

The ABC's of the  
Ragon Institute Imaging Core Facility  
400 Technology Square, Cambridge, MA  
Access/Biosafety/Calendars

Welcome to the Imaging Core of the Ragon Institute of MGH, MIT and Harvard! We provide access to and training on state-of-the-art flow cytometry and microscopy equipment for labs at Massachusetts General Hospital and other researchers in the Boston/Cambridge area. We are also affiliated with the Harvard Center for AIDS Research (CFAR).

Due to overhead costs of administering external funding, academic users that do not have a Partners fund number will need to pay a higher rate, unless you are CFAR or Ragon affiliated, in which case the IDC is waived—let us know if you are CFAR! For-Profit industry accounts have a separate rate that is charged for usage. Rates are listed on our webpages linked below.

Personnel/Contact information:

Flow Cytometry: Michael Waring ([mwaring@mgh.harvard.edu](mailto:mwaring@mgh.harvard.edu))

<http://ragoninstitute.org/research/services/flow-cytometry/>

Microscopy: Thomas Diefenbach ([tdiefenbach@mgh.harvard.edu](mailto:tdiefenbach@mgh.harvard.edu))

<http://ragoninstitute.org/research/services/microscopy/>

**Web Presence and Resources for Flow Cytometry**

Our core calendars and instrument information, as well as user documentation and user logs are hosted on [ragonmanagement.partners.org](http://ragonmanagement.partners.org), which requires a username and password to access. See “III. Calendars” below.

We are a part of the:

CFAR Advanced Technologies core

<https://cfar.globalhealth.harvard.edu/pages/core-e-immunology>

MGH Partners Research Cores (Ragon Immunology Core)

<https://researchcores.partners.org/>

iEagle Harvard pages (under “Flow Cytometry” and “Cellular Imaging and Microscopy”)

<http://cbmi.catalyst.harvard.edu/cores/index.html>

We have an account with Fluorofinder panel design tool, [ragon.fluorofinder.com](http://ragon.fluorofinder.com)

--The New England Cytometry Users Group holds an annual fall meeting which is hosted here at the Ragon. <http://newenglandcytometry.com>

--There is a Google+ group, with over 1200 members, which anyone can join,

<https://plus.google.com/communities/107840035426159582772>

--Purdue University hosts a cytometry message board, with searchable archives at

[tinyurl.com/cytometry](http://tinyurl.com/cytometry)

### **Overview (Flow Cytometry):**

The flow cytometry facility offers a variety of services to MGH and the surrounding community. Below please find a brief outline of these services and where you can find more information. For all core usage, it is helpful for us to have a description of the experiment(s) you are interested in running, as well as describing any previous flow cytometry experience you may have (and what software/platforms).

**Instrumentation:** Our instruments are listed on the [ragoninstitute.org](http://ragoninstitute.org) page linked above, and actual configurations for all of our instruments can be found on the [ragonmanagement](http://ragonmanagement) website. The needs of your experiment will determine which instrument is appropriate for you to use. Use of our analysis instruments requires attending the Intro to Flow class described below, as well as an instrument orientation with core personnel.

If you are interested in sorting, the core sorters are primarily run by core personnel, but training is available for Ragon members with frequent sorting needs.

- I. Access
- II. Biosafety
- III. Calendars
- IV. Sorting
- V. Outside Users
- VI. Training

### **I. Access**

As the Ragon Institute develops new collaborations and works outside of our parent institution (MGH), it becomes necessary to make sure all collaborators follow the proper safety procedures. For this reason, all researchers will be required to acquire a non-employee MGH ID badge and fulfill the requisite training and procedures to become eligible to perform work in MGH facilities (including confirmation of residence status, either US Citizen or type of Visa and expiration date). This includes health screening, CITI training (for working with patient samples), a CORI check, verification of work/visa status, Fire/Safety Training for 400 Tech Square, and Shipping training to ensure proper sample handling during transport.

Core users must complete portions of our new hire lab orientation checklist. If you plan to do any sample work at Ragon beyond running samples on the instruments (TC access, etc), there will be additional sections you will need to complete.

To access the core without an escort, elevators and floor access require badges that must be assigned to users—an MGH ID badge for floor access, and an access disk for building and elevators. In addition, you will be required to attend a Fire/Safety session for 400 Tech Square, offered Fridays.

Outside users will also have an orientation checklist that needs to be completed, which covers general work practices at MGH and our specific policies (dress code, sample transport) at Ragon.

## **How to Register:**

To begin the registration process, we need (for both “non-Ragon MGH” users and external applicants):

First Name

Last Name

Gender

Degree

Primary Email

Citizenship status (and expiration dates for green card/visa etc)

Which instruments you plan to use.

External users will also be required to provide a copy of their CV, and will be processed as a new hire to MGH, and will need to undergo:

1. Health screening, including completion of a Occ Health screening form (medications, allergies, immunization history)
2. Online CAP training (20 minutes)
3. Visit the MGH Main Campus for your badge.
4. HIPAA Healthstream training.
5. Orientation for our building

In addition, all holders of MGH badges, including “Non-employee” members, are required to complete annual refresher training through Healthstream. Annual training is a hospital requirement in accordance with The Joint Commission for all MGH employees and part of the performance evaluation process.

The FY2018 Required Training Assignment consists of:

- Four e-learning courses:
  - MGH General Safety Training
  - Partners HealthCare (PHE) Infection Control \*
  - PHE HIPAA (Health Information Portability and Accountability Act)\*
  - MGH Strategies to Prevent Workplace Conflict and Violence
- Five attestations:
  - MGH Standards of Behavior
  - MGH Diversity Statement
  - MGH Sexual Harassment Policy
  - MGH Drug Free Workplace Policy
  - PHE Confidentiality Agreement

\*Users who score 100% on the pre-test may test out of the training.

Most users will be able to complete the training within 90 minutes. Role-specific or work location training programs are not included in this package.

[The Frequently Asked Questions \(FAQs\)](#) document contains details about this annual training requirement.

**Transportation:** there is a shuttle bus from MGH Main Campus that departs from the Jackson building on the hour and half hour. Sample transport in personal vehicles is discouraged, and on public transportation is not permitted.

We are a short walk from the Kendall T stop, or there is a shuttle that leaves on the hour and half hour from Blossom Street outside of Jackson building of MGH. Its a Partners van and says MIT on the route sign and stops right outside of our building. <http://www.ragoninstitute.org/contact/>



## **II. Biosafety**

- **Dress Code:** It is important to remember that the core lab is regular lab space and the same PPE rules apply as for the rest of the Ragon lab space—clothing should protect/cover your legs and no open toe shoes are permitted. In addition, lab coats should be worn as well as safety glasses—researchers will need to manipulate liquids that are under pressure and spring-loaded fittings that are subject to breaking, posing a potential hazard. Ragon researchers should bring their lab coat from their usual bench area; visiting researchers can find lab coats in the hallway outside of the core.
- **Sample transport:** New regulations can now hold recipients of packages responsible if samples are not shipped or transported safely to the site. Travel to and from our facilities requires that samples are packaged properly. Individual tubes should be tightly capped (no filter caps!), and transported in sealed containers, such that if dropped they will not leak/spill. Package them as if you were planning to ship them—sealable Styrofoam containers (no ice buckets), carry in a bag or tote.  
Internally, each group has locking plastic boxes for travel between lab space and floors. For researchers travelling from off-site, the use of SaftPak shipping boxes to transport samples is an option. Their website can be found at [www.saftpak.com](http://www.saftpak.com), and there is a short training module on the website.
- When travelling to the lab floors with samples please use the freight elevator ONLY (elevator #1, call button is on the left door frame of the elevator and NOT the button on the wall) or between floors at the Ragon you may use the stairwell opposite from the men's restroom, on the laboratory side of the elevator lobby.
- Samples should ONLY be carried through lab space. Coats and personal items can be left in the core office or in the closet in the common area on the 9<sup>th</sup> floor, and should NOT be brought into the BL2 space (cell sorter rooms or TC rooms). Do NOT bring samples into the office when dropping off your personal items! Leave them on the cart in the hall, or in the lab.
- PIBC review: all unfixed samples to be handled within the core facility must have approval of the Partners Institutional Biosafety Committee. A PIBC protocol number must be provided, or hazardous samples from external labs will need to be added to the core's protocol.
- ALL work with pathogens or biologicals must be amended to the Core PIBC (Partners Institutional Biosafety Committee) protocol. Please contact core administrators to complete this process. (This includes internal Ragon samples.)

To transport samples from main campus, you will be required to fill out a Bill of Lading, which you can get from security or ask your lab manager.

### III. Calendars/Website

**Calendars:** The Ragon Institute Imaging core uses a web-based interface for reserving instruments and tracking users and grants for billing, and for providing instrument specs and documentation, which can be accessed from:

<http://ragonmanagement.partners.org>.

If you would like access to the calendars, please email your request to [mwaring@mg.harvard.edu](mailto:mwaring@mg.harvard.edu). If you have any problems please BE SPECIFIC when describing the issue (what page you were on, what information you were trying to enter, etc).

If you are an MGH employee, your user ID will be the same as your Partners “Alias” (abc12, not the 10 digit number), and the password is synced to your Partners password.



If you are not an MGH employee, you may need to get a non-employee MGH ID badge for access to operate core instrumentation and for access. Please email [mwaring@mg.harvard.edu](mailto:mwaring@mg.harvard.edu) and I will create a user account and fund number for you and send you your login information.

Logging in will add some items to the menu bar:



Click on “Resources”, and select **Documents and Links** which contains a list of core-related documents such as user guides, forms, etc, as well as links to useful websites, and most importantly the “Ragonmanagement instructions” which will provide further details on how to use the system. Please read it!

## **IV. Sorting**

All sorting is performed by core operators, and time is booked by us based on submission of Sorting Request Forms to [mwaring@mgh.harvard.edu](mailto:mwaring@mgh.harvard.edu) AND [nbonheur@mgh.harvard.edu](mailto:nbonheur@mgh.harvard.edu) . Users are NOT given “training request” clearance, but you can view the calendar for available times with your account. The sorting documents are on the “SORP Aria II” equipment page or the “Sorting” section of the “Documents and Links” Resources page. There you will also find a separate “sorting guidelines” document that covers sorting.

Self sorting (Ragon members only):

Sort request with hazards, new pathogens/samples must be cleared with me!

## **V. Outside users**

The Ragon Institute is also interested in providing services and expertise to researchers outside of our established affiliations. To do so, we must have approval in our PIBC (Partners Institutional Biosafety Committee) protocol to work with the materials involved in your project. If the samples will be run by core personnel, then we only need to verify that the samples are covered. No further registration is required, however you will need to be escorted into the lab and must call the core to let us know you are here.

### Access:

Outside users who wish to have access and/or run their own samples will be required to apply for a non-employee MGH ID badge to provide access to the appropriate floors. Since you will have access to MGH property and will be performing research/experiments, we must make sure that you have appropriate credentials.

The following information needs to be sent to [mwaring@mg.harvard.edu](mailto:mwaring@mg.harvard.edu):

### Personal Info:

First and Last name

Gender

Degree, year awarded

University/College

School/Department

Email address

Electronic copy of current CV

Citizenship/Visa information, expiration

Previous experience with requested equipment? (describe)

Applicants will be processed as a new hire to MGH, and will need to undergo:

1. Health screening, including completion of a Occ Health screening form (medications, allergies, immunization history)
2. Online CAP training (20 minutes)
3. Visit the MGH Main Campus for your badge.
4. HIPAA Healthstream training.
5. Orientation for our building

We also need to be provided with:

Project description and instruments requested

Potential risk to operator from exposure, NIH requirements

A description of the biological agents in your project must be approved. A brief description of the biological materials used (host species, any pathogens), as well as any genetic manipulations performed on the samples, must be provided on the “Outside Sorting Registration Form”.

All interactions with industry are overseen by the Innovation division:

<http://rvl.partners.org/about-innovation>



## VI. Training

Usage of the flow cytometers requires attending the Intro to Flow seminar, an Instrument Orientation session, and demonstrating proficiency in using the instruments before independent or after-hours work will be permitted. Microscopy requires training scheduled with Thomas Diefenbach.

There are many online tutorials on flow that may be useful, and are recommended before attending the class. I would recommend that you review the Invitrogen tutorials linked below, then time permitting the unit on compensation from Mario Roederer. The BD Biosciences tutorials cover more material and are worth viewing if time permits.

They can be found linked from:

<http://newenglandcytometry.com/cytometry-training/>

There are a few different sessions required for gaining access to the flow core instruments.

1. Intro to Flow Cytometry: 90 minute lecture, offered every 6-8 weeks depending on demand, and is held in the Mark and Lisa Schwartz Auditorium at 400 Technology Square, Cambridge MA. There is a \$100 core fee for attending for Partners or CFAR affiliated researchers, \$144 for outside academic users, and \$238.50 for users from industry

--This session covers the basics of flow cytometry, as well as some common pitfalls and issues, and is useful even for the experienced flow cytometrist. Register by emailing

[mwaring@partners.org](mailto:mwaring@partners.org), as well as on the ragonmanagement page by submitting a "Training Request" for the Training resource "1 Intro to Flow Cytometry". Include PI and fund # in the comments of the request.

-- The date of the next session can be found on the ragonmanagement page, as well as on the services page, under "News": <http://ragoninstitute.org/research/services/flow-cytometry/>

--The presentation itself is available on the Ragonmanagement page, Resources>Documents and links, "Intro to flow presentation" under Flow Cytometry, or downloadable here:

<https://newenglandcytometry.files.wordpress.com/2017/12/intro2017.pdf>

--Any colleagues that wish to attend are welcome to join us, seating is plentiful. ALL attendees should send an email to me with their funding information (grant number and PI for internal Partners users, or a billing contact for external users).

2. Instrument Orientation: demonstration of the setup and operation of the instruments and software. 3L, 4L, 4R, 5L and 5R all use the same software (Diva) so one orientation session covers them all. Register by emailing [mwaring@partners.org](mailto:mwaring@partners.org) in addition to creating a training request for the instrument you will need to use.

3. Proficiency—user must demonstrate competency in setting up and operating the instruments before they may run independently

4. HTS: the 3L, 5L and 5R are equipped with a plate loader for running samples, which requires a separate training session to learn.

Additional tips and hints:

filter antibodies for aggregates:

[http://www.emdmillipore.com/US/en/product/Ultrafree-MC-VV-Centrifugal-Filter,MM\\_NF-UFC30VV25](http://www.emdmillipore.com/US/en/product/Ultrafree-MC-VV-Centrifugal-Filter,MM_NF-UFC30VV25)