

OICR Collaborative Services

Cancer research requires access to infrastructure, platforms and resources that are not easily maintained and sustained by any individual researcher. The Ontario Institute for Cancer Research's (OICR) collaborative services will help to increase the impact of translational research province-wide by providing increased access to a wide spectrum of technologies and services across OICR's programs and platforms.

OICR is committed to excellence and to seeking out opportunities that will provide access to the Institute's expertise in bioinformatics, genomics, imaging, medicinal chemistry and other programs for OICR-funded research that is peer-reviewed (i.e., the Proposed Research Activity Report (PRAR) or Personalized Medicine Research Fund (PMRF), and collaborative projects with principal investigators (PIs) associated with OICR-funded programs and platforms. The latter are also expected to be selected by peer-review (including OICR, Canadian Institutes of Health Research, Ontario Research Fund, National Institutes of Health, or an equivalent funding agency), except for pilot projects that may be conducted to help apply for grants.

The primary objective of this initiative is to:

1. Strengthen Ontario's research capacity.
2. Enhance and nurture scientific collaboration.
3. Facilitate integration of disciplines and unleash creativity of scientists.
4. Facilitate access to leading-edge technologies.

The collaborative services to be provided by OICR will require the provision of additional funds to cover items such as reagents and professional or technical time. These additional funds must be identified prior to the start of the work. When funding for the work will be provided by an OICR source (such as a MaRS-based OICR program/platform administered by OICR or the PMRF) or by an external grant co-directed by a PI based at OICR or MARS and administered by OICR, the allocation and provision of funds can be coordinated internally by the OICR Finance Team. If the funding is to be provided from a non-OICR MaRS-based source or by an external fund not administered by OICR, an invoice (with applicable taxes) will be generated.

DESCRIPTION OF SERVICES:

OICR supports world-class cancer research teams and cutting-edge facilities with expertise and infrastructure in areas such as bioinformatics, genomics, imaging and medicinal chemistry. OICR has also established a tumour repository through the Ontario Tumour Bank (www.ontariotumourbank.ca) and provided start-up funds to the Ontario Cancer Biomarker Network (www.ocbn.ca).

Collaborative services listed below will be made available through consultation with OICR Program/Platform Directors depending on their capacity and readiness.

ACKNOWLEDGEMENT AND REFERENCE POLICY:

OICR monitors contributions to the scientific community. This is done as part of its ongoing support for the activities of its collaborators and to ensure it meets the

requirements of both funding partners and OICR's charter as a not-for-profit corporation. To achieve this, OICR's collaborators must acknowledge the work performed by OICR in any or all of the following ways:

1. OICR does not request or require co-authorship on publications when data has been generated through its cost-recovery collaborative service alone, i.e., when no intellectual contribution has been made.
2. For collaborations where OICR's contributions are more than simply fee for service, the collaborative work will be governed by collaboration agreements that will establish the nature of collaborative work and the terms and conditions of arising IP management and co-authorship.
3. At a minimum, acknowledgement of OICR's work must be included in peer-reviewed publications. The following sentence will be incorporated into the Acknowledgements section of the article: "The authors wish to acknowledge the Ontario Institute for Cancer Research for [activity]".
4. Alternately, acknowledgements may appear in the text of peer-reviewed publications, for example in the Materials and Methods sections. A suggested sentence for inclusion is: "[Activity] was performed by the Ontario Institute for Cancer Research funded by Ministry of Research and Innovation, Ontario."

OICR Collaborative Services Chart

OICR program or platform	Type of services	Description of services	Location	Contact person	Contact information
Cancer Stem Cells	Detection and characterization of cancer cells	<p>PRODUCT APPLICATIONS: CyTOF™ Instrumentation that allows massively multiplex analysis of individual cells or beads.</p> <p>Pharmaceutical: agonist/antagonist interaction (kinase/phosphatase activity), metabolite assays, drug validation.</p> <p>Research: protein interaction, protein reaction pathways, simultaneous gene/protein assay, high sensitivity, highly multiplexed bioassays, quality control of cell culture growth, gene expression.</p> <p>Gene analysis: multiplexed beads allow 1000s of measurements per second.</p>	Toronto	Vladimir Baranov Scott Tanner	vladimir.baranov@dvsscience.com sd.tanner@utoronto.ca
	Flow cytometry	<p>PRODUCT APPLICATIONS: MAXPAR™ Reagents for multiplex bioassay of bulk or discrete samples</p> <p>Clinical: assay of relatively homogeneous biopsies, blood samples, and body fluids.</p> <p>Pharmaceutical: agonist/antagonist interaction (kinase/phosphatase activity), metabolite assays, drug validation.</p> <p>Research: protein interaction, protein reaction pathways, simultaneous gene/protein assay, high sensitivity, highly multiplexed bioassays, quality control of cell culture growth, gene expression.</p>			
	Monoclonal antibody	Monoclonal antibody screening/development			
Genomics	Analysis including QC	SNP/indel discovery from whole genome or target	Toronto	John McPherson	john.mcpherson@oicr.on.ca
		Gene expression through sequencing			
		Structural variant analysis			
		Integration of data sets			

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Genomics (continued)	Large-scale PCR approaches	Selected SNP/indel validation	Toronto	John McPherson	john.mcpherson@oicr.on.ca
		Whole genome sequencing			
	Targeted genomic sequencing				
	Structural variation				
	Copy number variation				
	Whole transcriptome sequencing				
	Small RNA discovery/sequencing				
	Validation	Selected SNP/indel validation			
		qPCR			
Health Services Research	"cd-link"	CIHI (DAD), CIHI (NACRS) Home Care Database, ODB, OHIP, CytoBase, OBSP, OcrIS and RPDB	Toronto	Craig Earle	craig.earle@ices.on.ca
Imaging Pipeline	Histopathology	3D pathology lab, tissue sectioning/straining/digitized imaging	London	Aaron Fenster	afenster@imaging.robarts.ca
		3D pathology lab, research, tissue processing and staining (routine/special/antibody), whole mount sections	Toronto	Yulia Yerofeyeva	yulia.yerofeyeva@sunnybrook.ca
		Pathos automated microwave, ESBE - histopathology lab			
		Microwave Histos 5 Processor, ESBE - histopathology lab			
		Automated Immunostainer, Dako - histopathology lab			
		Shandon Finesse Electronic Microtome - histopathology lab			
Macrotome SP2600/ SM2500 Ultramiller, Leica					

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Imaging Pipeline (continued)	Mass spectroscopy	Waters LCT Premier MS System	London	R.H. Hudson	rhudson@uwo.ca			
		Agilent LC/MS and GC/MS	Hamilton	John Valliant	valliant@mcmaster.ca			
	Probe characterization	Zetasizer Nano ZS dynamic light scattering based particle sizer	London	Elizabeth Gillies	eggillie@uwo.ca			
		Cytometer for sorting ligand bound beads (peptide library)	London	John Lewis	john.lewis@lhsc.on.ca			
		HPLC with gamma detectors	Hamilton	John Valliant	valliant@mcmaster.ca			
		Gamma counter						
		RadioTLC						
		Biotage microwave						
		Biotage V10 for rapid evaporation						
		Biotage SP1 for rapid purification						
		Advanced ChemTech peptide synthesizer						
		Probe development				Automated synthesis unit, Modular-Lab Exkert & Ziegler	Toronto	David Green
	GMP hot cell					Hamilton	John Valliant	valliant@mcmaster.ca
	50 MW nuclear reactor					Hamilton	Chris Heysel	heyselc@mcmaster.ca
	RDS 112 cyclotron		Hamilton	Raman Chirakal	chiraklr@mcmaster.ca			
	Malvern Nanosizer S (zeta potential and dynamic light scattering system)		Toronto	Ivan Gorelikov	igorelik@sten.sunnybrook.utoronto.ca			
	Misonix Sonicator 3000							
	Northern Lipids extruder							

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Medicinal Chemistry	<i>In vitro</i> and <i>in vivo</i> DMPK experiment services	<i>In vitro</i> assays	Toronto	Ahmed Aman	ahmed.aman@oicr.on.ca
		<i>In vivo</i> assays			
		Other <i>in vitro</i> and <i>in vivo</i> assays (e.g., CYP induction, PD, drug concentration, metabolites etc.)			
One Millimetre Cancer Challenge	Computed tomography (CT)	3 Micro-CTs for small animal imaging	London	David Holdsworth	david.holdsworth@imaging.robarts.ca
		Micro-CT for specimens	Toronto	John G. Sled	jgsled@phenogenomics.ca
		Cone beam CT (sandbox), 100mm ³ , research, tissue, phantoms	Toronto	Gord Mawdsley	gord.mawdsley@sunnybrook.ca
		EVS MicroCT			
		GE 2000D Digital Mammography Unit			
		GE DS Digital Mammography Unit / Tomosynthesis Prototype	Toronto	Lisa Di Diodato	lisa.di.diodato@rmp.uhn.on.ca
		MicroCT (150um resolution), research, animal (whole body murine up to NHP brain) - anatomical and perfusion			
	MicroCT (>15um resolution), research, small samples (e.g., murine bone, polymer sample) - anatomical/structural				
	Image guided radiation therapy, research, animal	London	Aaron Fenster	afenster@imaging.robarts.ca	
	Machine shop				
N/C lathe					
Machine shop	N/C mill - 5 axis	Toronto	Gord Mawdsley	gord.mawdsley@sunnybrook.ca	

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One Millimetre Cancer Challenge (continued)	Magnetic resonance (MR)	3T, clinical, 1H, He, 13C, whole body human	London	Grace Parraga	gep@imaging.robarts.ca
		3T fMRI, research, whole body human		Ravi Menon	rmenon@imaging.robarts.ca
		7T fMRI, research, whole body human		Rob Bartha	rob.bartha@imaging.robarts.ca
		9.4T fMRI, research, animal, up to non-human primates		Ravi Menon	rmenon@imaging.robarts.ca
		RF coil development lab		Paula Foster	pfoster@imaging.robarts.ca
		Spinmaster FFC-2000 1T field cycling NMR relaxometer		Elizabeth Gillies	egillie@uwo.ca
		Auxiliary electromagnet			
		Zetasizer Nano ZS dynamic light scattering based particle sizer			
		1.5T for human whole body	Toronto	Christopher Macgowan	christopher.macgowan@sickkids.ca
		3T for human whole body (being purchased)		R. Mark Henkelman	mhenkel@phenogenomics.ca
		7T for mouse		Don Plewes	don.plewes@swri.ca
		3T, clinical, 1H, He, 13C, whole body human			
		0.5T, small sample relaxation and polarization measurements			
		7T, animal, 1H, 13C			
		C13 DNP polarimeter			
		7T MRI, research, animal (whole body murine up to NHP brain) - anatomical, quantitative, DCE		Lisa Di Diodato	lisa.di.diodato@rmp.uhn.on.ca

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One Millimetre Cancer Challenge (continued)	Optical	IVIS 300 (3D) caliper for mice	Toronto	R. Mark Henkelman	mhenkel@phenogenomics.ca
		Bioptonics OPT optical CT for fixed specimens			
		Prototype OPT for fixed specimens		Michael Salter	michael.salter@sickkids.ca
		Fluorescence caliper for mice			
		Dual photon <i>in vivo</i> microscopy system		Bojana Stefanovic	bojana.stefanovic@sunnybrook.ca
		ART softscan breast imager		Gord Mawdsley	gord.mawdsley@sunnybrook.ca
		Fulcrum high resolution film digitizer			
		HORIBA Jobin Yvon FluoroMax-4 spectrofluorometer		Ivan Gorelikov	igorelik@sten.sunnybrook.utoronto.ca
		Cary-5000 UV-Vis-NIR spectrophotometer			
		TissueScope 4000 slide scanner (whiteband, fluorescence, max 0.2 um)		Chris Peressotti	cperesso@butane.sunnybrook.utoronto.ca
		Mirax Slide Scanner (0.3 um)			
		3D ProtoPrinter FDM-200mc, Stratasys		Gord Mawdsley	gord.mawdsley@sunnybrook.ca
		Olympus IX81 inverted confocal fluorescence microscope (with EM-CCD camera)		James Jonkman	james@aomf.ca
		TISSUEScopeTM 4000			
		Hyperspectral fluorescence, research, small animal (murine, rodent)		Lisa Di Diodato	lisa.di.diodato@rmp.uhn.on.ca
		Fluorescence molecular tomography, research, small animal (murine, rodent) - NIR probes			
Leica FCM1000 confocal probe (<i>in vivo/in situ</i> cellular imaging), research, animal					

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One Millimetre Cancer Challenge (continued)	Optical (continued)	Confocal (Zeiss LSM510)	Toronto	James Jonkman	jjonkman@uhnresearch.ca
		FV1000 confocal (Olympus IX81)			
		Yokogawa spinning disk confocal (Zeiss Axiovert 200M)			
		Two-Photon (Zeiss LSM510 META)			
		Axiovert (Axiovert 200M)			
		Olympus upright (Olympus BX50)			
		Nikon upright (Nikon OPTIPHOT)			
		Aperio scanner (Aperio ScanScope XT)			
		Leica stereomicroscope (Leica MZ FLIII)			
		Xenogen (Xenogen IVIS imaging system 100)			
	Positron emission tomography (PET)	Gallium-68 radionuclide generator systems for nuclear medicine	London	Leonard Luyt	lluyt@uwo.ca
		Philips Mosaic microPET	Hamilton	Chantal Saab	saab@hpsc.ca
	Single photon emission computed tomography (SPECT)	Micro-CT/SPECT GE for small animals	London	David Holdsworth	david.holdsworth@imaging.robarts.ca
		NanoSPECT/CT, research, small animal (murine, rodent)	Toronto	Lisa Di Diodato	lisa.di.diodato@rmp.uhn.on.ca
	Software	Registration and analysis software	Toronto	Jason P. Lerch	jason@phenogenomics.ca
		Cone Beam CT reconstruction Exxim/Cobra		James Mainprize	james.mainprize@sunnybrook.ca
		Bitplane Imaris		Kristy Brock	kristy.brock@rmp.uhn.on.ca
		Software			
		Media Cybergenetics Image Pro Plus			
		MathWorks Matlab			
Altair HyperWorks					
ITT IDL					
Simulia Abaqus					

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One Millimetre Cancer Challenge (continued)	Software (continued)	Pinnacle	Toronto	Kristy Brock	kristy.brock@rmp.uhn.on.ca
		Inveon Research Workplace			
	Ultrasound	Four 3D ultrasound imaging systems for prostate, breast and liver imaging, biopsy and therapy	London	Aaron Fenster	afenster@imaging.robarts.ca
		Vevo 700 ultrasound microimaging system for mouse	Toronto	Yu-Qing Zhou	yqzhou@phenogenomics.ca
		Vevo 2100 high frequency ultrasound imaging system for mouse			
		Pulsed copper vapour laser (Oxford Lasers)			
		Fast frame camera (Photron APX)			
		Laser vibrometer (Polytech)			
		High frequency ultrasound scanner (VisualSonics VEV0770-RF)			
		Optical tweezers for manipulating microbubbles to assess boundary effects			
High Frequency Ultrasound (1.3cm penetration depth), research, small animal (murine, rodent) - quantitative tumour sizing, vascular/doppler imaging					
Ontario Cancer Biomarker Network (OCBN)	Biomarker development	Assistance with biomarker development and analysis is available via OCBN, OICR's Biomarker Initiative award recipient.	Toronto	Terrence Sills	tsills@ocbn.ca
Ontario Regional Bio-therapeutics Program (ORBiT)	Correlative Assays	Analysis of cytotoxic T-cell lymphocytes - phenotypic analysis	Ottawa	Catherine Fortin	cfortin@ohri.on.ca
		Functional assessment			
		Measurement of serum antibody by ELISA			
		Analysis of serum antibodies by SEREX			
	GMP Manufacturing	Upstream cell culture and bank cryopreservation			
		DC and TC culture			
		Virus manufacture			

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Ontario Tumour Bank (OTB)	Tumour specimens	Access to highly characterized tissue and blood from cancer patients is critical in validation studies based on clinical trial companion studies. The OTB is a biorepository and data bank focused on the collection of tumour-related human biospecimens. Clinical data associated with biospecimens include detailed information on all treatment modalities and patient and family histories, as well as treatment response and patient outcome information. Investigators are encouraged to take advantage of this biorepository to supplement collection of patient material obtained through companion studies.	Toronto	Charmaine DeSouza	tumourbank@oicr.on.ca

Acronyms

1MM	One Millimeter	NC	Numerically controlled
ART	Advanced Research Technologies Inc.	NHP	Non-human primate
CIHI	Canadian Institute for Health Information	NIR	Near infrared range
CT	Computed Tomography	NMR	Nuclear magnetic resonance
CYP	Cytochrome P450	OBSP	Ontario Breast Screening Program
DAD	Discharge Abstract Database	OCBN	Ontario Cancer Biomarker Network
DCE	Dynamic Contrast Enhanced	OCRIS	Online Catalogue and Repository Interoperability Study
DMPK	Drug Metabolism and Pharmacokinetics	ODB	Ontario Drug Benefit
DNP	Dynamic Nuclear Polarization	OHIP	Ontario Health Insurance Plan
ELISA	Enzyme-linked immunosorbent assay	OTB	Ontario Tumour Bank
ESBE	Company name - ESBE Scientific	PD	Pharmacodynamics
EVS	Enhanced vision system	PET	Positron emission tomography
FFC	Fast-field cycling	qPCR	Quantitative polymerase chain reaction
fMRI	Functional Magnetic Resonance Imaging	RDS	Radio isotope delivery system
GC	Gas Chromatography	RF	Radiofrequency
GMP	Good manufacturing practices	RNA	Ribonucleic acid
HPLC	High performance liquid chromatography	RPDB	Regional planning and development board
IDL	Interactive data language	SEREX	Serological analysis of recombinant cDNA (complementary deoxyribonucleic acid) expression libraries
ITT	Company name	SNP	Single-nucleotide polymorphism
IVIS	<i>In vivo</i> imaging system	SPECT	Single photon emission computed tomography
LC	Liquid chromatography	TLC	Thin-layer chromatography
MR	Magnetic resonance	US	Ultrasound
MS	Mass spectrometry	ZS	Zetasizer
NACRS	National Ambulatory Care Reporting System		