Child Health and Human Development Program (CHHD)

**From Conception, through Childhood, and into Adultescence: Optimizing Life**

Welcome Guide & Technical Information



<https://www.chhd-program.com/>

© Sara Beydoun, Angela Roussos, Rosanna Camarda and Murielle Akpa

# About the CHHD Program

The [Child Health and Human Development (CHHD) Program](https://rimuhc.ca/child-health-and-human-development-program) is one of [eight Research Programs](https://rimuhc.ca/programs) at the [Research Institute of the McGill University Health Centre](https://rimuhc.ca/). Approximately 125 researchers and over 200 trainees and staff members are part of our scientific program mostly located at the Glen site. Our researchers at the [Centre for Translational Biology (CTB)](https://rimuhc.ca/research-centres/ctb) perform mainly basic research, those at the [Clinical Outcomes Research Evaluations (CORE)](https://rimuhc.ca/research-centres/core) centre perform clinical and epidemiological research, and the [Centre for Innovative Medicine (CIM)](https://rimuhc.ca/research-centres/cim) houses clinical research only, all in various field of study including reproduction, development, birth, pediatric diseases, and many more. There are four pillars to the CHHD program: Human Reproduction & Development, Molecular & Cellular Determinants of Child Health, Neuroscience, and Health Outcomes in Childhood Diseases.

Our success lies in the ability of our basic, epidemiological, and clinical researchers to work together towards understanding the myriad of conditions that affect the parent, child, adolescent and emerging adult. The work conducted aims to generate novel therapies and methodologies that will help target such diseases.

The [CHHD researchers](https://rimuhc.ca/research/programs/chhd/researchers) hold appointments at McGill University’s Faculty of Medicine and Health Sciences in various schools and departments such as Medicine, Nursing, Pediatrics, Obstetrics& Gynecology, Oncology, and Human Genetics.

CHHD Management Committee

**Program Leader – Dr. Kolja Eppert**

Tel: (514) 934-1934 ext. 23876

Email: [kolja.eppert@mcgill.ca](mailto:kolja.eppert@mcgill.ca)

Office: 1001 boulevard Décarie, EM1.2248

Montréal, QC H4A 3J1

**Associate Program Leader** **– Dr. Isabelle Gagnon**

Tel: (514) 934-1934 ext. 23896

Email: [isabelle.gagnon8@mcgill.ca](mailto:isabelle.gagnon8@mcgill.ca)

Office: 5252 boulevard de Maisonneuve Ouest,

Montréal, QC H4A 3S5

The Program Manager and the Trainee Committee are the other members of the CHHD Management Committee.

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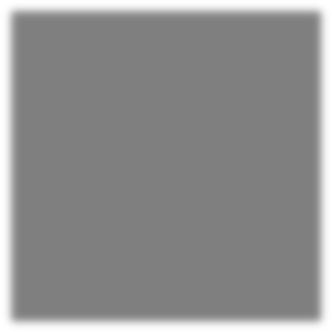
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CHHD Administrative Team



**Program Manager**

***Dr. Fanny Toussaint***

Tel: (514) 934-1934 ext. 76360

Email: [fanny.toussaint@muhc.mcgill.ca](mailto:fanny.toussaint@muhc.mcgill.ca)

Office: 1001 boulevard Décarie, EM0.3211

Montréal, QC H4A 3J1

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**Program Assistant**

***Angela Roussos***

Tel: (514) 934-1934 ext. 23023

Email: [angela.roussos@muhc.mcgill.ca](mailto:angela.roussos@muhc.mcgill.ca)

Office: 1001 boulevard Décarie, EM0.3221

Montréal, QC H4A 3J1

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**Program Assistant**

***Rosanna Camarda***

Tel: (514)934-1934 ext. 22418

Email: [rosanna.camarda@muhc.mcgill.ca](mailto:rosanna.camarda@muhc.mcgill.ca)

Office: 1001 boulevard Décarie, EM0.3217

Montréal, QC H4A 3J1

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**Technical Coordinator**

***Sara Beydoun***

Tel: (514) 934-1934 ext. 76128

Email: [sara.beydoun@muhc.mcgill.ca](mailto:sara.beydoun@muhc.mcgill.ca)

Office: 1001 boulevard Décarie, EM0.3211

Montréal, QC H4A 3J1

# Trainee Committee



**Zafina Budhwani**

President

MSc student - Dr. Aimee Ryan's lab

(zafina.budhwani@mail.mcgill.ca)

I completed my BSc in Chemistry with a concentration in Analytical Biochemistry at Mount Royal University in 2023. I am currently a first-year Human Genetics Master’s student working in Dr. Aimee Ryan’s Lab. My project is entitled “Characterizing the Claudin-3 interactome to understand Claudin-3's role in neural tube closure.” Neural tube defects are birth abnormalities that result from the improper closure of the neural tube, the precursor to the brain and spinal cord. The lab has identified claudin proteins as important for proper neural tube closure. My project aims to better understand the molecular mechanisms of neural tube closure that depend on Claudin-3 and its interaction partners. Outside of academia, I am a Civilian Instructor for the Royal Canadian Air Cadet program and an overall aviation enthusiast.

As president of the CHHD trainee committee, I work collaboratively with the team to provide trainees with different opportunities to show case their research and get to know their peers in the program. I hope that through the committee efforts we are able to build a sense of community amongst the trainee members of the program.



**Emilie Desnoyers**

VP Administration/Communication

MSc student - Dr. Daniel Dufort's lab

(emilie.desnoyers@mail.mcgill.ca)

I am a first-year master’s student in the Department of Experimental Medicine at McGill University. Before starting my master’s, I completed my undergraduate degree in Microbiology and Immunology at McGill University. Under the current supervision of Dr. Daniel Dufort, my research project uses the conditional Nodal-knockout mouse model to identify changes in the maternal immune landscape during all critical stages of pregnancy and to identify the role of Nodal as an immunomodulator.

As VP Administration, I oversee the internal administrative matters, including coordinating and scheduling committee meetings and recording meeting minutes. I strive to properly document, organize and share the committee's thoughts and ideas to ensure we plan the most pleasant and memorable events for you.



**Chika Onochie**

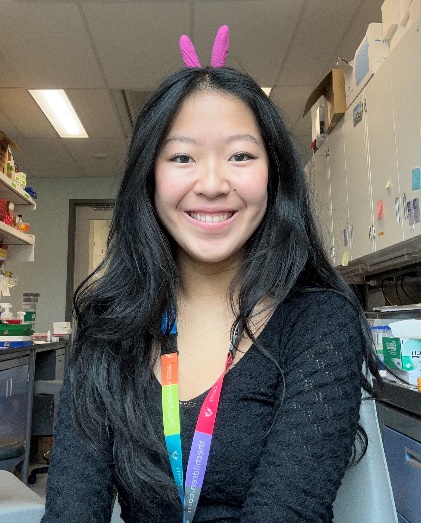
VP Finance

MSc student - Dr. Cristian O'Flaherty's lab

(chika.onochie@mail.mcgill.ca)

I am a second-year Pharmacology master's student in Dr. Cristian O'Flaherty's lab. My research is aimed at investigating a novel modification of human sperm proteins by Coenzyme A and its regulation of sperm capacitation. Before starting my master's degree, I completed my PharmD at the University of Benin, Nigeria. When I am not in the lab investigating the regulation of male fertility, I'm out playing soccer or discovering new spots around the city.

I am excited to be your VP of finance for this year! My goal in this role is to introduce effective financial record-keeping systems and secure support to help us organize larger events while reducing costs. If you're interested in event sponsorships, please don't hesitate to reach out!  We have an exciting year ahead for the CHHD trainee community, and I look forward to connecting with all of you soon!



**Candus Chik**

Co-VP Social Events

MSc student - Dr. Indra Gupta's lab

(candus.chik@mail.mcgill.ca)

I am a second-year master's student in the Department of Human Genetics. I completed my undergraduate degree in Biochemistry at McGill University.  I am supervised by Dr. Indra Gupta and my research aim is a two-pronged approach towards kidney stone prevention. My first objective is to understand the genetic causes of kidney stones and the second is to test a novel naturopathic approach towards stone prevention. Fun fact about me is that I do a really good small dog impression!

I am excited to serve as your Co-VP social events on the CHHD trainee committee! I strive to provide a positive, welcoming, and safe environment for our CHHD members and to bring together our community through some awesome events like movie nights, trivia nights, and bake sales. Stay tuned and see you there!



**Daniel Heydari**

Co-VP Social Events

MSc student - Dr. Mallory Downie's lab

(daniel.heydari@mail.mcgill.ca)

I am a second-year master's student in Dr. Mallory Downie's lab within the Department of Human Genetics at McGill. I am working on a Mendelian randomization to identify blood proteins involved in pediatric steroid-sensitive nephrotic syndrome, to hopefully better understand the disease and help develop safer treatments. My undergraduate studies were at the University of Toronto, in Bioinformatics & Computational Biology. I am originally from Toronto, Ontario, but getting to love Montreal through biking and food!

As Co-VP social events, I hope to help organize events that bring our community together, creating learning opportunities, and promote the exchange of ideas and collaboration within the CHHD.

​

# Welcome to the Program!

## Basic Information

* **Contact Information**

Please provide your program assistant, Angela or Rosanna, with all your up-to-date contact information (supervisor name, degree pursued, email address, etc.).

* **ID Card and Access to research spaces at the Glen**

Please contact your program assistant, Angela or Rosanna, to request your ID card and access. For further access issues, contact Technical Services at ext. 76000 or [ri.ts@muhc.mcgill.ca](mailto:ri.ts@muhc.mcgill.ca).

* **RI-MUHC portal access**

Your supervisor must request your access on the [RI-MUHC Portal (rimuhc.ca)](https://portal.rimuhc.ca/pls/apex/f?p=106:1:2924185817791:::::).

* **WIFI access**

Network: CUSM-MUHC.MCGILL.CA

Username: firstname.lastname@mail.mcgill.ca or firstname.lastname@mcgill.ca

Password: your email password

Network: CUSM-MUHC-PUBLIC

Username: public

Password: wifi

* **Mandatory Laboratory Orientation**

Please contact the Technical Coordinator to request a laboratory orientation session. Our Technical Coordinator will show and demonstrate the use you the common rooms and equipment, give you guidelines to follow and direct you to the different resources available (RI-MUHC Portal, Handbook, Orientation Documentation, CHHD website, Team-Up Booking Calendars, Delivery, etc.).

* **Desk in the Student Rooms**

The number of student desks allocated to the CHHD Program and available for use is limited. For that reason, the CHHD Program assigns desks to each lab according to the number of full-time active students (Masters, PhDs, and Post-Docs). This allocation does not take into account research assistants, volunteers and/or summer students. The Principal Investigators are responsible for assigning their allocated desks. You will find the CHHD Program’s Student Desks in three Student Rooms – ES1.1706, EM0.2510 and EM03509. In order to accommodate people with no desk or for temporary use, the program provides “flex desks” in those rooms, which can be booked online:

ES1.1706 – <https://teamup.com/ksygzdv4rnx8qcjx8a>

EM0.2510 – <https://teamup.com/ksbgrw6q3f6tv37rcd>

EM0.3509 – <https://teamup.com/ksczgyt1vhm78htknk>

If you are a Principal Investigator, your laboratory is expanding, and you are in need of more student desk space, please contact our Technical Coordinator. An assessment of the needs will occur every year and the number of desks assigned may change.

* **Flex Desks**

The program also provides two flex desks on EM0 for employees who need to work and have no desks. These can be booked online:

Room EM0.2217: <https://teamup.com/ksm9cjsjk3t74ahv3c>

Room EM0.2221: <https://teamup.com/ksgqrz4nga75z2jth3>

* **Conference Room Bookings**

To book a conference room, you will need to log into the [RI-MUCH Portal](https://portal.rimuhc.ca/pls/apex/f?p=106:1:9260495668854:::::). The “[Room Reservation](https://portal.rimuhc.ca/pls/apex/f?p=106:314:9260495668854:::::)” application gives you access to the “Room Reservation Software” to search for and book a room. Read the Room Reservation Policy before booking a room. Please note that some rooms, such as the Training Room, have restricted access for booking. If you need to book this room, please contact the Program Manager.

* **RI Directory**

The [RI Directory](https://portal.rimuhc.ca/pls/apex/f?p=106:15:9260495668854:::15::) is on the [RI-MUCH Portal](https://portal.rimuhc.ca/pls/apex/f?p=106:1:9260495668854:::::). You can find contact information (telephone number, email address, room number, etc.). Simply search by name (first or last).

* **Printer/Copier/Fax/Scanner Access**

You have to request access to the printer/photocopier/fax/scanner machine. For that you will need to log into the [RI-MUCH Portal](https://portal.rimuhc.ca/pls/apex/f?p=106:1:9260495668854:::::) and create an “[IT Rescue](https://portal.rimuhc.ca/pls/apex/f?p=911:1:9260495668854:::::)” ticket to request a username (not the same as the RI-MUHC Portal username) by completing the form:

**Request title:** username

**Service:** other

**Details:** Access to multifunctional printer/copier/scanner/fax machine

**Cost Center:** This is a four (4)-digit account number provided by your Principal Investigator. This account will pay for the use of the machine.

Your will then receive your username and temporary password by email. You will need to change this password. To do so, use these credentials to log onto an RI-MUHC computer (found in the conference rooms or laboratories) and change the password. **You will need to change the password periodically** (when you can no longer print, you will know that it is time to change your password!).

* **CHHD Program Lunch Room**

The Lunch Room assigned to the CHHD Program is on the EM0 floor. There are three fridges/freezers available where you can store you lunch. There are two microwaves, a small oven and a Panini press at your disposal. We also have a Tassimo, a Keurig, and a Nespresso machine to fill your caffeine needs.

* **Other Eating Spots**

Cafeteria are located in blocks C and D on S1, They have outdoor terrace access in the summer.

Hours of operation:

Monday to Friday - 7:00 AM to 7:00 PM

Weekends and holidays: 9:00 AM to 7:00 PM

You can also find a Presse Café in the lobby of the Institute. There is a Subway in block D on you way to the cafeteria. By the cafeteria, you will find a Boulangerie, Satay Brothers and a Jus Jugo Juice. In the Promenade between the Children’s hospital and the Royal Victoria Hospital, you can find a Sushi Shop, a Boulangerie, and a Bilboquet. In the PK Suban Atrium, in the Children’s hospital, you will find a Zouki’s.

## CHHD Events

**The CHHD Program organizes various scientific events during the academic year. You can find a complete list of the following series on the CHHD website:**

**CHHD Monday Noon Seminar Series**

The program invites local, national, and international researchers to speak about a variety of topics pertaining to conception, fertility, development and pediatrics, during the academic year. These seminars are open to the public. The seminar are one Monday per month, from 12:00 to 1:00 PM in the Cruess Amphitheatre (ES1.1129) and on Zoom. The link is available in the calendar invitation or upon request to the Program Manager.

**CHHD Work-In-Progress Seminar Series**

Held during the academic year, the program highly encourages trainees to participate. Every other week, two (2) trainees have 30 minutes to present their work and answer questions from attendees. The McGill University Faculty of Medicine and Health Sciences sponsors this event. This event is open to the public. The audience will rate the presentations. At the end of the series each year, prizes are awarded for best presentation for each trainee category (Master, PhD, and Post-Doc).

**Annual CHHD Research Day**

This is our annual large-scale scientific meeting where we invite all our members to come and highlight their research in oral or poster presentations. The event is meant to inspire, create new collaboration and connections across the program. It is also a way to get to know the many members of the program and their research focus.

**CHHD Trainee Events**

These social events provide trainees with a collaborative platform to carry out various team-building activities in an informal setting. Although open to the entire program membership, we highly encourage trainee participation.

## The CHHD Committees

**User Committee**

Every three (3) months, the Technical Coordinator holds a meeting with laboratory representatives. Topics of discussion are project, ideas, and/or issues regarding common equipment and/or workspace.

**Trainee Committee**

The CHHD Trainee Committee includes trainees from across the program who are interested in planning events for CHHD trainees. This group meets as needed to discuss all pertinent issues pertaining to the program’s trainees and plan for event (scientific and social). If any trainee is interested in participating, please contact the Program Manager at [fanny.toussaint@muhc.mcgill.ca](mailto:fanny.toussaint@muhc.mcgill.ca).

The Trainee Committee also serves on the CHHD Management Committee, advises the Program Leadership on issues that are of concern to the trainees, and brings back propositions from the Program Leadership to the CHHD trainees at large.

Some of the CHHD-wide events that require involvement of the trainee committee are:

* Annual CHHD Research Day (some hosting duties)
* CHHD Work-In-Progress Seminar Series (some planning and hosting duties)
* CHHD Trainee Events (planning and hosting duties)

## Emergency Measures

**In case of an emergency, please dial 55555 if you are in any of the MUHC buildings.**

The supervisor and/or his/her delegate must complete the McGill or RI-MUHC Incident and Accident Report form: <http://www.mcgill.ca/ehs/forms/forms/accident-andincident-reportor>

The form is available on the RI-MHC Portal under Resources, in the Health and Safety section/forms. Send the filled out form to EHS by email at [ri.ehs@muhc.mcgill.ca](mailto:ri.ehs@muhc.mcgill.ca) within **24 hours of the event**.

You can find an overview of the emergency Code Description and Protocols on the RI-MUHC Portal.

|  |  |
| --- | --- |
| **Emergency Code Descriptions** | |
| Code Red: Fire | Code Orange: External Disaster |
| Code Green: Evacuation | Code Brown: Dangerous Material Spill (Internal) |
| Code Blue: Cardiac Arrest | Code Gray: External toxic gas |
| Code Pink: Cardiac Arrest Pediatric | Code Black: Bomb Threat/Suspect parcel |
| Code White: Agitated or Violent Patient | Code White STAT: Armed Person |
| Code Yellow: Missing Patient | Code Yellow STAT: Abducted Patient |
| Code Silver: Active Shooter | |

You will hear these codes on the intercom system with the location of the code. Please follow the instructions in case of an evacuation order. Familiarize yourself with the evacuation routes. **Do not use the elevators**.

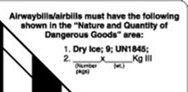
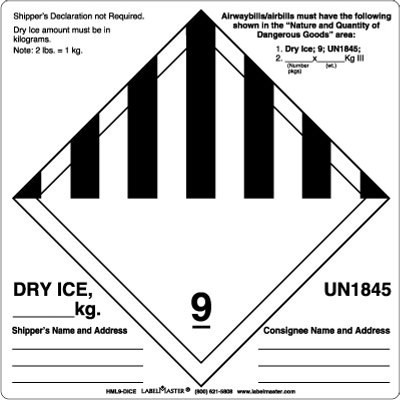
## Shipping Procedures

The Technical Coordinator is available to help you with your packages. Please inform the Technical Coordinator by email that you will drop by with an approximate time, **before 2:00 PM**, since shipping closes at 3:00 PM. This allows time to verify all the required documentation.

If the recipient is paying the shipping costs, please provide their FedEx account number.

You need to order an extra bag of dry ice when shipping on dry ice. This will prevent shortage of dry ice for experiments. If you need to order an extra bag of dry ice for shipping, please contact the technical Coordinator.

When shipping on dry ice, you need to put two (2) dry ice stickers, duly filled out, on your package:



**Dry Ice Stickers**

**#2**

1. Weigh your package
2. Write the weight (e.g 4 Kg)

1 X 4 Kg

1. Write From/To Addresses

**#1**

**#3 FROM**

**#3 TO**

**For International Shipping**

To ship a package internationally using FedEx, fill out the International Air Waybill for (green) and a commercial invoice in triplicate. Please note that the person named on the commercial invoice need to sign it. Put the form and the three (3) copies of the filled out, signed commercial invoice in a FedEx clear pouch, and tape it to your package. Place your package on the FedEx shelf in the shipping/receiving department, on CS2 by 3:00 PM at the latest.

Find all FedEx forms, dry ice stickers, ruler, and scale in the mail corner in EM0.3211

**For Shipping within Canada**

We offer two (2) options to ship a package within Canada:

Via FedEx:

Fill out the FedEx Intra-Canada Air Waybill (purple). Place the form in a clear FedEx pouch, and tape it to your package. Place the package on the FedEx shelf in the shipping/receiving department, on CS2 by 3:00 PM at the latest.

To properly fill out the FedEx form, you need to measure, weigh, and put dry ice stickers (if needed) your package. All necessary supplies are in the mail corner at EM0.3211.

Via Planète Courier:

Please, contact the Technical Coordinator to fill out the Planète Courier online form. Tape the completed form on your package. Place the package on the Planète Courier shelf in the shipping/receiving department, on CS2 by 3:00 PM at the latest.

To properly fill out the Planète Courier form, you need to measure, weigh, and put dry ice stickers (if needed) your package. All necessary supplies are in the mail corner at EM0.3211.

**FedEx Shipping to the Glen**

You could be asked for your FedEx number to receive shipments from the USA or abroad.

Because we do not have individual FedEx numbers, we will use the FedEx number that pertains to Planète Courier Inc. The pick-up order needs to be via Planète Courier. Once received, the investigator’s account is billed. Planète Courier will contact the person to arrange for pick-up and send the labels, so provide the person’s contact information (email and phone number). You can also provide the other party with the commercial invoice. They will need to add three (3) copies of the commercial invoice to the package.

## RI-MUHC Resources

### Health and Safety Division

They are here to help with everything pertaining to your health and safety at work! If you need any information regarding safety trainings, chemical safety, hazardous waste management, chemical waste containers, biosafety, and/or biosecurity.

The RI-MUCH Environmental Health and Safety Division is located in room ES1.5434. You can also contact them by email at [ri.ehs@muhc.mcgill.ca](mailto:ri.ehs@muhc.mcgill.ca).

**Dac Hien Vuong, MSc**

Manager, Environmental Health and Safety

Tel: (514) 934-1934 est. 71630

Email: [dachien.vuong@muhc.mcgill.ca](mailto:dachien.vuong@muhc.mcgill.ca)

**Useful links**

* McGill University Health and Safety : <https://www.mcgill.ca/ehs/laboratory>
* [McGill University Laboratory Safety Manual](https://www.mcgill.ca/ehs/laboratory/lab-safety-manual)
* [McGill university Biosafety Manual](https://secureweb.mcgill.ca/ehs/files/ehs/biosafety_manual_ehs-sman-001_v1.pdf)

**Mandatory Safety Training**

The MUHC offers Safety Training mandatory for all laboratory personnel and trainees:

* Introduction to Emergency Measures
* Workplace Hazardous Materials Information System (WHIMIS) for Laboratories
* Hazardous Waste Disposal
* Biosafety Principles

Other safety training, such as Radiation Safety, Working with Lentiviral Vectors, and others are also available if needed. For more information, please contact EHS.

**Disposing of Full Chemical Waste Containers**

1. Send an email to RI-EHS ([ri.ehs@muhc.mcgill.ca](mailto:ri.ehs@muhc.mcgill.ca)). The title of the email can simply be Waste Disposal.
2. In your email, please include the following information:
   1. How many containers
   2. Volume is in each container
   3. What chemical is in each container
   4. Please, make sure to include your name, phone extension and lab number, in case they need to contact you.
3. Pick up will be scheduled, usually on Wednesday or Thursday from 1:30 to 2:30 PM at ES2.0405 (right by the elevator)
4. On pick-up day, bring your containers to ES2.0405. Someone will be waiting at the door.
5. **Please label each container correctly or it will be rejected for pick-up**.

The label must have:

Principal Investigator name, Lab room number that generated the waste, phone extension in case of an emergency, list of chemicals in the container, property of the waste (flammable, toxic, corrosive, etc.).

**\*They cannot accept any chemicals contaminated with Biological Hazards**

**\*\*DO NOT leave your chemicals in front of the door at any time for any reason!**

**Pick-up of Empty Waste Containers**

1. Send an email to RI-EHS ([ri.ehs@muhc.mcgill.ca](mailto:ri.ehs@muhc.mcgill.ca)). The title of the email can simply be Container Pick-up
2. In your email, please include the following information:
   1. Number of containers needed
   2. Volume of the containers needed (4L or 10L)
   3. Please, make sure to include your name, phone extension and lab number
3. Pick up will be scheduled, usually on Wednesday or Thursday from 1:30 to 2:30 PM at ES2.0405 (right by the elevator)
4. On pick-up day, you must pick-up the empty containers at ES2.0405

### RI-MUHC Biomedical Services

Biomedical Services are responsible for every request and/or advice related to laboratory and/or biomedical equipment, such as incubators, freezers, refrigerators, centrifuges, autoclaves, glasswasher, etc.

A request for service must be place through the Planon application on the RI-MUHC portal or you can contact the Technical Coordinator.

In case of an emergency or for after-hours services you can contact them by phone at (438) 351-8504

After-hours Emergencies:

1. -80oC Freezers
2. Any equipment failure that require immediate attention
3. Samples stuck in the sterilizers and/or centrifuges
4. Temperature and/or CO2 problems in an incubator

The Technical Coordinator will set up, coordinate, and follow up with Biomedical Services on repairs, maintenance, acquisition, and trainings if it is a CHHD common laboratory equipment.

### RI-MUHC Infrastructure Services

Infrastructure Services include:

* Utilities : power, water, medical gases, liquid nitrogen, lights, cold rooms,
* Furniture
* Moving
* Facility structures: floors, ceilings, insulation, doors, windows, AC, ice machine
* Access and ID cards
* Project renovations

A request for service must be place through the Planon application on the RI-MUHC portal or you can contact the Technical Coordinator.

In case of an emergency or for after-hours services you can contact them by pager at (514) 406-6666

After-hours Emergencies:

1. Flood, power failure, water system failure, etc.
2. Ventilation or mechanical problem (high/low temperature) in the animal facility, cold room

### IT and Telecommunications

They are here to help with issues regarding computers, network access, printers, conference rooms, or anything related to informatics. They are located at ES1.5800.

General IT inquiries: [ri-it@muhc.mcgill.ca](mailto:ri-it@muhc.mcgill.ca)

Users with a computer connected to the CIM/MUHC Network:

Please refer to the C2 Service Desk application on the RI-MUHC Portal or by phone at (514) 934-1934 ext. 48484

Users with a computer connected to the RI-MUHC Network:

Please submit your request through the IT Rescue application on the RI-MUHC Portal. They cannot be reached by phone.

### Biobars and Promotions

All information is available on the RI-MUHC Portal under Biobars and Promotions

**Génome Québec Sanger Sequencing Services**

Free pick-up services available:

Sample deposit box location: E01.5028 (Technology Platform hallway). Sample pick-up is every Wednesday and Friday at 10:30 AM

**List of Biobars at the CTB - Glen**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Supplier** | **Room** | **Contact** | **Ext.** | **Email** |
| Bio Basic Canada | E02.5391 | Nathalie Bédard | 76118 | [nathalie.bedard@mcgill.ca](mailto:nathalie.bedard@mcgill.ca) |
| Bio-rad | E03.5375 | Nathalie Martel | 44536 | [bioradglen@gmail.com](mailto:%20bioradglen@gmail.com) |
| Diamed | E01.5029 | Marie-Helene Lacombe | 76352 | [diamed.rimuhc@gmail.com](mailto:diamed.rimuhc@gmail.com) |
| New England Biolabs/Cell Signaling Technology | E02.5375 | Stephanie Patterson | 76420 | [stephanie.patterson2@mail.mcgill.ca](mailto:stephanie.patterson2@mail.mcgill.ca) |
| Qiagen | E02.4374 | Lucie Hamel | 44614 | [lucie.hamel@affiliate.mcgill.ca](mailto:lucie.hamel@affiliate.mcgill.ca) |
| Wisent | E03.5391 | Angela Brewer Louis Cyr | 44585 | [angela.brewer@affiliate.mcgill.ca](mailto:angela.brewer@mail.mcgill.ca) [louis.cyr@affiliate.mcgill.ca](mailto:louis.cyr@mail.mcgill.ca) |

## RI-MUHC Animal Facility

**To access all this information, you can go on the** [**RI-MUHC portal**](https://researchportal.muhc.mcgill.ca/) **under Research>Animal Research.**

The Animal Resources Division provides professional and technical support to investigators, trainees, and research staff. The facilities are fully compliant with the recommendations of the Canadian Council on Animal Care (CCAC) and the Facility Animal Care Committee (FACC). A veterinary service is available and provides support in project design and animal care to investigators, trainees, and research staff. They are responsible for assisting in/advising on the care and use of experimental animals at various RI-MUHC sites.

**Step 1- Online Theory Course**

All individuals listed in the personnel list of an Animal Use Protocol (AUP) form are required to pass the theory course. For more information, please contact [animalcare@mcgill.ca](mailto:animalcare@mcgill.ca)

**Step 2- Biomethodology Workshops**

All Individuals listed in the personnel list of an Animal Use Protocol (AUP) and handling animals are required to pass the Biomethodology Workshop specific to the species and techniques listed in their AUP. All registrations for the Animal Biomethodology Workshops and requests for specialized training should be sent to the Training Coordinator at [ARD.training@muhc.mcgill.ca](mailto:ARD.training@muhc.mcgill.ca) at least 2 weeks in advance. You can reach the training coordinator via e-mail (see previous) or at 514- 934-1934 extension 66215.

**Step 3-Vivarium Orientation Session**

In compliance with the Canadian Council on Animal Care (CCAC) and the RI-MUHC Facility Animal Care Committees (FACCs), please be informed that all individuals listed in the AUP are required to attend a Vivarium Orientation Session prior to acquiring animal facility access (MGH or Glen). The session may last about one hour but the participant should be present at the meeting point 10 minutes in advance. Please contact [ARD.training@muhc.mcgill.ca](mailto:ARD.training@muhc.mcgill.ca) for more information and registration.

The Animal Resources Division is responsible for the husbandry and/or veterinary care for all vertebrate animals maintained for research, teaching, or testing at the Research Institute of the MUHC.

The following animal facilities are available to researchers:

**Glen**

* Barrier Facility for rodent
* Conventional Facility for various species
* Imaging Facility for rodents
* Containment Level 2 Facility
* Containment Level 3 Facility

**Montreal General Hospital**

* Barrier Facility for rodent
* Large animal facility for rabbits, dogs, primates and pigs

## Technology Platforms

To access all this information, please go to the [**RI-MUHC portal**](https://researchportal.muhc.mcgill.ca/) under Research > Technology Platforms.

The RI-MUHC offers a range of technology platforms, which provide access to state-of-the-art instruments, techniques, and consultative services on a fee for service basis. The web-based iLab Solutions’ Core Facility Management software manages the technology platforms. This software is used to request services, training and schedule use of equipment.

You will need to create an account by completing the iLab account sign-up form here:  <https://rimuhc.corefacilities.org/account/179/signup>

Your PI or lab manager will need to log into their account to add a cost center to your account.

Here are the Technology Platforms at the RI-MUHC:

* Histopathology Platform
  + Tissue processing and embedding, tissue sectioning and staining, IHC, ISH, laser capture microdissection, microscopy, antibody optimization, etc.
* Containment Level 3 Platform
  + Controlled biosafety laboratories for live pathogens study
* Immunophenotyping Platform
  + Flow cytometry, imaging flow cytometry, cell sorting, cell separation, etc.
* Proteomics & Molecular Analysis Platform
  + Protein identification, protein characterization, protein quantification, post-translational modifications, etc.
* Molecular Imaging Platform
  + Confocal imaging, live cell imaging, Super-resolution imaging, intravital and deep tissue imaging, etc.
* Biobank Platform
  + Participant recruitment, sample reception and processing, automated and secure specimen storage, database with clinical annotation and follow-up, etc.
* Small Animal Imaging Labs (SAIL) Platform
  + MRI, nuclear medicine imaging (PET/CT, SPECT/CT), high-sensitivity optical molecular imaging (bioluminescence and fluorescence), X-ray, autoradiography, radiochemistry, etc.
* Bioinformatics Platform
  + Analytical tools and support in computational genomics, acceleration of the translation of computational genomic tools, etc.

## CHHD Common Rooms and Labs

### ES1 Common Rooms

ES1.2054 Histology Room

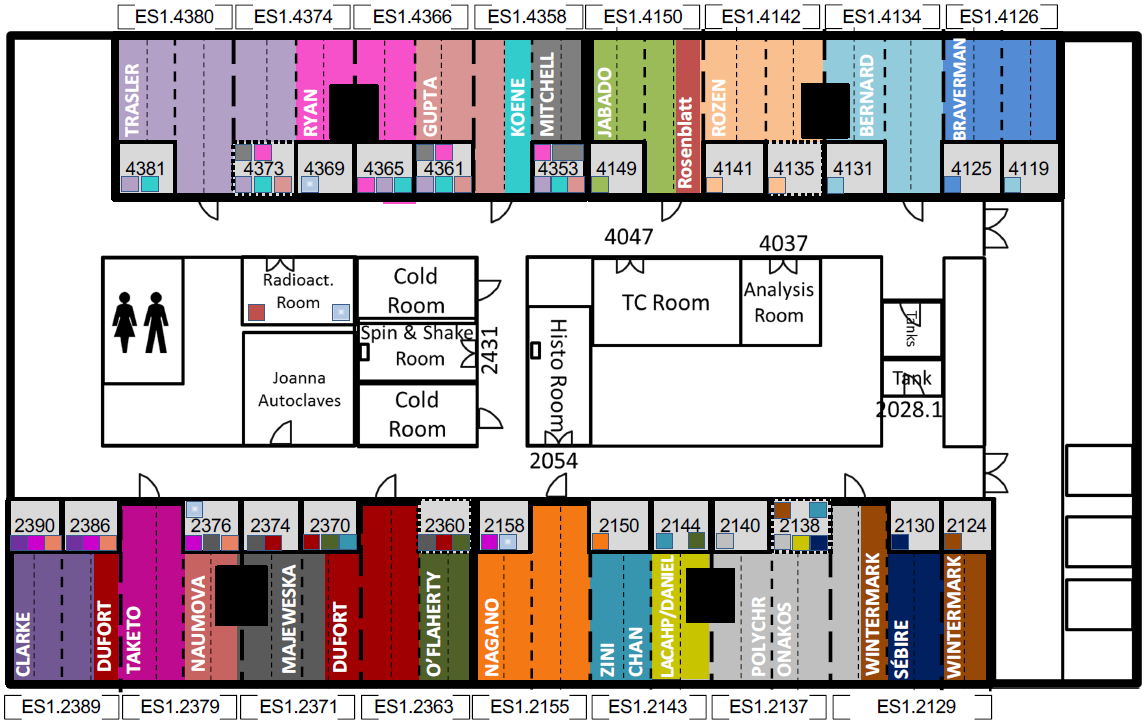
ES1.2074 Autoclave operated by Joanna

ES1.2431 Spin and Shake Room

ES1.4037 Analysis Room

ES1.4047 Tissue Culture Room

ES1.4073 Radioactivity Room



### 

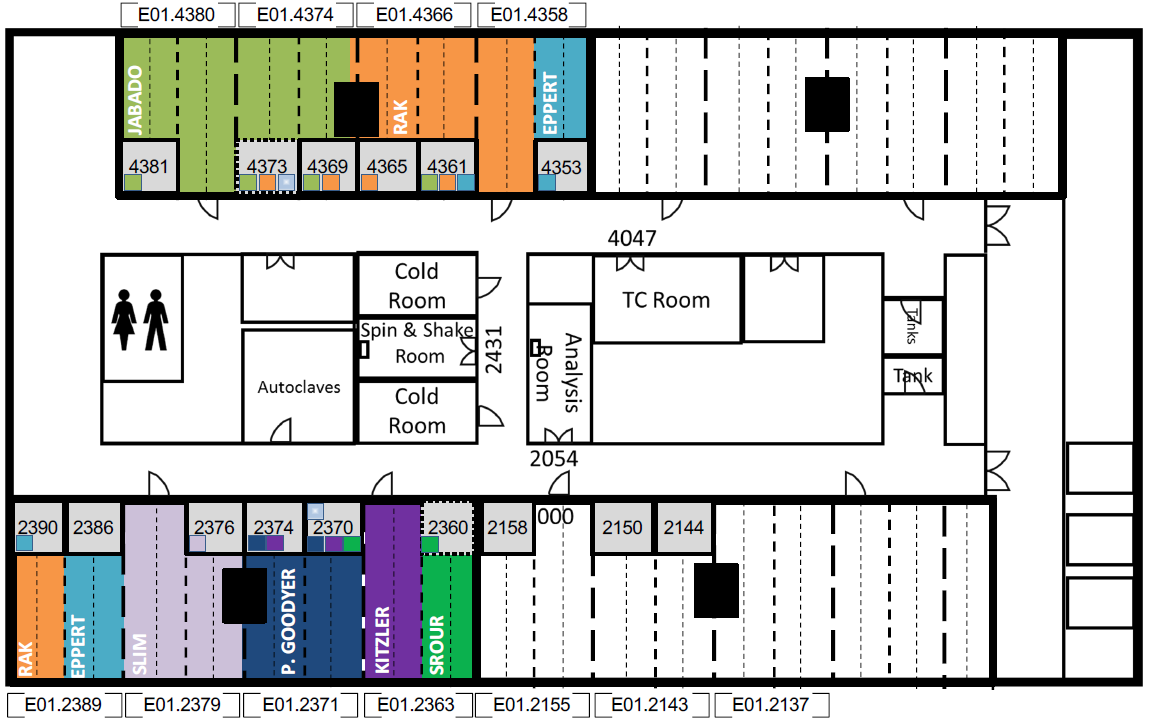
### E01 Common Rooms

E01.2054 Analysis Room

E01.2074 Autoclaves (Account needed)

E01.2431 Spin and Shake Room

E01.4047 Tissue Culture Room



## 

## Booking of Equipment with Team Up

These booking calendars are more reliable than loose papers and avoid conflicts at the machine. They are accessible anytime, anywhere on the internet and on the mobile application. You can easily reach out to the users before or after you. Finally, they allow us to keep track of the use of the equipment.



ES1 Histology Room: <https://teamup.com/ks3trziaarcnbc7kcw>

ES1 Analysis Room: <https://teamup.com/kstjn5ju6jrtct3jvz>

ES1 Centrifuges : <https://teamup.com/ks83o91cnfagho4v7u>

E01 Tissue Culture : <https://teamup.com/ks39gqpzvt2wa4n98z>

E01 Centrifuges : <https://teamup.com/ksyiai2mi9e7w8aff5>

Microscopes: <https://teamup.com/ksrzpj1axtznor4jj5>

E01 Autoclaves : <https://teamup.com/kskyp8n8n96srgc8a4>

## Histology Room and Equipment

### ES1.2054



* For paraffin embedding, paraffin sectioning and cryo-sectioning.
* Open to everyone and other programs.
* Please contact our technical coordinator for an orientation session (15 min) and training.

|  |  |  |
| --- | --- | --- |
| **Booking ES1.2054:** [**https://teamup.com/ks3trziaarcnbc7kcw**](https://teamup.com/ks3trziaarcnbc7kcw) | | |
| **Equipment** | **Brand and model (location)** | **Reservation needed?** |
| Tissue embedding station | Leica Embedder EG1160 Vaccum oven  Dish microscope | Dr. Dufort’s lab permission  and training (Shiva S.) |
| Tissue embedding station | Leica Embedder EG1150H/C (E01.4373). | Dr. Rak’s lab permission and training (Brian M.) |
| Manual embedding | 2x 62°C Ovens Slide warmer | Dr. Taketo Permission and training |
| Tissue processor | Leica ASP300S (E01.4373) | Dr. Rak’s lab permission and training (Brian M.) |
| Microtomes  ES1.2054 | #1-Leica RM2155, #3-Leica RM2145  #2,4-Leica RM2255, | Yes |
| Other microtomes | Leica RM2235 (E01.4373), Leica 820 (ES1.2360) | Need permission |
| Cryostat | Leica CM3050 | Yes |
| Cryostat | Leica CM3050S (ES1.2129) | Need permission from Dr. Wintermark |
| Vibratome | Leica VT1200 S (E01.2389, Dr. Rak’s  lab, User: Lata) | Yes, Please coordinate with Lata (x76220). |

## The Tissue Culture Rooms

### ES1/E01.4047



|  |  |
| --- | --- |
| **Equipment (Each floor)** | BSC cabinets (4), CO2 incubators (10), Centrifuge 4°C, Nikon Fluorescence Inverted Microscope. |

###### General rules:

1. The cleanliness of the equipment and room is the responsibility of the users and is really important to keep sterile. Please note on the sheet that the bath is cleaned each month.
2. The incubators must be cleaned each 2 weeks (shelves and water pan)
3. Each quadrant has an assigned hood. Please refer to your lab assistant or the technical coordinator to know which hood you can use.
4. The centrifuge lid must be left unclosed for the evaporation of the condensation.
5. Do not forget to turn off the microscope’s light or the fluorescent lamp.
6. Rinse the bottle of uncontaminated media before recycling.

###### Biohazard biopak grey containers:

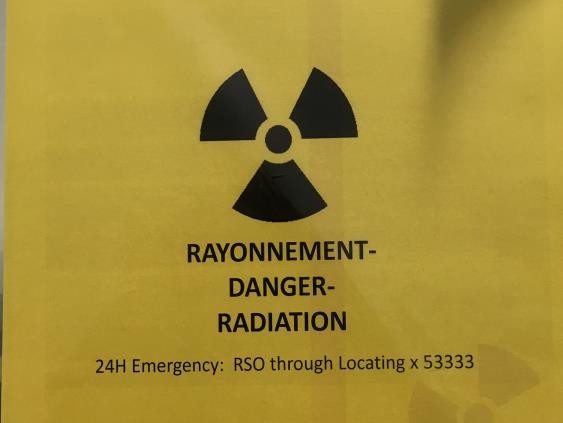
1. Discard cells, bacterial culture, other biological liquids, contaminated autoclavable solids (plates, flasks, tips, gloves, etc.). Disposable pipettes need to be discarded in an autoclave bag then closed before being discarded in the grey bin or they can be decontaminated with bleach and discarded as non- contaminated plastic.
2. Must be changed by the users when ¾ full
3. Tie a knot to the bag and close the box
4. Put in the corridor next to the door.
5. New gray biohazard bins are always available in the room itself or in the main corridors nearby.

###### Sharp containers:

1. Close when full. Do not put in hallways.
2. Put it in a biohazard grey bin. The pick-up is with MUHC Logistics Helpdesk: 23456.

## The radioactivity Room

### ES1.4073



This room is a common room used for radioactivity experiments.

You need a training to have the right to use radioactivity and your lab must have a permit.

As required by the Canadian Nuclear Safety Commission, all trainees who are handling radioisotopes and/or radiation emitting devices must complete radiation safety training.

At the RI-MUHC, radiation safety training is the responsibility of the MUHC Radiation Protection Service. For information on radiation safety training, please call extension at 43866.

|  |  |  |
| --- | --- | --- |
| **Equipment** | Fridge, freezer, Geiger, Survey meter, hot plate, microfuge, mixer, vortex, water bath/shaker, centrifuge, hybridization, incubators, scintillation counter. | |
| **Technical problems: Sara Beydoun x76128, sara.beydoun@muhc.mcgill.ca** | | |
| **Training: MUHC Radiation Protection Service, X43866,** [**ri.ehs@muhc.mcgill.ca**](mailto:ri.ehs@muhc.mcgill.ca) | | |

## Gels & Membranes Visualization

**Booking Amersham I. 6000:** [**https://teamup.com/kstjn5ju6jrtct3jvz**](https://teamup.com/kstjn5ju6jrtct3jvz)

|  |  |  |
| --- | --- | --- |
| **Equipment (EtBr)** | **Specifications / Purpose** | **Room** |
| Alpha Innotech Coorporation | Résultats de recherche d'images  EtBr Agarose gel | ES1.2028.1 |
| Biorad Gel Doc 2000 | E01.2431 |
| Fully automated Aplegen Omega Lum C | EtBr agarose gel and Western blot Chemiluminescence, UV Fluorescence, Colorimetry, Densitometry, Gel Documentation | ES1.2028.1 |
| **Equipment (Safer Dye)** | **Specifications / Purpose** | **Room** |
| Fully automated Aplegen Omega Lum C | **No EtBr!**  🡪 Safer dyes (e.g. Red Safe)🡪 agarose gel and Western Blot | E01.2431 |
| ChemiDoc™ XRS BioRad  **(Dr. Jabado)** | E01.4373 |
| **Equipment (Western blot only)** | **Specifications / Purpose** | **Room** |
| Amersham Imager 6000 | For Western blot exposition and incrementation | ES1.4037 |

## Autoclaves Rooms

The CHHD program is lucky to have a Lab Aid, Joanna, who’s taking care of the sterilization and the washing of dishes for some of the laboratories that need her help.

Joanna operates the autoclaves on ES1 exclusively to avoid any problem that could affect her work.

**Lab Aid**



##### Joanna Kalomiris ES1.2074, Ext. 23010

Use of the autoclaves on E01 is self-serve for any lab that has an account. If you need to use the autoclave and need your username and password, please contact the [Technical Coordinator](mailto:annie.v.roy@gmail.com). You need training to use the autoclaves.

If you break the autoclaves, your laboratory will take the entire responsibility to pay for the repairs.

**E01 Autoclaves and Washer:** [**https://teamup.com/kskyp8n8n96srgc8a4**](https://teamup.com/kskyp8n8n96srgc8a4)

## Centrifuges

**Booking ES1 Centrifuges:** [**https://teamup.com/ks83o91cnfagho4v7u**](https://teamup.com/ks83o91cnfagho4v7u)

**Booking E01 Centrifuges:** [**https://teamup.com/ksyiai2mi9e7w8aff5**](https://teamup.com/ksyiai2mi9e7w8aff5)

## Microscopes ES1

**Booking:** [**https://teamup.com/ksrzpj1axtznor4jj5**](https://teamup.com/ksrzpj1axtznor4jj5)

#### Fully Automated Inverted Fluorescent



###### Leica IDM6000B

Common: ES1.2376 Examinations of cells and tissues Objectives: 10, 20, 40, 63 (oil).

Fluorescence filter: Dapi (325-375 nm), L5 (460-500 nm), Y3 (530-560 nm) and TX2 (540- 580 nm)

#### Fully Automated Fluorescent

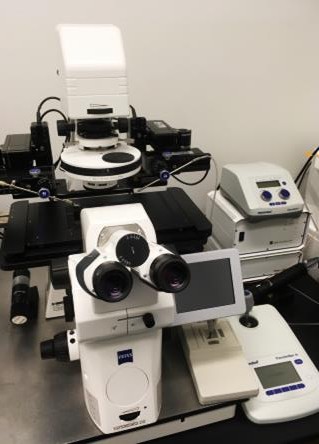


###### Leica DM6000B

Common: ES1.4369

Objectives: 4, 10, 20, 40, 63 (oil).

Fluorescent filters: Dapi (325-375 nm), L5 (460-500 nm), Y3 (530-560 nm) and TX2 (540- 580 nm).



#### Inverted Fluorescent + Microinjection System

###### Zeiss, Axio Observer.Z1, Eppendorf

Common: ES1.2376 Eppendorf micromanipulator

Two type of microinjection system: Eppendorf Piezoxpert (impulsions) or gas driven microinjector (medical system corp)

## Microscopes E01

#### Upright Microscope



###### Zeiss Axiophot

Dr. P. Goodyer: E01. 2370 Objectives: 10, 20, 40x (no oil)

Fluorescent filters: Blue, green, red (basic ones)

#### Upright, Fully Motorized, PC controlled



###### Zeiss Axio Imager Z1

Dr. Rak: E01.4369 (See Brian M.) Objectives: 1.25, 5, 10, 20, 40, 63, 100x

Fluorescent filters: Blue, GFP, Alexa 594 Brightfield, DIC and Fluorescent imaging. Multi-dimensional data acquisition (multiple fluorescence channels, Z-stacks, time lapse).

#### Inverted Fluorescent



###### Leica DMIRB

Dr. Rak: E01.4369 (See Brian M.) Objectives: 5, 10, 20, 40x

Fluorescent filters: Blue, Green and red Examinations of cells and tissue.

Contrasting techniques of brightfield, darkfield, Phase contrast, DIC, fluo and Hoffmann modulation.

## Stereomicroscopes ES1/E01

#### Automated Fluorescence Stereomicroscope



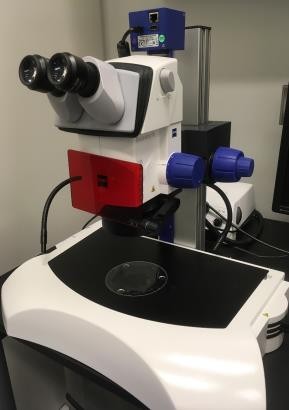
###### Leica M205FA

Dr. Clarke, Rozen and Ryan (ES1.2158/4141/4369) Objectives: 7.8-160×

Filters: (Dr. Clarke) EtGFP, EtYFP, Etmcherry (Dr. Rozen) EtDapi, EtGFP2, EtYFP,

(Dr. Ryan) EtDapi EtGFP, EtYFP, Etmcherry

#### Teaching Stereomicroscope



###### Zeiss Stereo Discovery V8

Dr. Ryan (ES1.4369)

Objectives: 1, 1.25, 1.6, 2, 2.5, 3.2, 4, 5, 6.3, 8x

Good for tissues and whole embryos pictures. Gentle and uniform illumination for your embryos. No fluorescence.

#### Fluorescence Stereomicroscope



###### Leica MZFIII

Dr. P. Goodyer (E01.2370)

Objectives: Planapochromatic 2x, 1x, 1.6x, 0.63x and plano 1x, 0.8x, 0.5x. (8x–100x with 1.0x objective and 10x eyepieces)

Filters: GFP2, TxR, YFP

## Useful Links

**Fluorescence microscopy**

#### Panel builder

[Fluorofinder:Antibodies & Fluorochromes](https://fluorofinder.com/) [selector](https://fluorofinder.com/)

#### Spectrum viewers

[BD Biosciences](http://www.bdbiosciences.com/ca/s/spectrumviewer)

[Invitrogen](http://www.thermofisher.com/ca/en/home/life-science/cell-analysis/labeling-chemistry/fluorescence-spectraviewer.html)

[BioLegend Spectra Analyzer](http://www.biolegend.com/spectraanalyzer)

**Fluorescent Proteins** [Fluorescent protein](http://nic.ucsf.edu/FPvisualization/) [properties](http://nic.ucsf.edu/FPvisualization/) [Photoswitchable](http://nic.ucsf.edu/FPvisualization/PSFP.html) [Fluorescent Protein](http://nic.ucsf.edu/FPvisualization/PSFP.html) [Properties](http://nic.ucsf.edu/FPvisualization/PSFP.html)

[Fluorescent Proteins Table](http://physrev.physiology.org/content/physrev/90/3/1103/F10.large.jpg?width=800&height=600&carousel=1)

## Other equipment list

\* They are **not common** equipment

\*\* They need special permission to be used!

\*\*\* Broken, cannot take pictures.

|  |  |
| --- | --- |
| **Equipment** | **Brand and model (location)** |
| **Upright Microscopes** | Fluo Zeiss Axiophot\*\* (ES1.2140), Fluo Leica DM6000B\*\* (ES1.2376), Fluo Olympus (ES1.4125), Light Olympus CX41 (E01.2370). |
| **Inverted microscope** | Inverted Fluo Axiovert 40 CFL (E01.2374), Inverted Nikon TS100 MFA 32500 (E01.4047), Inverted Fluo/microinjection Leica DM IRB\*\* (ES1.2158), Confocal Zeiss LSM510\*\*\* (ES1.2140). |
| **Stereomicroscopes** | Stereo Leica MZ6 (ES1.2371), Stereo Leica MZ75 (E01.2370), Stereos (E01.2381). |
| **Nanodrops** | ND-1000 (ES1.4142/E01.2371), Biodrop uLite (E01.2431) |
| **Microplate readers** | Promega Glomax 96 (ES1.4047), Perkin Elmer Victor3 (ES1.2054), BioTek Epoch (E01.2431), Reader/Washer ESBE SC. Infinite 200 PRO (E01.4369), FluoSTAR Optima BMG\*\* (ES1.2137). |
| **Spectrophotometer s** | Amersham Pharmacia Ultrospec 1100 Pro (ES1.4141), GE Genequant (ES1.4126), Milton Roy 1001 Plus (ES1.2386), Amarsham Bioscience Ultrospect 3300 pro (E01.2054), |
| **Micro-centrifuges** | Eppendorf 5430R (ES1.4361/4369), Eppendorf 5424R  (ES1.2431/E01.2054), 4°C (ES1.2137), |
| **Centrifuges** | J6-HC (ES1/E01.2431), J2-21 (ES1. 2431), J2-HS (ES1.2431),  T.Fisher Sci. Sorvall Legend XTR 4°C (E01.2431/2150), Heraeus Multifuge 3SR Plus (E01.2370), Avanti J26S (E01.2431) |
| **Ultra-centrifuges** | L-80 (ES1.2431) , Optima XPN-90 (E01.2431), Table Top BeckmanTL-100 (E01.4073), L-70 (E01.2431) |
| **Shakers** | Orbital shaker 37°C (ES1.2431),  Infors Multitron 37°C (ES1/E01.2431), Infors Ecotron (ES1.2431),VWR Thermo MaxQ 2000 22°C (ES1.2431/E01.2054) |
| **Other Scanners/ Gel docs** | Amersham Bioscience Storm840 (ES1.4037)  Dark room with film machine (E01. 3053) 34 |

|  |  |
| --- | --- |
| **Equipment** | **Brand and model (location)** |
| **Sequencers & Nucleic Acid Analysis** | Pyrosequencer Qiagen Pyromark Q24 advanced (ES1.4380), PyroMark Q24 (ES1.4142), Experion nucleic acid electrophoresis BioRad (E01.4369). |
| **PCRs** | PCR thermocycler Roche LightCycler 96 (ES1.4361), Lightcycler 480 (E01.4380), Lightcycler 480II Roche (ES1.4142),  Eppendorf Mastercycler gradient (ES1.2155), Digital PCR Biorad (E01.4366), Regular PCR (E01.2379), RT-PCR (E01.2379), DNA engine MJ Research PTC-200 (E01.2371). |
| **Hybridization** | Hybridization oven Robbins Sci. model 1000 (ES1.4361), Hybridization oven Fisher Sci. Shake 'n Stack (ES1.4361/2371 & E01.2431/2371). |
| **DNA concentrators/ lyophilizers** | LABCONCO Centrivap DNA (ES1.2431/E01.2431),  LABCONCO Freeze dry system (E01.2074) |
| **Electroporators** | Amaxa nucleofector II device Lonza (ES1.4131), Square Wave Electroporator CUY21SC\* (ES1.4364), Bio Rad Gene Pulser Xcell™ Electroporation Systems (E01.4361), |
| **Flow Cytometry & microvesicules** | Flow cytometer Accuri C6 (ES1.2155), FACSCalibur BD bioscience (E01.4073), Nanosight NS500 Malvern (E01.4369) |
| **Mass spectrometer** | LC-MS/MS\*\* (ES1.4125) |
| **Incubators** | CO2 incubator for embryo culture (ES1.2158), Incubator Thermo Sci. Precision (ES1.2130), Isotemp Fisher Sci. (ES1.2054), Napco\*\* (ES1.2054) |
| **Ovens** | Thermofisher Sci. Heratherm (E01.2074) And one in ES1.2074 |
| **Sonicators/Lysers/ polytrons** | Tissue Lyser (ES1.4135), Polytron Brinkmann (ES1.2425), Sonicator (E01.2389), Covaris sonicator (E01.4073)\*\*. |
| **pH Meters** | ES1.4141, E01.2364 |
| **Balances** | Analytic balances: (ES1.2129) (E01.4373), Normal: (E01.4373) |
| **Others** | Needle puller Sutter instruments P-97 (ES1.2360), Bag sealer (E01.2054). |

## Expertise of the Laboratories

This section contains information about the expertise of each CTB lab of the program. It was created to strengthen collaboration between the laboratories of the program and facilitate the progression of your research. For each lab, you can see the subjects of their studies and knowledge, the model they are using, the techniques they know and do regularly and bioinformatics resources.

|  |  |
| --- | --- |
| **Dr. Aimee Ryan (ES1.4374 I-J)** | |
| **Subjects** | Neural tube closure, tight junctions, claudins, embryogenesis,  Organogenesis, Pitx2c, protein purification, blood-testis barrier. |
| **Models** | Cells: MDCK II, HEK293, mimCD3.  Chickens: embryos.  Mice: embryos. |
| **Techniques** | Chicken embryos: Staging, culture, dissection, injection. Mice embryos: Staging, dissection.  Histology: WM-ISH, WM-IHC, IF on  Proteomics: Protein purification (Bacterially expressed GST and His-tagged fusion protein), GST pull downs.  Genomics: PCR, RT-PCR, mutagenesis, cloning.  Others: TEM, Cell culture, measurements of transepithelial resistance and  permeability dextran assays. |
| **Bioinformatics** | ImageJ, blasting, UCSC, ClustalW, GEISHA, IGV, GraphPad. |
| **Dr. Anna Naumova (ES1.2379 I-J)** | |
| **Subjects** | Epigenetics, DNA methylation,chromosome, X chromosome dosage, gene  expression, sex-specific differences, spermatogenesis |
| **Models** | Cells: HEK293T. |
| **Techniques** | Genomics: Sodium bisulfite methylation, pyrosequencing, FAIRE, RT-PCR,  qPCR, FISH, DNA/RNA extraction |
| **Bioinformatics** | PeakPicker, BWA, PyroMark Assay Design 2.0, R Console, BiQ Analyzer,  BioEdit. |
| **Dr. Armand Zini (ES1.2143 M-N)** | |
| **Subjects** | Male infertility, Andrology, Varicocele microsurgery, sperm DNA and  chromatin studies, sperm DNA damage |
| **Models** | Cells: spermatozoa from semen samples of infertile patients and donor  controls |
| **Techniques** | Analysis of semen parameters such as concentration, motility and vitality using CASA and microscopy, evaluation of sperm DNA damage using SCSA (flowcytometry), sperm chromatin compaction analysis using fluorescence  microscopy and flow cytometry |
| **Bioinformatics** | Male infertility, Andrology, Varicocele microsurgery, sperm DNA and  chromatin studies, sperm DNA damage |
| **Dr. Constantin Polychronakos (ES1.2137 F-J)** | |
| **Subjects** | Diabetes type 1, Ribosomes and mRNA translation, Genetics, polymorphism,  splicing. |
| **Models** | Cells: macrophage, LCLs, K562, CD4+ T cells, Hek293.  Mouse: B6.  Human: fetal tissues. |
| **Techniques** | Immunology: Immune cell flow cytometry, immune cell assays, phagocytosis based on CFSE fluorescence, ELISA, thymus dissection.  Genomics: Microarray, Chromosomal clustering, SB, PCR, TCR profiling,  Library preparation, MiSeq.  Proteomics: Protein–DNA Binding Assay, Polyribosome fractionation. Others: Ficoll density gradient centrifugation, RIA. |
| **Bioinformatics** | Variant calling from whole exome sequencing, CGH data analysis, TCR analysis, Microsoft Excel expert level, programming tools in different  languages, CellQuest, FlowJo, FlexArray, MACH 1.0. |
| **Dr. Cristian O’Flaherty (ES1.2363 A-B)** | |
| **Subjects** | DNA damages, male infertility, oxidative stress, ROS. |
| **Models** | Rat: Sprague-Dawley. Mice: *Prdx6*−/−, B6.  Tissues: Human and rat semen. |
| **Techniques** | Sperm: Rat testis dissection, Percoll gradient centrifugation, count, viability, motility.  Biochemistry: ROS quantification, Protein oxidation by WB, Lipid peroxidation determination by flow cytometry, IF and WB on spermatozoa,  SCSA. |
| **Bioinformatics** | MACSQuant Analyzer flow cytometer, WinList, UnScan-It gel, ImageJ, Sigma  Systat 13. |

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| **Dr. Daniel Dufort (ES1.2363 C-D)** | |
| **Subjects** | Oocyte Development, female reproduction, endometriosis |
| **Models** | Cells: Embryonic fibroblasts, MES cells.  Mice: CD1, Porcn floxed/floxed, PgrCre/+, Nodal-lacZ, *NodalloxP/loxP, NodalΔ/Δ*, Cripto*loxP/loxP, CriptoΔ/Δ,* C57BL6/129, TCF/Lef-LacZ.  Tissues: uteri, endometriosis. |
| **Techniques** | Histology: Uterus dissection, paraffin and cryo-embedding, paraffin and cryo-sectioning, IHC and IF on uteri, X-Gal assay on uteri, RNAscope in situ.  Other: WB, flow cytometry |
| **Bioinformatics** | ImageJ, GraphPad. |
| **Dr. David Rosenblatt (ES1.4150 M)** | |
| **Subjects** | Vitamin B12 (cobalamin), metabolism, folate metabolism, genetics. |
| **Models** | Cells: Human fibroblast cell lines derived from patients with inborn errors of cobalamin or folate metabolism (cblA, cblB, cblC, cblD, cblE, cblF, cblG, cblJ, cblX; methylenetetrahydrofolate reductase (MTHFR) deficiency;  methylenetetrahydrofolate dehydrogenase 1 (MTHFD1) deficiency. |
| **Techniques** | Genomics: WES, whole genome sequencing RNA-sequencing, starting from cultured patient fibroblasts  Cloning: Gateway cloning system.  Biochemistry: Assessment of function of cobalamin-dependent enzymes (methylmalonyl-coenzyme A mutse, methionine synthase) in cultured fibroblasts; measurement of synthesis of cobalamin coenzyme derivatives from exogenous labeled cyanocobalamin; methylenetetrahydrofolate reductase (MTHFR) assay; methylenetetrahydrofolate dehydrogenase  (MTHFD1) assay. |
| **Dr. Geneviève Bernard (ES1.4134 E-H)** | |
| **Subjects** | Leukodystrophies, genetic mutations, RNA polymerase III. |
| **Models** | Cells: HeLa, HEK293, primary fibroblasts, lymphocytes. |
| **Techniques** | Proteomics: WB.  Genomics: WES, Sanger sequencing, genomic DNA/RNA/protein extraction. Molecular Biology: Cloning |
| **Bioinformatics** | Ingenuity, dbNSFP, GATK. |
| **Dr. Guillaume Sébire (ES1.2129 C-D)** | |
| **Subjects** | Maternal bacterial infection, perinatal inflammation, brain hypoxic-ischemic  injuries, autism, arterial ischaemic stroke, neuroprotection. |
| **Models** | Bacteria: Group B Streptococcus (GBS) serotype Ia and serotype III. Rats: Lewis strain (dams, fetuses, neonatal pups)  Tissues: placentas, blood, amniotic fluid, brain and cerebro-spinal fluid from  rats.  Tissues: brains and placenta from rats. |

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| **Techniques** | Rats: Surgeries, injections, dissection, MRI.  Histology: IHC, IF and gram staining (on paraffin-embedded tissues), cryosectioning, paraffin sectioning.  Behavioral tests: ultrasonic vocalisations (pups), open field, grip strength, foot fault, rotarod, elevated plus maze, olfactory discrimination (nest- seeking task), novel object recognition, prepulse inhibition (sensorimotor gating), social interactions, elevated body swing test (EBST).  Others: ELISA, TEM, microbiology (GBS) |
| **Bioinformatics** | ImageJ (cell counting, brown extraction), Adobe Photoshop, GIMP, GraphPad, SPSS, NDP view (Nanozoomer), F1000, EC and TAC from  Affymetrix. |
| **Dr. Hugh Clarke (ES1.2389 N-P)** | |
| **Subjects** | Oocyte development, maternal mRNA, mitochondrial DNA. |
| **Models** | Cells: mice ovairies, mice oocytes, bovine oocytes.  Mice: B6, Fshb−/−, C1, Nf2−/−, Transgenic mice homozygous for the β- catenin/Tcf-responsive LacZ. |
| **Techniques** | Oocyte: microinjections of oocytes, oocytectomy.  Histology: IF on oocyte, IHC, 5′-Ethynyl. Uridine incorporation.  Microscopy: confocal microscopy, FRAP, FLIP. Proteomics: WB  Genomics: RNA extraction, qPCR. |
| **Bioinformatics** | ImageJ, GraphPad. |
| **Dr. Indra Gupta (ES1.4366 D-F)** | |
| **Subjects** | Vesico-ureteric reflux and urinary tract development, urinary tract  malformations, kidney development, extracellular matrix, claudins |
| **Models** | Cells: mIMCD-3, MDCK, HEK293T, fibroblast MCH058, fibroblast MCH065.  Mice: B6, C3H/HeJ, C3H/HeN, CD1-Hoxb7GFP, 129S2/SvPasCrl. |
| **Techniques** | Cells: BrdU proliferation assay, TUNEL assay, collagen gel assay, Wound healing assay.  Genomics: Sanger sequencing, fluidigm, WES.  Histology: Kidneys, urinary tract, lung and salivary gland dissection. WISH on kidney. IHC, IF on kidney, urinary tract and lung sections.  Animals: mice breeding, Vesico-ureteric reflux, intravesical ureter lengths, bladder compliance assay. Kidney, lung and salivary gland organ culture. Human: patient recruitment, hypermobility testing, saliva collection for DNA samples.  Others: WB |
| **Bioinformatics** | IGV, image J |

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| **Dr. Jacquetta Trasler (ES1.4380 K-P)** | |
| **Subjects** | Epigenetics (DNA methylation), birth defects, developmental genetics,  pharmacology, reproduction, embryogenesis, spermatogenesis, Assisted Reproductive Technologies (ART), DOHAD |
| **Models** | Mice: Dnmt1omat−/−, Mthfr+/−, GOF/deltaPE-Oct4/GFP, *Dnmt3L+/-*, Folic acid  diet and high fat diet mouse models |
| **Techniques** | Genomics: Sperm DNA extraction, PCR, qRT-PCR  DNA methylation analyses: Pyrosequencing, Reduced representation bisulfite sequencing (RRBS), Methyl-Capture-sequencing, RLGS, qAMP Proteomics: Western blotting  Animals and histology: Dissection of embryo and placenta (E6.5-E18.5), ovaries, testes. Embryonic and placenta histology (E9.5-E10.5). Mouse ART: Superovulation, *in vitro* fertlization (IVF), embryo culture and non-surgical embryo transfer (NSET)  Cells: Immunomagnetic cell sorting, flow cytometry |
| **Bioinformatics** | GraphPad, Linux, R, Access database |
| **Dr. Janusz Rak (E01.4374 C-H)** | |
| **Subjects** | Tumor angiogenesis, cancer, extracellular vesicles, angiogenesis,  coagulation |
| **Models** | Cells: HCT116, DLD-1, HKh-2, DKs-8, DKO-1, DKO-3, HCT116 (379.2),  528ras+mTF, A549, U373, U373vIII, A431, HUVEC.  Mice: NOD SCID. |
| **Techniques** | Microvesicules: isolation by ultracentrifugation, transfer assay, flow cytometry.  Genomics: profiling and RRBS methylation assays, PCR-RFLP, qRT-PCR, NB. Proteomics: WB, luciferase assay, TF activity assay, ELISA.  Others: IHC, tumor formation in matrigel. |
| **Bioinformatics** | GraphPad, in silico mRNA expression analysis. |
| **Dr. John Mitchell (ES1.4358 A-B)** | |
| **Subjects** | Morquio syndrome, Lysosomal Storage Diseases (LSDs),  Mucopolysaccharidoses, Orphan diseases, Farber Lipogranulomatosis, |
|  | Rheumatology, Phenylketonuria, Ceramidase, Glycosaminoglycans, |
|  | Parkinson’s disease, Alzheimer’s disease |
| **Models** | Human: urine, blood, serum, plasma, synovial fluid, dried blood spots  Recombinant proteins (from Bacteria) |
| **Techniques** | Proteomics: LC–MS/MS (qTOF and QqQ), Protein structure and biochemistry (circular dichroism, chromatography, fluorescence, NMR, MS), Protein expression in bacteria.  Metabolomics: MS and NMR Metabolomics, MS and NMR Lipidomics,  extraction of metabolites from dried blood spots,  Others: cytokine profile analysis using BDTM CBA Human Inflammatory Cytokines kit, enzymatic reactions. |
| **Bioinformatics** | Molecular Dynamic Simulations  Molecular visualization (VMD) |

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| **Dr. Kolja Eppert (E01.4358 A-B)** | |
| **Subjects** | Acute myelogenous leukemia, leukemic stem cells, hematopoietic stem  cells, extracellular vesicles (EVs). |
| **Models** | Cells: LT LSC culture, HSC culture, Kasumi-1, K-562, MOLM-13, F36-P, primary AML, MS-5, Patient-derived xenotransplants  Mice: NSG, NSG-S |
| **Techniques** | Vesicles: EV isolation, EV uptake/transfer assay, EV biological assays, flow  cytometry.  Cells: IF on cells, Lentivirus.  Genomics: Microarray, gene expression profiling.  Mice: Intrafemoral injection, Sublethal whole body irradiation  Others: Flow cytometry, WB, Methylcellulose colony formation assay, q- PCR. |
| **Bioinformatics** | R, SPSS. |
| **Dr. Loydie Jerome-Majewska (ES1.2371 F-H)** | |
| **Subjects** | Genetics of development and craniofacial malformation, development  processes, vesicular transport, splicing, placenta. |
| **Models** | Cells: HepG2, SK-HEP-1, mouse embryonic Stem cell line with *MmachcGt,* Bewo, Jeg3, HEK293.  Mice: Tg(HIST1H2BB/EGFP)1Pa, CD1, C57/Bl6, 99J , C3H, GPI. |
| **Techniques** | Histology: Paraffin and cryoembedding, WMISH, ISH, WMIHC, IHC, IF, Oil Red O and Sudan Black B staining.  Early embryo collection.  Genomics: WES, gene trap, SB, Generation of mice models using CRISPR/Cas9.  Proteomics: WB, TEM, isolation of plasma, confocal microscopy, BioID. |
| **Bioinformatics** | ImageJ. |
| **Dr. Makoto Nagano (ES1.2155 O-R)** | |
| **Subjects** | Spermatogenesis, fertility. |
| **Models** | Cells: Rodent Spermatogonial Stem Cells, human testis cells, Thy1-positive  testis cells.  Mice: Ncr nude, B6ROSA, B6, ROSA26, Oct4GFP, B6GFP. |
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|  | Tissues: Human testis. |
| **Techniques** | Histology: WMISH, IF on tissues, IHC.  Testis: busulfan treatment, spermatogonial transplantation.  Proteomics: flow cytometry, immunomagnetic cell Sorting, ELISA Genomics: RNA extraction, qRT-PCR. |
| **Bioinformatics** |  |

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| **Dr. Myriam Srour (E01.2363 A-B)** | |
| **Subjects** | Childhood neurodevelopment disorders including congenital brain malformations (schizencephaly, focal cortical dysplasia, cerebellar  hypoplasia, Joubert syndrome) and congenital mirror movements. |
| **Models** | Human only. |
| **Techniques** | Extraction of DNA from different tissues. DNA Sequencing: exome and  targeted NGS-based sequencing. |
| **Bioinformatics** | Germline and somatic DNA variant calling. |
| **Dr. Nada Jabado (E01.4366 I-P)** | |
| **Subjects** | Epigenetics related to pediatric brain tumors |
| **Models** | Cells: Over 15 different cell lines.  Mice: p53LoxP, R26CreER, Emx1IRES cre, B6.129S4(Cg)-Trp53tm2.1Tyj/J, B6.ATRX-Flox, FVB/NJ, B6,… |
| **Techniques** | Genomics: NGS (whole genome, exome, targeted, RNA, methylation, CHIP, HiC), ddPCR, qPCR, HRM, CRISPR, DNA/RNA extraction, genotyping.  Proteomics: WB.  Cells: Stem cells (primary culture, differenciation), Lentivirus. |
| **Bioinformatics** | Most of the NGS analysis is done at Genome Quebec |
| **Dr. Nancy Braverman (ES1.4126 A-D)** | |
| **Subjects** | Peroxisome biogenesis disorders, Pex genes, Zellweger spectrum disorder, RCDP, natural history studies, genotype/phenotype correlations, therapies  for peroxisome disorders, precision medicine. |
| **Models** | Cells: patient fibroblast cell lines, engineered cell lines.  Mice: Pex1-G844D, Pex7 deficient mouse series, primary cell lines. Humans: primary fribroblast from skin biopsy. |
| **Techniques** | Genomics: PEX Gene Screen, qPCR, ddPCR, gene therapy, gene editing. Proteomics: peroxisome metabolites by LC-MS/MS, catalase distribution assays, microscopic assessment of peroxisome function, subcellular distribution of peroxisomal proteins, WB.  Mouse: lung inflation, gavage, electroretinogram, optokinetics, behavioral studies.  Histology: tissue fixation, paraffin, cryo and EM embedding, IHC and IF.  Others: Lentiviral production and transduction, drugs treatments. |
| **Bioinformatics** | ImageQuant TL, ClustalW2, SWISS-MODEL, PyMOL, ImageJ. |

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| **Dr. Paul Goodyer (E01.3271 E-H)** | |
| **Subjects** | Kidney development, rare renal diseases, PAX2, Wnt, apoptosis. |
| **Models** | Cells: Embryonic E15 CD24+ Cells, amMSC, bmMSC, [SK-N-BE(2), SH-SY5Y],  SK-NEP1, G401, Wit49, WitS, 786-O, Caki-1, A498. |
| **Techniques** | Genomics: β-Galactosidase Activity, flow cytometry, ChIP-qPCR, Luciferase assay, cell cystine assay.  Kidney: Glycerol-Induced Acute Renal Tubular Injury, EMSA, FACS. |

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| **Dr. Peter Chan (ES1.2143 M)** | |
| **Subjects** | Enrichment of human sperm quality in infertile and varicocele patients,  chemotherapy impact on male fertility, effect of cryopreservation on sperm quality. |
| **Models** | Human semen, human spermatogonia stem cells. |
| **Techniques** | Sperm: CASA (motility and concentration), sperm viability, TUNEL, SCSA,  Annexin-V magnetic-activated cell sorting (MACS). |
| **Bioinformatics** | WinList 8, GraphPad Prism. |
| **Dr. Pia Wintermark (ES1.2129 A-B)** | |
| **Subjects** | Brain and eyes injury in human term-born and pre-term newborn babies. |
| **Models** | Rats: Long-Evans, Sprague–Dawley. |
| **Techniques** | Animals: Rat surgeries - carotid ligation, hypoxia-ischemia, hyperoxia, full- field flash electroretinograms.  Histology: Cryosectioning, resin sectioning, brain structure, retinal structure, retinal flatmounts, neurons and endothelial cell count, immunofluorescence.  Proteomics: WB. |
| **Dr. Pierre Lachapelle (ES1.2143 K-L)** | |
| **Subjects** | Structural and functional consequences of perinatal insults to the primary visual pathways, human retinal and/or genetic disorders (pediatric/adult), human normal visual function, animal models of human retinal diseases, signal processing and functional imaging and diagnostic potential of retinal  blood vessels’ architecture. |
| **Models** | Animal models: oxygen-induced retinopathy, light-induced retinopathy and term neonatal hypoxic-ischemic encephalopathy.  Rats: Sprague–Dawley, Lewis, Long-Evans, Brown Norway. Mice: C57BL/6J; BALB/c.  Guinea pigs: Hartley albino. |
| **Techniques** | Model design: hyperoxia, hypoxia, bright light exposure, surgery, intravitreal Injection and drug toxicity.  Functional analysis: flash and multifocal electroretinogram and visual evoked potentials.  Associated clinical tests done at the ophthalmology department: visual fields, optical coherence tomography (OCT) and fundus imaging.  Anatomical and biochemical analysis: retinal histology, cryosectionning, immunohistochemistry, TUNEL, WB, confocal microscopy, eye fundus photography, EM.  Mathematical analysis: inverse problem solving, wavelet analysis based on  the discrete wavelet transform, multifractal analysis |
| **Bioinformatics** | MATLAB, Graph Pad, ImageJ, AcqKnowledge; Espion; AxioVision; Adobe  Photoshop. |

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| **Dr. Rima Rozen (ES1.4142 I-L)** | | |
| **Subjects** | | MTHFR (methylenetetrahydrofolate reductase), MTHFD1 (methylenetetrahydrofolate dehydrogenase, methenyltetrahydrofolate cyclohydrolase and formyltetrahydrofolate synthetase), one-carbon folate  metabolism, DNA methylation, epigenetics, birth defects, miRNAs. |
| **Models** | | Mice: BALB/c, C57BL/6, Mthfr+/−, Mthfr−/−, MthfrTg, Mthfd1S+/-.  Tissues: mouse liver, mouse brain, mouse spleen, mouse preneoplastic intestine, mouse embryos and placentae. |
| **Techniques** | | Genomics: DNA and RNA extraction, microarray analysis, qRT-PCR, DNA methylation analysis by pyrosequencing, inborn errors and SNP analysis. Mouse behavioural testing: nest seeking, reciprocal social interaction, novel object recognition, open field, Y-maze.  Histology: TUNEL staining, IHC, immunofluorescence.  Proteomics: Western Blots, 5, 10-MethyleneTHF dehydrogenase and 10- formylTHF synthetase assays, ER stress. |
| **Bioinformatics** | | Design of methylation assays, identification and characterization of new  genes, GraphPad, SPSS. |
| **Dr. Rima Slim (E01.2379 I-L)** | | |
| **Subjects** | NLRP7, KHDC3L, Molar pregnancy and genetics. | |
| **Models** | Cells: HEK293, Epstein Barr virus-transformed B lymphocyte cells, Hela cells, Oocytes and zygotes.  Humans: blood samples, saliva samples, paraffin embedded tissues | |
| **Techniques** | Histology: Oocyte and early cleavage embryos immunostaining, FISH, IHC, IF on cells and oocytes, microsatellite genotyping.  Genomics: next generation sequencing.  DNA extraction from blood, saliva and paraffin blocksProteomics: flow  cytometry, confocal microscopy, TEM, cytokine assay, WB. | |
| **Bioinformatics** | Olympus FluoView FV1000. | |
| **Dr. Robert Koenekoop (ES1.4358 C)** | | |
| **Subjects** | Inherited retinal diseases (also called inherited retinal dystrophies or IRDs) are a group of rare eye disorders caused by an inherited gene mutation and can result in vision loss or blindness. | |
| **Models** | Human: Blood, saliva or skin samples. | |
| **Techniques** | Genomics: Genotyping, sequencing, DNA extraction, PCR's. | |
| **Bioinformatics** | GraphPad, Photoshop, ClustalW, Sequencher | |

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| **Dr. Sam Daniel (E01.2143 K-L)** | | |
| **Subjects** | Ears – outer ear, tympanic membrane, middle and inner ear. | |
| **Models** | Cells: House Ear Institute–organ of Corti 1 (HEI-OC1). Rats: Sprague-Dawley.  Chinchillas: *C. Laniger*.  Gerbils: for tympanic membranes.  Guinea pigs: albino. | |
| **Techniques** | Earing: auditory brainstem response (ABR) test, tone burst stimuli, sound exposition, acoustic overstimulation events.  Histology: ears dissection.  Electronic microscopy: Cochlea (hair cells). Radiation (X-ray)  Proteomics: SEM, cell viability assay, in-gel digestion, HPLC-MS/MS, SEM. | |
| **Bioinformatics** | Computer modeling, Scaffold 4.3.4, PeptideProphet, Code\_Aster, Fie, Tr3,  Fad, SPSS. | |
| **Dr. Teruko Taketo-Hosotani (ES1.2379 K-L)** | | |
| **Subjects** | | Meiotic progression, surveillance, and chromosome segregation in mouse  oocytes. |
| **Models** | | Cells: Fetal and neonatal oocytes, GV-stage oocytes, MII oocytes, granulosa cells.  Mice: B6, Spo11 null, Caspase2 null, Caspase9 null, Xiap-null, Xiap- transgenic, RING-free-Xiap mutant, B6.Y TIR , C3H, B6.X PAF Y, BALB/cByJ,  CByJ.RBF-Rb(8.12)5Bnr, RBF/DnJ |
| **Techniques** | | Histology: isolation of ovary at all stages, paraffin embedding and sectioning,  whole-mount, dissociated cell spread, immunofluorescence staining, confocal  microscopy, DNA-FISH, live imaging.  Culture: ovary, oocyte in vitro maturation, fertilization, vitrification, gap junction permeability assay, preimplantation embryo, microinjection Genomics: DNA-PCR, RT-PCR  Proteomics: IP, WB, ATP quantification |