

SickKids[®]
RESEARCH
INSTITUTE

**Core
Facilities**

“ At SickKids we are committed to the idea that innovation and research are critical to our vision of Healthier Children. A Better World. ”

The Hospital for Sick Children (SickKids) is Canada's most research-intensive hospital and the largest centre dedicated to improving children's health in the country. The mission of SickKids is to provide the best in complex and specialized care by creating scientific and clinical advancements, sharing our knowledge and expertise and championing the development of an accessible, comprehensive and sustainable child health system. At SickKids we are committed to the idea that innovation and research are critical to our vision of Healthier Children. A Better World.

In order to provide for the wide array of technical requirements of our research community, we are home to a series of specialized core facilities. Each of these facilities provides technical expertise and services as well as access to state-of-the art equipment to our researchers on a cost recovery basis. For more information on these facilities and the services that are available, please visit:

www.sickkids.ca/Research/FacilitiesandResources/index.html

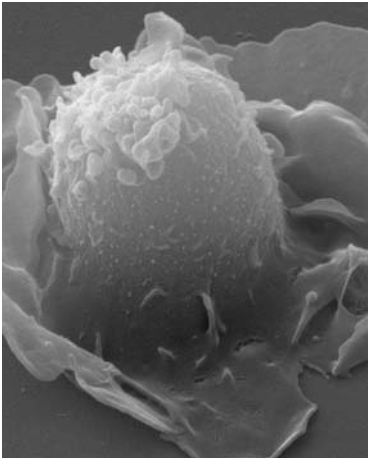
Advanced Bioimaging Centre (ABC)	04
Advanced Protein Technology Centre (APTC).....	05
Analytical Facility for Bioactive Molecules.....	06
Biostatistics, Design and Analysis Unit (BDA)	07
Canadian Mouse Mutant Repository (CMMR)	08
The Centre for Applied Genomics (TCAG).....	09
The Centre for Computational Biology (CCB)	10
Clinical Research Centre (CRC)	11
Embryonic Stem Cell (ES) Facility	12
Flow Cytometry Facility (FCF)	13
Focus in Synthetic Chemistry (FISC).....	14
Imaging Facility.....	15
Liquid Nitrogen Support Services	16
Monoclonal Antibody Facility.....	17
Research Information Technology Facility (Research IT)	18
Research MRI Facility.....	19
Signalling Identification Network (SIDNET).....	20
Sterilizing, Glassware Processing & Laboratory Support Services	21
Toronto Centre for Phenogenomics (TCP).....	22
TCP Transgenic Core (TCP Tg Core)	23

A joint venture between The Hospital for Sick Children (SickKids) and Mount Sinai Hospital, the ABC provides transmission and scanning electron microscopy services to scientists at these two institutions and the research community at large.

SERVICES

- FEI Tecnai 20 transmission electron microscope with EDX, Gatan image filter, cryo holder and an AMT 4k by 4k digital camera
- FEI XL30 environmental scanning electron microscope with EDX
- routine specimen preparation for transmission electron microscopy and scanning electron microscopy as well as specialized procedures and imaging in the areas of immuno and analytical electron microscopy

Projects can be performed entirely by the centre's staff or individuals can be trained to prepare their own samples and to operate the microscopes.



CONTACT INFORMATION

Robert Temkin

Mount Sinai Hospital

Department of Pathology and Laboratory Medicine

600 University Ave., Room 6-409

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www.sickkids.ca/Research/

Advanced-Bioimaging-Centre

In operation for over two decades, the APTC provides protein analysis services to SickKids and the greater research community. They provide analysis in four main functional areas: amino acid analysis, protein sequencing, peptide synthesis and mass spectrometry.

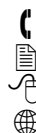
SERVICES

- amino acid analysis
 - protein purity & quantity estimates
 - tryptophan and/or cysteine content
- Edman sequencing
- peptide synthesis
 - large & small scale peptide synthesis
 - high throughput peptide synthesis and peptide arrays
- mass spectrometry
 - protein identification
 - quantitative proteomic profiling
 - de novo sequencing
 - peptide mass mapping

CONTACT INFORMATION

Christine Dhara

555 University Ave., Room 9107, Elm Wing
Monday–Friday, 9:00 a.m. to 5:00 p.m.



416.813.5120

416.813.5029

christine.dhara@sickkids.ca

www.sickkids.ca/Research/APTC/



The Analytical Facility offers a range of services for quantitative and qualitative analysis of biological samples to the greater scientific community.

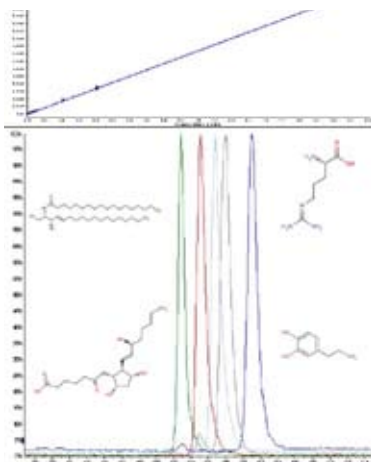
SERVICES

Mass Spectrometry

- quantitative and investigative analysis of small molecules
 - metabolites, lipids, amino acids, eicosanoids, drugs, customized methods
- stable isotope metabolic pathway tracing
- molecular tissue imaging
 - spatial arrangement and relative abundances of metabolites, drugs, phospholipids, peptides and proteins in tissue samples

Bio-Analytical

- HPLC-PDA, UV, Vis, fluorescence and ECD
- Nano-HPLC
- ProteomeLab PF 2D
- Luminex – immunoassays, receptor-ligand, molecular biology, enzymatic
- ProteOn – protein/protein interactions



CONTACT INFORMATION

Denis Reynaud (Bio-Analytical)

Monday to Friday, 9 a.m. to 5 p.m.

Michael Leadley (Mass Spectrometry)

Monday to Friday, 10 a.m. to 6 p.m.



416.813.8707 (Bio-Analytical)

416.813.8706 (Mass Spectrometry)



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Operated by the Child Health Evaluative Sciences Program at the Research Institute, the mandate of the BDA is to improve the quality of research at SickKids by offering consultation in the areas of study design and methodology, statistical analysis and data management.

SERVICES

Biostatistics consultation

- study design and methodology (sample size and power)
- statistical analysis
- development of statistical methods for peer-review publications and grant submissions

Clinical research database management

- design of data entry screens
- documentation of the database development
- modification, design and programming of tables and reports
- development of coding guidelines and database checks

Methodological education of clinical investigators

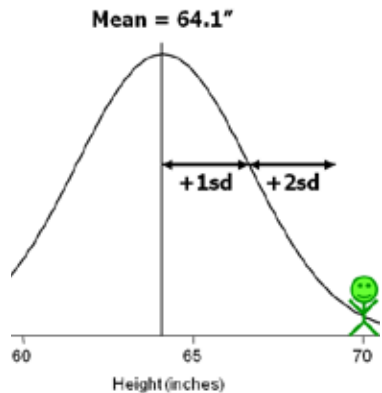
- biostatistics clinic
- data and biostatistics workshop series

Data entry services

CONTACT INFORMATION

Teresa To, Scientific Director
 Derek Stephens, Facility Manager
 123 Edward St., 4th Floor
 Monday to Friday, 9 a.m. to 5 p.m.

- ☎ 416.813.8498 (To)
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- 📄 416.813.5979
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- 🌐 www.sickkids.ca/research/bda



The CMMR is a central repository for the cryopreservation and archiving of mutant mouse lines as spermatozoa, embryos and tissues in various formats (fixed, embedded and glass-slide mounted). The CMMR is also the repository and distribution centre for mutant mouse embryonic stem cells from the North American Conditional Mouse Mutagenesis project (NorCOMM). Located at the Toronto Centre for Phenogenomics (TCP), the CMMR forms part of a full-service mouse model research centre.

SERVICES

- embryo cryopreservation and recovery
- sperm cryopreservation and recovery
- strain services, including rederivation by IVF, speed expansion and strain rescue
- NorCOMM ES cell withdrawal
- more than 4,200 unique genes trapped in mES cells
- more than 500 targeted NorCOMM allele genes in mES cells
- access to ES cell lines from the International Knockout Mouse Consortium
- non-NorCOMM ES cell expansion
- derivation of mice from NorCOMM ES cell lines in conjunction with the TCP Transgenic Core



CONTACT INFORMATION

Lauryl Nutter, PhD

Toronto Centre for Phenogenomics

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www.cmmr.ca

TCAG is comprised of facilities that provide the resources, technologies and expertise essential for disease gene research and other basic and applied genetic and genomic investigations.

SERVICES

DNA sequencing & synthesis

- Sanger capillary electrophoresis and next-generation sequencing, and synthesis of conventional and labeled oligonucleotides
- microarray analysis for gene expression, SNP detection and copy number variation

Cytogenomics & genome resources

- Karyotyping (G-banded and SKY), FISH mapping, probe labeling, gene and physical mapping services, control DNA samples, and clone retrieval

Genetic analysis

- microsatellite and SNP genotyping, fine-mapping and genome-wide scans, marker development and mutation analysis

Statistical analysis

- consulting and analytical services

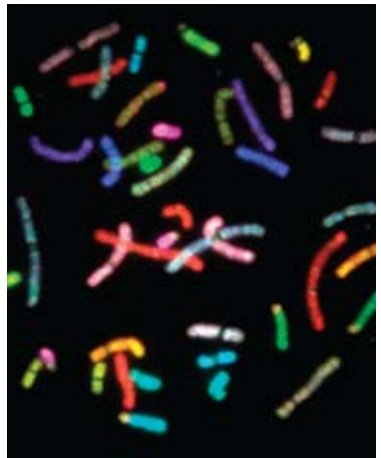
Biobanking & databases

- DNA extraction from lymphoblasts, fibroblasts and other cell types, archiving of white cell pellets, preparation and immortalization of cell lines, and databasing and tracking of samples and/or cell lines
- comprehensive bioinformatics support

CONTACT INFORMATION

Jo-Anne Herbrick, Facility Manager
101 College St., TMDT - Room 14-706
Monday to Friday, 9 a.m. to 5 p.m.

- ☎ 416.813.8140
- 📄 416.813.8319
- ✉ jherbrick@sickkids.ca
- 🌐 www.tcag.ca



The CCB provides for the computing, super computing and software needs within the Research Institute and to the greater research community.

SERVICES

Software, Databases & Websites

- consulting services for the development of research software, databases, and dynamic websites. We also provide website and web applications hosting services

Bioinformatics & Research

- tools and consulting services for bioinformatics research including: drug design, sequence analysis, systems biology, computational chemistry, data analysis, and statistical programming for genome-wide studies

Supercomputing

- the High Performance Facility (HPF) is also available to handle computationally intensive tasks



CONTACT INFORMATION

Dave Fernandes, PhD, Facility Manager
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Monday to Friday, 9 a.m. to 5 p.m.



416.813.8339



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www.ccb.sickkids.ca

The CRC is dedicated to providing safe and accessible facilities for physiological patient-based research. These services are offered to SickKids research personnel and clinical researchers from other hospitals.

SERVICES

- research exercise measurements
- general patient assessment
- specialized metabolic testing, including calorimetry and body composition
- research nursing care, including phlebotomy and medication infusions

CONTACT INFORMATION

Karen Chapman, Clinical Investigation Unit

Jane Schneiderman, Exercise Laboratory

555 University Ave.

Monday to Friday, 7 a.m. to 5 p.m.

Evening and weekends may be scheduled



416.813.6121 (Chapman)
416.813.7654 ext. 4407 (Schneiderman)



416.813.4972 (Chapman)
416..813.5109 (Schneiderman)



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The ES facility provides reliable, high quality technical service and support for the maintenance of embryonic stem cell lines and generation of targeted cell lines. They also provide materials, training and technical assistance to researchers. Feeder cells, ES cell lines and reagents are also available for outside users.

SERVICES

- provide ES cell lines, including R1, G4, and W4
- provide feeder cultures from DR4 mice, available in both E12.5 and E15.5
- provide fully tested and standardized reagents and supplies required for gene targeting and selection
- technical advice and guidance for all facility users at all steps in process, including:
 - growth of cells
 - electroporation of targeting vectors
 - selection and expansion of targeted ES cell clones
 - freezing and temporary storage of potential clones
- thawing, expansion, re-freezing and mandatory MAP testing for ES cell clones purchased or generated by outside labs
- provide frozen vials of DR4 feeders
(Limited supply, sold in lots of 50 vials. Please inquire.)



CONTACT INFORMATION

Valerie Prideaux, Facility Manager

Jodi Garner, Facility Technician

101 College St., TMDT - Room 13-403

Monday to Friday, 9 a.m. to 5 p.m.



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jgarner@sickkids.ca



<http://riweb.sickkids.on.ca/escf>

A joint SickKids and UHN facility, the FCF provides cell analysis services using flow cytometry technology. Flow cytometers detect and quantify a number of cellular parameters as cells are carried in a liquid stream through a nozzle that is illuminated by one or more lasers emitting light of defined wavelengths. This level of analysis allows researchers to use multiple experimental parameters when processing samples.

SERVICES

- analytical flow cytometry
- high speed and magnetic cell sorting
- basic educational and training materials
- consultation on the design of flow cytometry experiments, including the need to include particular kinds of specificity and fluorescence compensation controls
- data analysis

CONTACT INFORMATION

Sherry Zhao, Facility Manager
101 College Street, TMDT
Lab 2-504 (MoFlo, Influx and BD analyzers)
Lab 2-203 (Arias, Coulter Analyzers and
Magnetic Cell Sorters)
Office: 2-302
Monday to Friday, 10 a.m. to 6 p.m.



416.581.7654 (lab 2-504)

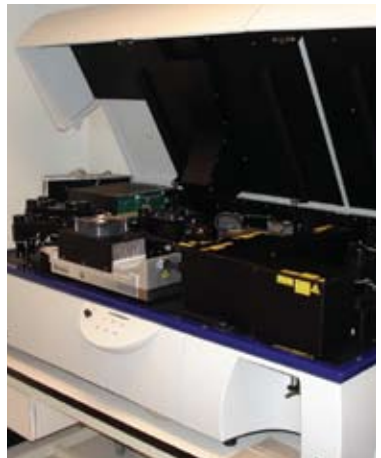
416.581.7610 (lab 2-203)



sheyun.zhao@sickkids.ca



www.sickkids.ca/Research/FCF



Launched in 2008, FISC provides researchers within SickKids Research Institute with chemical synthetic expertise to develop and improve small molecule modulators of biological systems. These syntheses are targeted to generate molecules which can function with a living system.

SERVICES

Chemistry for these services can be based on lead compounds identified by the researcher, structural data on molecular interactions, in silico prediction of such, or a combination of approaches.

- plan and define synthetic potential
- elaborate and synthesize lead compounds
- scale up synthesis of bioactive compounds



CONTACT INFORMATION

Dr. Cliff Lingwood, Scientific Director

Dr. Murugesapillai Mylvaganam

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416.813.5622



416.813.5993

cling@sickkids.ca

mmyl@sickkids.ca

The Imaging Facility provides a full range of biological imaging solutions for life sciences research. Researchers are able to access cutting edge technologies in biological imaging, which are made available on a fee for service basis.

SERVICES

- basic transmission and epifluorescence microscopy
- spinning disc and point scanning confocal microscopy
- access to more advanced technologies – ie. ratiometric imaging, TIR-FM, FLIM, two-photon excitation, FRAP, photo-activation
- laser microdissection, whole slide scanning (immunohistochemistry and fluorescence slides), fluorescence stereomicroscopy
- analysis workstations are provided free of charge for image analysis and presentation (ie. deconvolution, 3D reconstruction, quantitation, etc.)

CONTACT INFORMATION

Michael Woodside, Facility Manager

Paul Paroutis, Imaging Specialist

McMaster North Annex/
101 College St., TMDT - 11-303

Monday to Friday, 9 a.m. to 5 p.m.

General Access: 24/7



416.813.8591

416.813.8704 (TMDT)



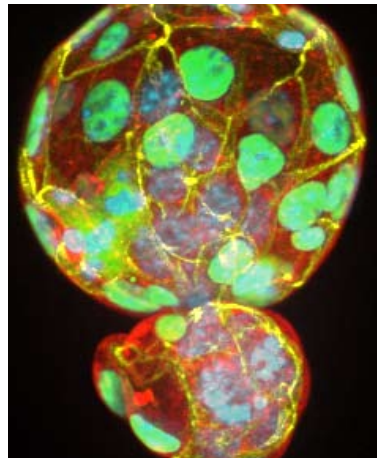
416.813.2236

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www.sickkidsimaging.ca



This facility provides material management support and storage for researchers using liquid nitrogen. All services are offered exclusively to SickKids research personnel.

SERVICES

- liquid nitrogen supply & storage
- cold room/warm room decontamination and maintenance



CONTACT INFORMATION

Rosanna Sheppard, Facility Manager
555 University Ave., Room B312,
Atrium, Access 24/7



416.813.8698

rosanna.sheppard@sickkids.ca

The Monoclonal Antibody Facility produces high quality monoclonal antibody-producing cell lines and antibody purification services to the greater research community on a fee for service basis.

SERVICES

- hybridoma generation from peptides or proteins supplied by the customer
- rescue and subcloning of existing hybridoma cell lines
- monoclonal and polyclonal antibody purification
- isotyping of hybridoma cell lines
- large scale (1 litre) production of existing cell lines
- supply epitope-tag mouse monoclonal antibodies for research purposes only

CONTACT INFORMATION

Dr. Sudha Arya, Facility Manager
555 University Ave., Rooms 9503/9525, Hill Wing
Monday to Friday, 9 a.m. to 5 p.m.



416.813.7654 ext. 2606/2310
416.813.5002
sudha.arya@sickkids.ca
<http://riweb.sickkids.on.ca/maf/index.html>



The mission of Research IT is to foster research at SickKids through the provision of core computing resources, services and infrastructure. Our guiding principle is service excellence through industry best practices, teamwork and feedback from the research community.

SERVICES

- desktop support for Windows, Macintosh and Linux platforms
- hardware and software distribution and bulk licensing
- server hosting
 - external network – enabling access by collaborators from other institutions
 - internal network – directly connected to Kidnet for those services not requiring external access
- data storage and backup services
- consulting services and specification writing to assist with design and procurement of computing hardware and software



CONTACT INFORMATION

Wayne Arnold, Facility Manager
555 University Ave., Room 11101, Elm Wing
Monday to Friday, 9 a.m. to 5 p.m.



416.813.5728

researchhelpdesk@sickkids.ca

<http://riweb.sickkids.ca>

The research 1.5 Tesla MRI facility provides a wide range of human-imaging and animal-imaging capabilities to Toronto-area scientists. The site is staffed with two full-time research MR technologists.

SERVICES

- conventional anatomical imaging
- functional MRI, diffusion tensor imaging and tractography
- phase-contrast flow imaging, contrast-enhanced perfusion quantitation and delayed enhancement imaging
- spectroscopic imaging (1H and 31P)
- specialized coils for small field-of-view imaging
- animal anesthesia, ventilation and monitoring equipment
- power injector for contrast-enhanced imaging

CONTACT INFORMATION

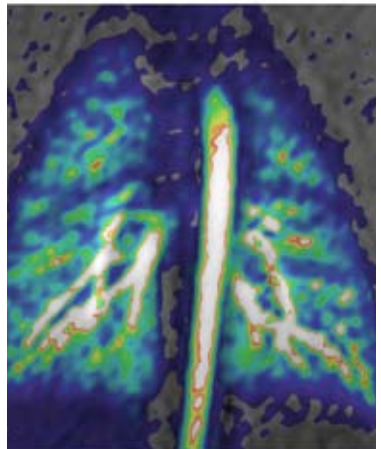
Chris Macgowan, PhD, Facility Manager
Ruth Weiss/Garry Detzler, MRI Technologists
180 Dundas St. W., Suite 430, Room 422
Monday to Friday, 8 a.m. to 7 p.m.



416.813.1069

416.813.7362

<http://researchmri.ccb.sickkids.ca>

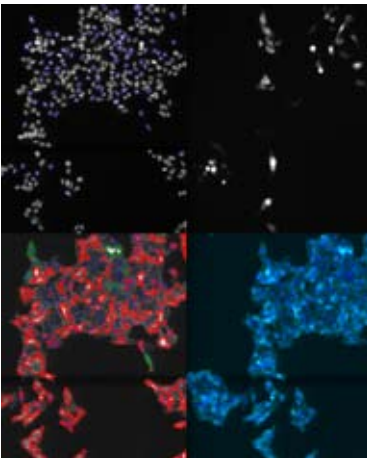


SIDNET supports high throughput screening projects by providing access to automation platforms, liquid handling systems, detection technologies, cDNA expression libraries and shRNA and esiRNA knock-down libraries to the academic research community in a cooperative and interactive environment. SIDNET staff is available to assist in the development of custom assays and automation protocols.

SERVICES

A variety of *in vivo* cell based screening approaches to identify the role of specific genes and gene families in cell signalling pathways and networks are available utilizing the clone archive of expression-ready cDNA, shRNA and esiRNA:

- liquid handling: integrated liquid handling, cell culture and detection technologies provide uninterrupted workflow resulting in increased quality and quantity of data
- high-throughput detection technologies, plate readers etc.
- Cellomics VTI high-content screening
- SIDNET Archives: functional sets of protein-encoding open reading frames (ORFs) and shRNAs and esiRNA allows functional studies of the corresponding proteomes
- High-throughput transfection methods
- LOPAC 1280 small molecule library
- Protein array printing screening and analysis
- Custom cDNA entry clones and expression clones



CONTACT INFORMATION

Christopher Fladd, Facility Manager
555 University Ave., Room 9147, Elm Wing
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416.813.5106



416.813.5029



cfladd@sickkids.ca



www.sickkids.ca/Research/SIDNET

A centralized facility which provides sterilization and glassware services exclusively to SickKids research personnel.

SERVICES

- Sterilization and glassware processing
- Reverse Osmosis water system

CONTACT INFORMATION

Rosanna Sheppard, Facility Manager
555 University Ave., Room 9510, Hill Wing
Monday to Friday, 6:30 a.m. to 2:30 p.m.



416.813.8698

rosanna.sheppard@sickkids.ca



TCP is a state-of-the-art facility enabling ground-breaking research with expertise in mouse generation, breeding and maintenance, phenotypic analysis, pathology and cryopreservation. The result of an innovative collaboration among Mount Sinai Hospital, St. Michael's Hospital, The Hospital for Sick Children, the University Health Network and the University of Toronto, Faculty of Medicine, the TCP provides research support for researchers from member institutions, throughout Ontario and around the world.

SERVICES

- exclusion barrier holding rooms
- modified barrier holding rooms
- custom breeding of wildtype and mutant lines of mice
- technical expertise in drug administration, sample collection, device implantation
- support for pre-clinical *in vivo* GLP toxicology and drug trials
- research technique training
- mouse colony diagnostic and health monitoring services
- genotyping and molecular biology services (coming soon)



CONTACT INFORMATION

Lise Phaneuf, DVM, DVSc, Director,
Research and Facility Operations
Toronto Centre for Phenogenomics
25 Orde St., Room G-104
Monday to Friday, 8 a.m. to 4:00 p.m.



647.837.5844

647.837.5834

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www.phenogenomics.ca

The TCP Tg Core is an amalgamation of the Transgenic Facilities at Mount Sinai Hospital and The Hospital for Sick Children. These facilities have been operating since the early 1990s and have pioneered innovative technologies such as the production of chimeras between genetically modified mouse ES cells and embryos using the aggregation method and the tetraploid complementation assay. The TCP Tg Core provides a range of services for generating genetically engineered mouse models (GEMMs) for research programs hosted at the TCP, TCP member institutes, throughout Toronto and around the world. The TCP Tg Core maintains a close affiliation with the laboratories of Dr. Janet Rossant and Dr. Andras Nagy.

SERVICES

- targeted mutagenesis using validated mouse embryonic stem cell lines
- expansion and pathogen testing of mutant mouse embryonic stem cells
- derivation of novel mouse embryonic stem cell lines
- generation of chimeras by blastocyst microinjection, morula aggregation and tetraploid complementation
- generation of transgenic mice by pronuclear microinjection
- re-derivation of mouse strains to specific pathogen-free status
- natural or superovulated timed pregnancies for embryo recovery
- pseudopregnant recipients for embryo transfers
- embryo transfer surgery

CONTACT INFORMATION

Marina Gertsenstein, Associate Director,
Transgenic Core, Toronto Centre for Phenogenomics
25 Orde St., Ground Floor
Monday to Friday, 9 a.m. to 6 p.m.



647.837.5811 ext. 4302



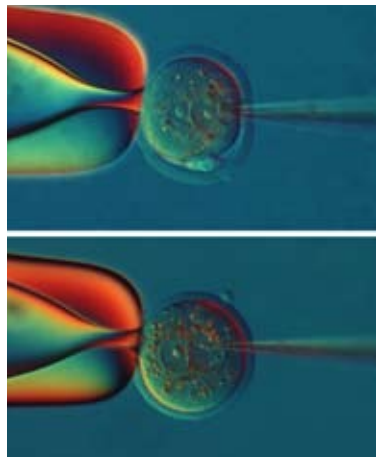
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[www.phenogenomics.ca/
transgenics/index.html](http://www.phenogenomics.ca/transgenics/index.html)





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