

Molecular Profiling of Tumours

Recent advances in molecular biology and genomics have improved our understanding of the molecular and biochemical processes involved in cancer and have opened the door to the development of novel therapeutics directed at specific tumour targets. In addition, innovations in technology have improved diagnostic, screening and therapeutic techniques. As a result, recent years have seen an emphasis on translational research with translational research groups now in existence at most major Canadian cancer treatment and research facilities. The creation of a national tissue and tumour bank repository was recognised some years ago as a critical infrastructure requirement to accelerate the growth and productivity of translational research in Canada. The development of targeted therapies relies on the availability of human tissues, linked to clinical data, in order to: facilitate the understanding of the biological mechanisms involved in cancer; assess prognostic factors that determine the outcome of disease; and predict responses to various treatment modalities.

The Canadian Tumour Repository Network (CTRNet)

The CIHR Institute of Cancer Research (ICR), identified the Molecular Profiling of Tumours as one of the original six Institute strategic research priorities. Following a series of



working group meetings and the awarding of a planning grant – a



Needs, Gaps and Opportunities Assessment Grant – in 2001 to the Canadian Association of Provincial Cancer Agencies (CAPCA) tumour bank working group, a CIHR Special Programs Grant was launched by ICR in October 2003. The purpose of this National Tumour Banking Network Grant was to bring together Canada's existing, fragmented, tumour banks into a national network. A single application was requested from the six participating provincial tumour banks led, on behalf of CAPCA, by Dr. Brent Schacter. Following a successful international review, CTRNet

was launched in April 2004, supported by a financial commitment from ICR of \$3.8 million over five years.

CTRNet Charter Members

- Alberta: Alberta Research Tumour Bank
- British Columbia: BC Cancer Tissue Repository
- Manitoba: Manitoba Breast Tumour Bank
- Ontario: Ontario Research Network Tumour Bank (now OICR)
- Ontario: National Cancer Institute of Canada Clinical Trials Group
- Québec: Fonds de la recherche en santé du Québec

Results and Outcomes

CTRNet, which is a consortium of six biobank collection programs, has its head office at CancerCare Manitoba. The original CTRNet goals and objectives included:

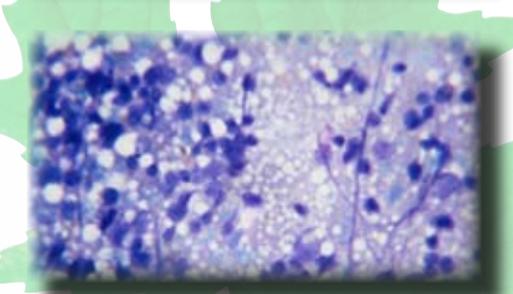
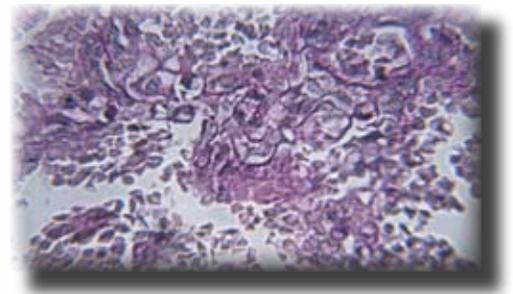
- Development of Standard Operating Procedures (SOPs) to provide consistent national standards;
- Creation of a single electronic portal for access to tissues and clinical information;
- Promotion of the exchange of administrative and scientific best practices;
- Promotion of translational research in Canada; and
- Development of a business plan to encourage sustainability.

Since 2004, CTRNet has achieved many of these goals and has succeeded in bringing together the six largest provincial tumour banks under one banner. A remaining challenge is to generate sufficient funds to attract and maintain other large, privately held, Canadian tumour banks that are not currently members of CTRNet.

CTRNet has now established a Standard Operating Framework and has completed the first two of the three phases identified for SOP development. To date, more than 50 internationally reviewed SOPs have been developed which cross multiple domains, such as specimen collection, annotation, quality control, ontology, information security and IT infrastructure. All CTRNet charter members have agreed to implement and follow CTRNet SOPs.

An electronic portal to streamline access to materials now exists as the CTRNet website (www.ctrnet.ca). Researchers can use the website to search almost 70,000 samples with clinical and materials annotation and the sample size continues to grow. Promoting awareness of CTRNet in the research community is recognised as one of the key components for success and is being addressed through workshops and presentations to national and international research communities. Currently, more than 200 researchers use the CTRNet database and the CTRNet website has approximately 500 unique visitors every month.

CTRNet has acted as a catalyst at the international level by founding the Marble Arch International Working Group on Human Specimen Biobanking for Research Purposes (The Marble Arch Working



Canadian Institutes of Health Research (CIHR) Institute of Cancer Research (ICR)



Group). The Mable Arch Working Group has a membership of approximately 30 of the foremost experts in human specimen biobanking from around the world. The group focuses its efforts on understanding and resolving biobank issues and has assisted several countries in establishing or improving their biobanking operations including Brazil, Australia, Ireland, Israel, Switzerland, the Netherlands and Italy.

CTRNet has provided leadership and forums for public education addressing privacy and ethical issues, interactions with government regulatory bodies, and creating a virtual community of researchers interested in biobanked specimens. The CTRNet website offers learning opportunities covering topics such as tissue handling, study design, sample selection and relevant technology training and innovations.

Clinical annotation plays a critical role in cohort studies and translational research and CTRNet has been involved in the strategic planning of several large scale translational research initiatives. CTRNet has made major improvements in developing and collecting standardized data with the introduction of the Advanced Tissue Management (ATiM) system. ATiM was developed in collaboration with all charter member banks and is already deployed in Manitoba and British Columbia, with final testing currently ongoing in Quebec. A pilot project is planned for Alberta and a national study in Ontario. CTRNet has also established an Ontology server to ensure common data.



CTRNet is recognized as a world leader in biobanking and is ensuring that Canadian-funded biobanks invest their limited resources in a coordinated fashion in order to capitalize on the best available science in the fight against cancer. The next step will be to finalize a business plan to ensure long term sustainability.

www.ctrnet.ca

www.cihr-irsc.gc.ca