVITY

Description

Plan a national conference, featuring a broad range of Canadian cancer researchers and other key stakeholders. This first conference will combine the already-planned meetings of at least three CCRA members (CIHR-ICR New Principal Investigators meeting, TFRI annual meeting and the OICR annual scientific retreat). The meeting will showcase research efforts in Canada, provide a forum for networking among the broader cancer research community in Canada, create an opportunity to connect with the public and media in a variety of ways to report on the impact of Canada's cancer research investment and provide a means for funding agencies to connect with their research communities to promote existing programs or effectively launch new programs.

Key Accomplishments



- The inaugural Canadian Cancer Research Conference was convened from November 27-30, 2011 in Toronto, Ontario. About 1,000 delegates attended this meeting. The conference's scientific program featured five plenary sessions, 19 symposia, nine poster discussion sessions, and 17 satellite meetings hosted by 10 CCRA member organizations. The conference received 573 scientific abstract submissions. Eighteen organizations provided financial and/or in-kind support to the meeting. More than 85% of survey respondents indicated a preference for the conference to be held on a biennial basis. Based on the positive reception of the inaugural conference, a second conference was planned for 2013. In conjunction with the scientific program, a Community Forum was held for members of the public to engage with researchers.
- The second Canadian Cancer Research Conference was held November 3-6, 2013 in Toronto, Ontario. More than 1,000 delegates attended this meeting. The conference's scientific program featured eight plenary sessions, 20 symposia, eight poster discussion sessions, and 11 satellite meetings hosted by seven CCRA member organizations. The conference received 599 abstract submissions. Twenty-seven organizations provided financial and/or in-kind support to the meeting. 87% of survey respondents rated the overall conference as "Excellent" or "Good". A second Community Forum was also held.



- Building on the success of the 2011 New Principal Investigators Meeting, the CIHR-ICR and CCS hosted the Careers in Cancer Research Development Program during the 2013 conference. Rated by attendees as very valuable, this new program was developed to provide career development opportunities for the cancer research community at large, with a special focus towards newly established principal investigators or faculty members and senior postdoctoral fellows.
- As a result of the success of the first two conferences, the Canadian Cancer Research Conference will become a biennial event to be held at different locations across Canada. The third conference is planned for November 8-10, 2015 in Montréal.

PRIORITY: CREATING AN OPTIMAL CANCER RESEARCH SYSTEM			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 20	Continue to release the Annual Cancer Research Investment Report	CCRA Executive Office	COMPLETED WITH CONTINUING ACTIVITY

Description

Continue to publish an annual report on cancer research investment in Canada based on submissions by CCRA members.

Key Accomplishments



- Four annual reports (for data years 2008 to 2011) were released in years 2011 to 2014. Funding from 36 organizations (9,233 projects) was captured in the 2008 data report; funding from 41 organizations (14,196 projects) was captured in the 2011 data report.
- The reports provide an important environmental scan and increased transparency on how and where research dollars are being spent. Feedback indicates the reported data is useful for planning purposes. In addition, the reports are of value to organizations beyond CCRA: “[we] thank the CCRA for paving the way with their Cancer Research Investment Surveys on which [the pan-Canadian strategy for health services and policy research] initiative was modeled” (Terrence Sullivan & Associates. *A pan-Canadian Vision and Strategy for Health Services and Policy Research. Phase I: Building the Foundation*. CIHR, 2014).



- The reports continue to be broadly distributed to funding organizations, university administrators, and other decision-makers and are accessible on the CCRA website (www.ccra-acrc.ca/index.php/publications-en).

PRIORITY: CREATING AN OPTIMAL CANCER RESEARCH SYSTEM			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 21	Provide an analysis of Canada's cancer research human resources	CCRA Executive Office	COMPLETED

Description

Provide a report to describe current cancer research capacity across the spectrum (by specific expertise area i.e. clinician scientists, pathologists, health economists, trainees and other technical positions), articulate areas of strength and identify areas where specific gaps may exist. During consultations, a number of concerns were expressed about the low research capacity in a number of areas within the cancer research community. This should aid CCRA members in evaluating the impact and timing of strategic initiatives designed to enhance research capacity in gap areas. The findings of this report will complement those of the reports on prevention and survivorship research, the translational research workshops and other actions within this plan where gaps in research personnel may be identified.

Key Accomplishments



- A survey to assess human resource capacity in Canadian cancer research community was sent to funded principal investigators in the Canadian Cancer Research Survey database (December 2011).
- *Human Resource Needs and Capacity in Cancer Research in Canada* report was approved by the CCRA Board and published by CCRA (www.ccra-acrc.ca/index.php/publications-en/strategy-related-publications/item/human-resource-needs-and-capacity-in-cancer-research-in-canada-an-online-survey-of-cancer-researchers) (December 2012).
- The results of the survey highlighted that, despite an increase in monies allocated to cancer research over the past decade, many researchers felt that more funding opportunities/sustainable funding was needed to address Canada's human resources capacity issues.
 - In some areas (notably basic fundamental science), the highly qualified human resource available and in training was greater than the ability of the cancer research funding system to provide operating funds.
 - In others (notably population research), a lack of highly qualified personnel was more often considered rate limiting.
- CCRA members are wrestling with the ongoing demand for greater amounts of operating funding. Despite a rise in the investment in operating funds through open and targeted competitions in many areas, the number of applicants continues to rise.
- With respect to the need to build capacity in population sciences, several CCRA members have already responded, primarily in the area of prevention research (see AI 1).

PRIORITY: CREATING AN OPTIMAL CANCER RESEARCH SYSTEM			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 22	Encourage appropriate academic recognition for researchers involved in large multi-disciplinary teams	CCRA Executive Office	COMPLETED

Description

Send letters, on behalf of the CCRA membership, to universities, hospitals and research institutes to underscore the importance of team science and to encourage revisions of guidelines for academic recognition to reflect this position.

Key Accomplishments



- Since this topic goes beyond cancer research and spans all health research disciplines, it was agreed that action by the Canadian Academy of Health Sciences (CAHS) would be more appropriate, wide ranging and influential.
- CAHS was, therefore, approached to see if its Standing Committee on Assessments would consider this topic (January 2014). CAHS reported that the Association of American Medical Colleges had created a panel and prepared a report for US medical schools on this topic last year. Having examined that report, the Standing Committee on Assessments considered the proposal as a potential “Casting in a Canadian Context” (Triple-C) assessment (September 2014).
- The CAHS Board approved assessment of the question, “How can the Canadian academic promotion, tenure, and merit processes be optimized to acknowledge and give appropriate academic recognition to researchers involved in multidisciplinary collaborative research teams?” (December 2014). CAHS is in the process of identifying potential funding sources and the panel for this assessment.

PRIORITY: CREATING AN OPTIMAL CANCER RESEARCH SYSTEM			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 23	Establish a task force to discuss opportunities for collaboration in peer review	CCRA Executive Office	DISCONTINUED

Description
Set up a task force to provide a vehicle for dialogue between funding agencies on this issue and look for specific opportunities to coordinate part(s) of the peer review process. One example could be improving access/expanding use of ResearchNet to other agencies.
Key Accomplishments
Discussions leading to the creation of this action item came from the perspective of researchers in their capacity as grant reviewers who sometimes felt they were being called on too frequently by more than one agency to review the same (or similar) applications. The perspective of researchers as applicants, however, was different and, in this context, researchers often appreciated the opportunity to submit the same or similar applications to more than one agency, particularly at a time when funding for some categories of research was extremely competitive. Under these circumstances, a move to consolidate peer review was seen as negative and led CCRA to remove/discontinue this action item (December 2012).

PRIORITY: EVALUATING AND MONITORING THE STRATEGY			
ITEM	ACTION	LEAD AGENCIES	STATUS
AI 24	Monitor progress of the strategy and prepare an annual report to the CCRA	CCRA Executive Office	COMPLETED

Description

Evaluate the Pan-Canadian Cancer Research Strategy on an ongoing basis using clearly defined metrics.

Key Accomplishments

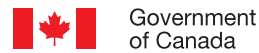


- CCRA members have reported on the progress of individual action items on an ongoing basis since the release of the strategy in May 2010. At the year-end members' meeting, the status of all action items has been reviewed and, since December 2010, annual progress reports have been prepared. The last two reports (for years 2012 and 2013) are posted on the CCRA website.
- This report is the final one as the plan comes to a close.

Appendix A. LIST OF ABBREVIATIONS

3CTN	Canadian Cancer Clinical Trials Network	CPC-GENE	Canadian Prostate Cancer Genome Network
ACF	Alberta Cancer Foundation	CPTP	Canadian Partnership for Tomorrow Project
AHS	Alberta Health Services	CRS	Cancer Research Society
AIHS	Alberta Innovates – Health Solutions	CSCC	Cancer Stem Cell Consortium
BCCA	BC Cancer Agency	CTRNet	Canadian Tumour Repository Network
BTFC	Brain Tumour Foundation of Canada	DQC	Direction québécoise de cancérologie
CAHS	Canadian Academy of Health Sciences	FRQS	Fonds de recherche du Québec - Santé
CAPCA	Canadian Association of Provincial Cancer Agencies	GC	Genome Canada
CBCF	Canadian Breast Cancer Foundation	ICGC	International Cancer Genome Consortium
CBCRA	Canadian Breast Cancer Research Alliance	MSFHR	Michael Smith Foundation for Health Research
CBCRC	Canadian Breast Cancer Research Collaborative	NCI	National Cancer Institute (US)
CCAN	Canadian Cancer Action Network	NRC	National Research Council Canada
CCMB	CancerCare Manitoba	NSERC	Natural Sciences and Engineering Research Council
CCNS	Cancer Care Nova Scotia	OCC	Ovarian Cancer Canada
CCO	Cancer Care Ontario	OICR	Ontario Institute for Cancer Research
CCRA	Canadian Cancer Research Alliance	PCC	Prostate Cancer Canada
CCS	Canadian Cancer Society	PHAC	Public Health Agency of Canada
CDRD	Centre for Drug Research and Development	POGO	Pediatric Oncology Group of Ontario
CFI	Canada Foundation for Innovation	QBCF	Quebec Breast Cancer Foundation
CIHR	Canadian Institutes of Health Research	SOP	Standard Operating Procedure
CIHR-ICR	Canadian Institutes of Health Research – Institute of Cancer Research	SU2C	Stand Up to Cancer
CPAC	Canadian Partnership Against Cancer	TFRI	Terry Fox Research Institute

OUR MEMBERS





Canadian Cancer Research Alliance • Alliance
canadienne pour la recherche sur le cancer

Canadian Cancer Research Alliance (CCRA)

1 University Avenue, Suite 300

Toronto, Ontario M5J 2P1 CANADA

<http://www.ccra-acrc.ca>

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