

NBTC Orientation

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Please Note:

The safety rules for the NBTC are based on our best interpretation of requirements at the federal, local, campus, and Duffield Hall levels. As a core facility with a broad user base, our goal is to enable all users to have the safest and most efficient possible research experience.

If you have any safety questions or concerns about the NBTC, here are some useful contacts:

- Brian Bowman (bjb5@cornell.edu) NBTC Safety Officer
- Dan Woodie(daniel.woodie@cornell.edu) CoE Safety Manager
- Frank Cantone (fac2@cornell.edu) EHS Biosafety Officer



Dress Code

Anyone entering the NBTC labs must be dressed appropriately for lab work. This means no chemical-accessible skin from shoulders to feet.

Shoes must completely cover the foot.

Pants must be full-length from waist to all the way down your leg. **Closed shoes only no skin showing!**

No shorts, no skirts (without pants underneath), no short pants. No tight pants such as yoga pants, leggings, tights, or legging/jeggings. Pants should not be tucked into shoes.

Shirts must completely cover the body from shoulder to pants. A lab coat must be worn with midriff-bearing tops or sleeveless shirts.

Final determination of the safety of any piece of clothing is at the discretion of NBTC staff.

These people should not be doing lab work!



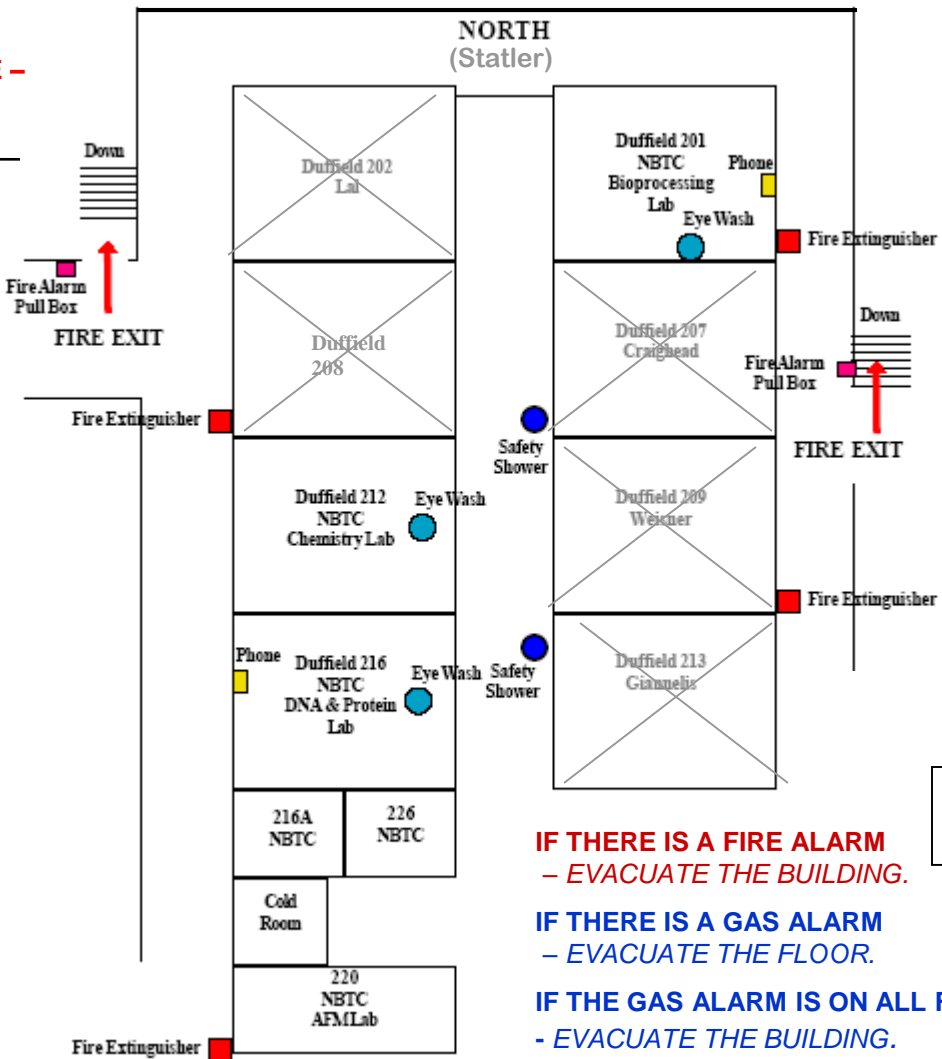
Fire Exits and Evacuation

**IF YOU EXIT ON WEST SIDE –
GATHER ON THE QUAD**

**MAIN ENTRANCE (EAST)
EXIT THROUGH MAIN DOORS**

ENG. QUAD (WEST)

**IF YOU EXIT ON EAST SIDE –
GATHER AT THE INTERSECTION
OF TOWER/HOY RD.
(ON THE GRASS PATCH)**



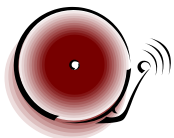
**EXIT TO QUAD
THROUGH WEST
CORNERS OF
THE BUILDING**

**ATRIUM (EAST)
EXITS NEXT TO CAFETERIA**

**IF THERE IS A FIRE ALARM
– EVACUATE THE BUILDING.**

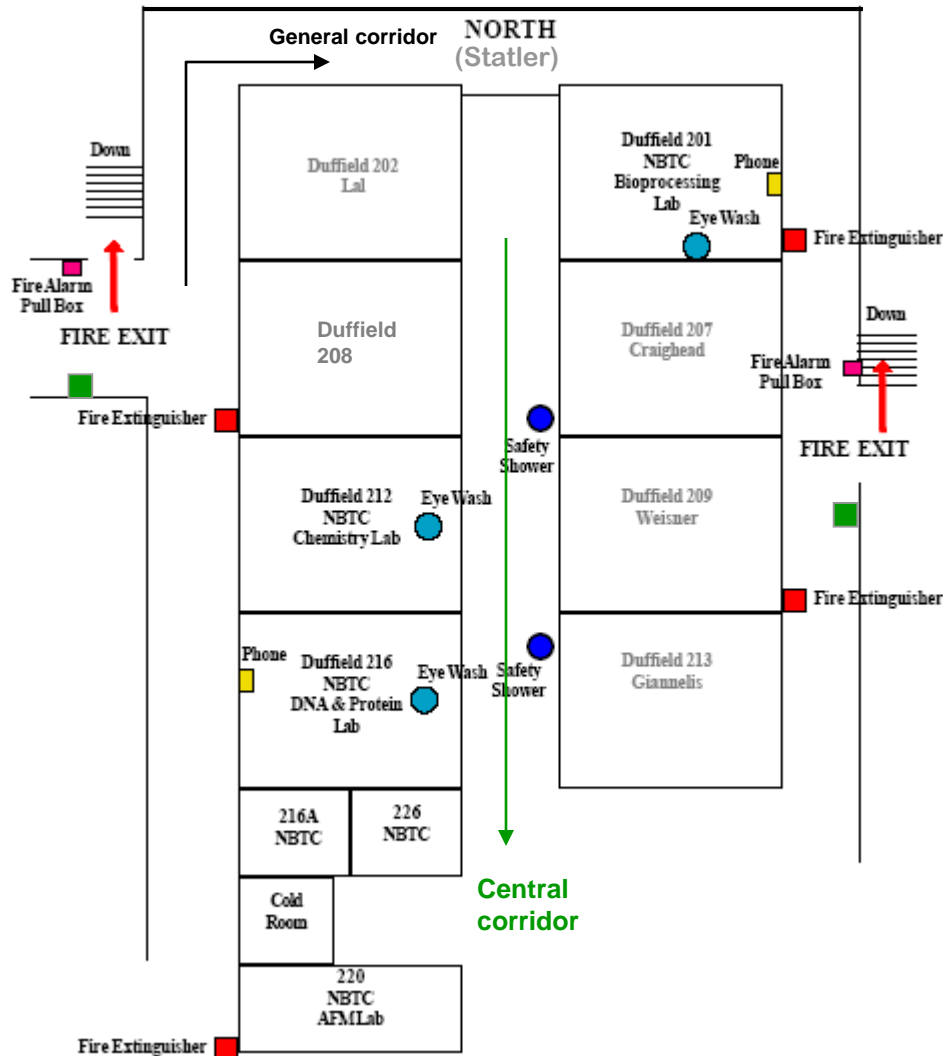
**IF THERE IS A GAS ALARM
– EVACUATE THE FLOOR.**

**IF THE GAS ALARM IS ON ALL FLOORS
– EVACUATE THE BUILDING.**



Leave your experiments in safe condition—covered chemicals, instrument on standby, etc.

Emergency Equipment



■ EH&S – 911 PHONE (red colored phones)

If you accidentally lift up the phone, stay on the line and explain what happened so they know it is a false alarm. Regardless, police and EH&S will respond to any call no matter what!

911 phones and fire alarm pull boxes are located next to the fire exits

■ STANDARD PHONE

■ FIRE EXTINGUISHER

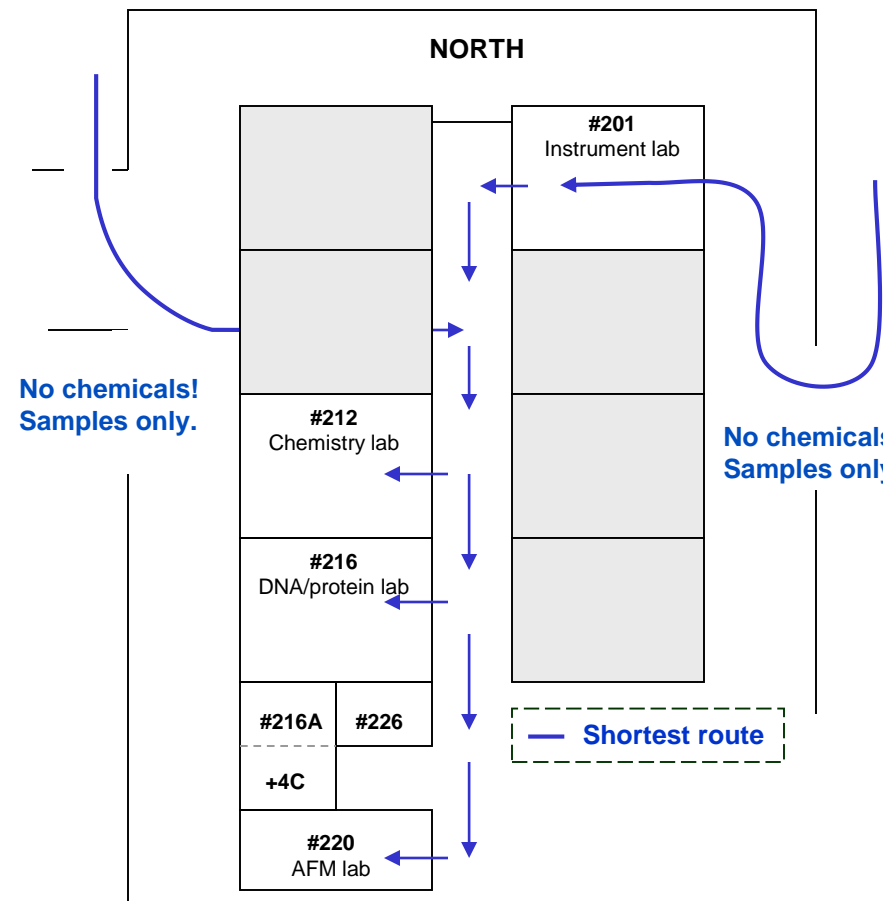
● SAFETY SHOWER

● EYE WASH

THERE ARE ADDITIONAL FIRE EXTINGUISHERS IN THE CENTRAL CORRIDOR BUT THESE ARE A DIFFERENT CLASS THAN THE ONES IN THE GENERAL CORRIDOR – IF YOU DON'T KNOW HOW TO USE ANY OF THEM - DON'T !

If you start a fire alarm or call on EH&S/Fire department, meet them at the main north entrance and explain the situation.

Transporting Materials



SAMPLES (less than 50 ml aqueous buffers or 10 ml organic solutions)

- Notify staff before bringing a new sample in for the first time so there is a MSDS sheet on record.
- Samples can usually be transported into the NBTC labs the **shortest route** (see arrows) and moved into the desired lab via the central corridor. Samples should be transported in a primary vessel (falcon tubes, glass scintillation vials, etc.), which in turn is kept in a secondary transportation box (tool box etc.)

CHEMICALS AND BIOLOGICAL SAMPLES

- Notify staff when you want to bring chemicals or samples into the labs – all bottles must be labeled by staff. You will need to provide a MSDS sheet (.pdf format) – send to Penny Burke (pd28@cornell.edu) or Teresa Porri (tp252@cornell.edu)

- To transport chemicals into the building either:
 - A. Make an appointment with staff beforehand and then meet the staff member with your chemicals at the loading dock of Phillips Hall (where the big liquid N₂ tanks are).
 - B. Order the approved chemical and ship it directly to NBTC, with attention to Penny Burke. Send an email to let us know we should expect incoming packages.

SHARP SYRINGES:

If you want to use sharp syringe needles in the facilities, you need to keep them in a locked, labeled box when they are not in use.

Before Working in an NBTC Lab

- To use the NBTC labs you must complete:

- The orientation you are attending today

- EH&S training in “Chemical Waste Disposal” and “Laboratory Safety”, or CNF clean room training.

Email your scores to Penny Burke (pd28@cornell.edu). You will not have access to the NBTC labs until she has received your scores.

- Enter the labs by swiping your ID card at the door.

Every user should swipe their ID every time they enter NBTC labs.

Users must be dressed appropriately: No exposed skin from shoulders to feet

Visitors are only allowed to observe (no training or lab usage), must adhere to the same safety rules as users, and users must accompany visitors at all times.

- **SAFETY EQUIPMENT IS REQUIRED AT ALL TIMES**

- Gloves

- Safety glasses

Personal safety equipment is located close to the entry door in all labs

Change gloves as soon as they get dirty to minimize cross-contamination.

Working in NBTC labs

- No headphones or speakers can be used in the labs.
- HASP signs with staff phone numbers are posted on all doors.
 - Contact staff with non-emergency safety questions or concerns, or with emergency information after contacting Cornell Police or EH&S.
- Additional staff phone numbers are posted by the phones in Rooms 201 and 216. Numbers of instrument managers are posted by the instruments.
 - Do not call with non-emergency questions outside of business hours (7am-5pm).
- Label all containers, tubes, etc.
 - Label with your name, the date, chemical (i.e., “water” NOT “H₂O”) and concentration
 - Unlabeled chemicals will be disposed of.
- Clean up after yourself when you are done working for the day
 - Dispose of liquid/solid waste appropriately
 - Clean bench space and glassware

Working in NBTC Labs – Waste and Trash



Broken glass and pipette tips

No biological material



Biological Materials

Petri dishes, wipes, tissues, gloves, etc.



Biologically contaminated sharps

Syringe needles, razors, biological glass etc.



General Trash

Paper, gloves etc.

No biological material, pipette tips, or sharps!

Working in NBTC Labs – Chemical Waste

Organic Solvents

There are non-halogenated and halogenated organic waste bottles in the fume hoods. The bottles have a generic label listed with commonly used chemicals (see image). Put a check mark in front of the solvent you add to the bottle.

Acids and Bases

Put ANY acid or base waste into the appropriate waste container (available in 212 and 216). Put a check mark in front of the chemical you add to the bottle.

Other waste chemicals

If there is a need to collect a specific type of chemical that cannot be discarded in any existing waste bottle, please notify staff and we will make a waste bottle for that class of chemical.

Examples:

Heavy metal ions, ethidium bromide, poisons etc.

Organic Solvents	
<input type="checkbox"/> Non Halogenated - Flammable	<input type="checkbox"/> gamma-butyrolactone
<input type="checkbox"/> 1-methoxy-2-propanol acetate	<input type="checkbox"/> hexane
<input type="checkbox"/> 1-methyl-2-pyrrolidone	<input type="checkbox"/> isopropanol
<input type="checkbox"/> 2-ethoxyethyl acetate	<input type="checkbox"/> methanol
<input type="checkbox"/> 2-butoxyethanol	<input type="checkbox"/> methyl ethyl ketone
<input type="checkbox"/> 3-pentanone	<input type="checkbox"/> methyl isobutyl ketone
<input type="checkbox"/> acetone	<input type="checkbox"/> naphthoquinone
<input type="checkbox"/> acetonitrile	<input type="checkbox"/> polymethyl-methacrylate
<input type="checkbox"/> anisole	<input type="checkbox"/> polyimide
<input type="checkbox"/> butanol	<input type="checkbox"/> propylene glycol monoethyl ether acetate (PGMEA)
<input type="checkbox"/> n-butyl acetate	<input type="checkbox"/> pyridine
<input type="checkbox"/> cyclohexane	<input type="checkbox"/> tetrahydrofuran (THF)
<input type="checkbox"/> diethyl malonate	<input type="checkbox"/> toluene
<input type="checkbox"/> dimethylformamide (DMF)	<input type="checkbox"/> xylene
<input type="checkbox"/> dimethylsulfoxide (DMSO)	<input type="checkbox"/> _____
<input type="checkbox"/> ethanol	<input type="checkbox"/> _____
<input type="checkbox"/> ethyl 3-ethoxypropionate	<input type="checkbox"/> _____
<input type="checkbox"/> ethyl lactate	<input type="checkbox"/> _____

For all waste:

Fill the bottles to the marked line, when filled to this level put them in the back of the hood.

If you have filled a waste bottle, you can obtain an empty, pre-labeled bottle from the rack next to the log on computer.

MSDSs for all chemicals in the NBTC and the Cornell Chemical Hygiene Plan are located in the central safety corridor.

Working in NBTC Labs – Supplies

- General supplies are kept in the individual labs (tubes, vials, wipes, etc).
Supplies are usually kept around the perimeter of the lab.
- Locked storage cabinets are in the central corridor contain extra stock.
If you can't find what you need in the lab, contact staff for assistance.
- Door charges cover “reasonable usage” of supplies and chemicals. For larger quantities, please speak to NBTC staff about purchasing materials.
- It is OK to move supplies and smaller equipment between the NBTC labs as long as you return them to their proper location.
Sometimes this simple notion is not followed so look in other labs if you can't find what you are looking for (pipettes, tweezers, glassware etc.)

Do not take NBTC supplies, chemicals or equipment from the NBTC labs into other areas (other PI labs, CNF labs, etc.)

Working in NBTC Labs – Using Chemicals

- Solvents are kept in the solvent cabinet in the central corridor. Other chemicals are located in storage areas in individual labs.

Always return solvent/chemical bottles to their proper storage location.

- If you can't find a chemical or we are running low, please contact NBTC staff.
- All chemicals should be labeled with the name of the person that owns the chemical and the full chemical name. If "NBTC" is the owner then feel free to use it, otherwise ask permission!
- When transporting chemicals/solvents between rooms, always use the rubber buckets that can be found near the solvent cabinet in the corridor.

Working in NBTC Labs – Cleaning Up/Maintenance

- There are wash bottles of common solvents and cleaners available for your convenience.

Refilling wash bottles is the user's responsibility. If you need to refill one, be sure that it is the same solvent as on the label. Solvents should be available in the yellow solvent cabinets.

- If you take the last of any stock chemical or solvent, leave the bottle the hood or on the counter and NBTC staff will dispose of it safely.

- If you spill a chemical:

Spill kits for small amounts of organic solvents or acid/bases are stored in #212, cupboard 10 (under the acid hood).

If larger amounts are spilled, use the red emergency phones and contact EH&S.

MSDS sheets, first aid kits and laboratory safety manual are located next to the login computer in the central corridor.

Working in NBTC Labs – Hoods

- Always wear a face shield when working in any of the hoods.
- If you use any hazardous/corrosive chemicals use an apron.
- Always have the fume hood sash in the proper working position.
- Use solvents in the solvent hood and acid/bases in the corrosive hood in Room 212 (chemistry lab).
- If you must use acids/bases and organic solvent together, use the most appropriate hood (depending on the type of hazard).
- The hood in Room 216 is mostly for DNA/protein related work and should not be used for large amounts of solvents/acids.
- There are compressed air (orange tap), tap water (green tap) & house vacuum (yellow taps) outlets available in the hoods.

Remember:

Always clean up after yourself when you are done working for the day!

ALWAYS label all your containers/tubes/vessels etc. with your name, date, chemical name, and chemical concentrations.

Working in NBTC Labs –Misc.

- The perimeter of the labs are for NBTC equipment and general use.

This space is shared by all users for day-to-day work—please keep these areas clean!

- The central islands in Rm. 212 and 216 are designated to individual users.

You need to ask permission from the individual user or lab before using any of the non-NBTC equipment on these benches or in drawers.

The same applies for shelves/drawers marked with individual names.

If you need longer term working or storage space, contact Penny Burke or Teresa Porri.

- DI Water:

There are 18.2 MΩ DI water tap-stations in 212 (Chemistry) and 216 (Microbiology).

Operate by flipping the gray switch on the handle on/off and wait until LED reads 18.2 MΩ.

There is also a box of DI water above the sink in 201.

Ignore any service messages on the LED display, and contact NBTC staff with any concerns.



- House Nitrogen

•There is nitrogen available in the solvent hood in 212, there are also additional yellow nitrogen guns at various locations in the labs.

Working in NBTC Labs –Misc.

•Ice Maker:

Is located in the central corridor and uses DI water—do not eat!

Ice maker runs when styrofoam cup is held underneath the spout.

•Dishwasher

Located in the central corridor and is operated by staff only.

Remove all labels and markings on glassware, clean it in the sink, and put it in the cart next to the dishwasher in the area labeled “Dirty Dishware”.

•Storage

All stored materials must be marked with your name, PI’s name, contact information, date, and chemical names. Unlabeled chemicals will be disposed of without notice. This includes all chemical shelves, refrigerators, and freezers.

•Publications based on work that has been done in the NBTC facilities should include the NBTC in their acknowledgements section. The suggested text should read:

“This work made use of the Nanobiotechnology Center shared research facilities at Cornell.”

Biology Research

Using biological samples?

EH&S requires that we give an additional orientation to researchers doing mammalian or bacterial cell culture, handling tissue samples, etc. You are not allowed to do ANY bio work in the NBTC labs until you have done this. Please contact Penny Burke (pd28@cornell.edu) to arrange a time for this training.

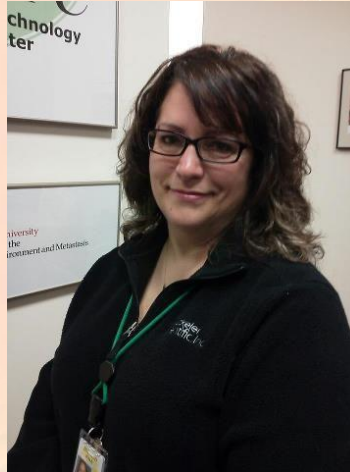


NBTC Contacts



Brian Bowman
Research Support
Specialist
bjb5@cornell.edu

- Safety Issues, Billing, Mechanical/Electrical Questions, Custom Equipment Modifications



Penny Burke
Lab Technician
pd28@cornell.edu

- Lab Supplies, general lab questions and trainings, microfluidic trainings, fume hood information, hazardous material path appointments



Teresa Porri
Research Associate
tp252@cornell.edu

- Research questions, experimental design, minicourses, outreach and dissemination activities, cell culture questions, overall center operation.