General Notes on MBB Common Use Equipment

Person to contact in case of questions or problems:

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Emergency (Out of Hours): 778-231-6610 or 604-475-1050

Introduction
This handout covers in detail what was discussed in the MBB Orientation. In addition it explains what the department and I expect from you as users of our equipment. The orientation and this handout are not designed to give you carte blanche to operate any of the equipment in the department, for a large amount of the instruments in MBB, additional training must be sought from me. A copy of this handout together with blank PH Key request forms and our departmental code of conduct can be found on the MBB website www.sfu.ca/mbb/Documents/Orientation

SSB 6113: Autoclaves/glass-washer/glass dryer

Autoclave operation
Only trained personnel are allowed to use the autoclave facilities.

1. **Sign up on the waiting list plus on the computer.**
   If there are other loads ahead of you and an autoclave is free please put in those loads. More than one load can be put if there is enough room and they require the same cycle and temperature. Please use the metal bins provided, in order to protect the autoclaves from spills and broken glass, etc. which clogs the plumbing. The dimension of the chamber can accommodate two bins at a time. If there are no loads ahead of yours, you may go ahead and use the autoclave.
   However, you must still fill in the sign-up sheet plus the computer log-in.
2. **Choose the appropriate type of cycle, either dry or liquid.**
   The cycles are labeled either for liquids or for dry loads on the control panels. It is very important to get this right; a dry cycle has a rapid exhaust phase and liquid (i.e. the solutions you've just spent time making and pH-ing) will evaporate very quickly. A liquid cycle is for any solutions, garbage loads, and soils. Dry cycles are for tips and tubes, glassware and other equipment. Please use the correct bins; some are only for garbage loads.
3. **Set the correct exposure and exhaust times for dry loads, and an exposure time only for liquid loads.**
   If you wish the equipment to be dry after sterilizing, you should set an exhaust time of 20 minutes. For liquid loads, the exhaust time is set by the autoclave (the display will be "00:00") and will be quite slow to prevent evaporation or boil-over.
4. **Ensure that the "ready" light is on and press "start".**

Wait a few moments to ensure that the autoclave is running correctly and the temperature is rising. **You must note the time, temperature, and type of cycle on the logbook attached to the front of each autoclave, include your name, room # and the name of the person whose load you have put in, if it is not your own.**

5. **CLEAN the metal bins after use;** if any agar has solidified, do not put it in the sink as this causes clogs. Scrape it into the garbage and then clean out the bin. If agar is still hot and liquid, run hot water into sink as you drain and rinse the bin**.**
6. **After use, rinse and put the bins upside down at the sink top.**
7. **No loads should be left in the autoclaves overnight.**
   If it is late in the day, be prepared to remove your load when it is finished, or arrange to have someone else remove it. Loads must not be left in the autoclaves overnight (plastics become very brittle and solutions evaporate). A regular 20-minute liquid cycle takes about one hour to complete, as does a dry cycle with a 20-minute exposure and 20-minute exhaust time. Please remove completed loads promptly to avoid clutter in the room.
8. **Once your load is completed** and you have removed it, please load anything that may be waiting (unless it is late in the day). If there are no loads to be put in, leave the autoclave on dry ("wrapped") with the door slightly ajar (about 5 cm). This prevents the autoclaves from cooling down and ensures that they will be ready for the next user. This is important as the autoclaves can take upwards of 1.5 hours to get back up to temperature if this procedure isn't followed.

Additional notes for newer Getinge Canada Autoclave (#4 left)

1. Before using the autoclave in the morning make sure that the boiler is up to temperature and pressure. To check the pressure there are 2 gauges you can use, one on the autoclave itself labeled Jacket pressure and one that you can see floating above the autoclave, both of these gauges should read the same (~20 psi). The jacket temperature can be read from the display screen, by pressing the down arrow 2 times, the temperature should read (~252F). Please return the screen information to standby by pressing the up arrow 2 times.
2. There is a list of programs on the door of the autoclave. If you need conditions that differ from these please send me an email and I'll come and change the programs temporarily.
3. To use the autoclave press the button corresponding to the program that you want (P1 – P6), then press start. Wait to make sure that the autoclave is running before you leave it. When the program has finished just press the lower of the two door symbols to open the door seals.

4. If you make a mistake and need to abort the run, press clear and the program button you are using. The autoclave will enter an abort cycle lasting 15-20 mins, after which you will be able to remove your samples.

Additional notes for Ritter M11 Ultra Care Benchtop Autoclave (#6)

1. Check the hose gauge inside to see if autoclave needs more water. If more water is needed fill up by removing top panel till gauge reads green again.
2. Choose either a solids ("packs" gives you 30 min exposure time at 250F) cycle or a liquids (also 30 min exposure time).
3. Your load is limited to 3 x 250mL flasks or 4 boxes of tips.
4. Press Start and wait for cycle to finish.

If you run into problems please see Neil (SSB7124, x23021, nda15@sfu.ca), Deidre (Paetzel Lab, SSB 6156, x24316) or Linda Pinto (Moore Lab, SSB 6171, x23511)

Biological Waste Disposal

Level 1 biohazard waste is picked up from your lab (just like chemical waste so you have to fill out the webform: https://webform.sfu.ca/cgi-bin/WebObjects/WebForm.woa/wa?scist.disposal). It should be placed in semi-transparent bags, which are available at the Science Stores. There is **NO NEED** to put the stripe autoclave tapes on your level 1 biohazard waste.

Level 2 waste (or greater) must be placed in the orange biohazard bags with the **LETTER** autoclave tape).

1. Make sure to label each bag with your supervisor's name and room #.
2. Fill in the Biohazard Waste logbook with complete details
3. Put your waste in the blue storage bin & that's it! The rest will now be done for you.

Use of the glassware washer

1. Sign the log sheet, located on the window side of the dishwasher; please indicate how many loads you are doing and check your name off once your loads are complete.
2. Load the glassware on the racks. The water pressure is very strong in this machine, so ensure that glass items do not touch each other and do not wobble too much as this will cause breakage. Weigh down the lighter items with the tray(s) provided, to ensure these items do not fly around inside the machine. Lids and small items that don't fit on the racks can be placed in wire mesh baskets.

3. Before loading the rack into the dishwasher, check the metal screens at the bottom (they lift out) and remove any tape, glass, agar, etc, before starting your run. Be careful not to cut yourself. Do not operate the dishwasher without a rack in it, otherwise water is directed at the door and ends up on the floor.
4. Select the cycle (cycle II is slightly shorter than cycle I). Choose whether or not you want detergent and whether you want mineral free water (MFW) rinses. If you wish the glassware to be rinsed, set it to 1 or 3.
5. Press "start". The machine should start right away. If it is the first wash of the morning, some "fill" time may be necessary. If the machine doesn't start, check to see whether the "stop" button has been pressed in. If it has, release it, and the machine should start.
6. Remove loads promptly. Cycles can take over 1 hour to complete (Dishwasher getting old). Check the metal screens and clean them if necessary.
7. If you wish to dry the glassware, put the racks directly into the dryer and turn it on. It takes about 20~30 minutes to dry, depending on the temperature selected. The dryer does not have a timer, so you must come back to turn if off and remove your glassware. Don't leave items, especially plastic, in the dryer overnight—they will discolor and become very brittle.

SSB 7135 Xray Developer Room

The developer gets used by BPK, BISC and MBB, so make sure if it's urgent to reserve the machine online. If you want to make regular use of the film developer, tell me so I can register you.

Users of the developer are responsible for turning it on and **ensuring it is correctly shut down afterwards**. To turn on the machine: Turn the water on, check the level of developer/fixer in the tanks **then** turn the machine on.

1. Ensure that the "in use" light is on and the door locked to prevent people from walking in while you are working (ALWAYS knock before entering this room). The light switch is labeled.
2. Sign up on the paper sheet provided. Note number of uses and any problems. Do not use this room for long procedures. Many people need to use the room every day.
3. Turn off the room lights and turn on the safe light, if the film you use is OK with the safelight on.
4. Put the film to be developed on the feeder. Press the start button to the left of the feeder. This will start the roller moving. Slide the film forward until it is grabbed. The machine will do the rest. Once the film is in no danger of light exposure, the machine will beep. At this point you may feed in another film (you won't need to press the button this time) or turn on the room light. ENSURE YOUR FILM IS PUT AWAY before turning on the lights.

5. The minimum size film that can be put in the developer is 4 X 10 inches (10 cm X 25 cm) with EDGES TRIMMED ROUND, preferably 7 X 9.5 inches (18 cm X 24 cm), which is the smallest size available commercially. Smaller pieces can go in, but they won't come out again. **Also do not feed in two or more films together**.

6. Clean up any remnants of your work. **In particular, dispose of all sharps in the container provided** (needles and razor blades). People are working in the dark, your sharps are doubly dangerous if left lying around. Do not leave or store reagents or radioactive gels in this room.

   When you are finished using the Developer, **TURN it OFF!** If you forget, the machine continues running throughout the night/weekend wasting costly reagents. You will be billed for this extra time so keep your PI happy and turn it off.

Gel Documentation

SSB 7137 - This room contains one short wave UV transilluminator (A), attached to a wide camera and computer for capturing/processing images. All images are to be saved to a USB stick, and a standalone Sysgene gel doc (B). It also contains a standalone long wavelength UV transilluminator (C).

A. Short Wave UV transilluminator

1. Ensure that you lock the door and put on the "in use" light. The room light will not turn on unless the "in use" light is also on. Always knock before entering if the door is closed.
2. Turn on the monitor.
3. Place your gel on the transilluminator under the camera. Cover it with the Plexiglas cover. The upper ring on the camera is the F-stop, the middle is the zoom and the lowest one is the focus. There is no need to move the camera.
4. Make sure you are protected from UV light. Short wave UV is extremely damaging.
5. Turn on the transilluminator.
6. Click on the ScionImager icon to open the program.
7. Go to "special". Click on "start capturing". If the resulting image is too faint, click on "average frames". Set the # of frames to be captured to between 2 and 10 (the higher the #, the stronger the exposure will be) and click "integrate on chip" and "OK". Note that increasing the # of frames captured will increase the exposure time, and will erase any previous adjustments you've made to the image.
8. Once you have a good exposure you can save it to a USB memory stick and work on the image in your lab. You can save images temporarily to the HDD but these will be deleted periodically.

9. If you want to see the manual for the imaging software, you can check it out from the MBB office. There are many functions, including densitometry that you may be interested in.
10. Take care in using this system. Short wave UV radiation as well as being bad for you is also bad for DNA, introducing strand breaks and mutations throughout your sample.

B. Geni² Gel Documentation system

The Geni² system is self contained having a built in monitor plus computer.

1. Place your gels on the transilluminator and press the large power button (top right corner).
2. To enter the setup menu press the prefer button (located on lower left of the screen)
3. This presents you with a menu with the following options:
    a. Bit depth (16 bit) will give you a higher resolution
    b. Save image to (Always save to USB)
    c. Save format (TIF-non-processed image file; JPEG-mildly processed image file; BMP highly processed image file)
    d. Filters (only contains a mid pass UV filter, position 1 suitable for EtBr)
    e. Calendar & Time (should be fine)
4. After you have entered the settings that you like press the done button (Bottom right on screen)
5. Next turn on the Epi White light and adjust the gel till it's in the right position.
6. Shut the door and turn on the UV light. Adjust the image with the Aperture, Zoom and focus buttons till it gives you the information that you need.
7. Next adjust the exposure and hit the snap button (bottom right).
8. Your image will appear at the top left of the screen. Just pop in your USB Key, click on the image and press save. The file will then be saved to your USB key.
9. Clean the transilluminator screen and turn the instrument off.

C: Long Wave UV transilluminator

This instrument is standalone and can be used for excising DNA bands from gels. The room should be clean when you start, if it isn't please inform Neil. Make sure that you tidy up thoroughly after using.

SSB 6130 Alpha-innotech Gel Documenation system

This instrument is located in the fumehood. **Always wear gloves** when placing samples into the gel doc plus and when using the computer due to HEAVY ethidium bromide contamination. The gel doc has an external computer and to login successfully you need to be on the departmental email list (mbb-all). If you're not I can give you temporary access.

1. After you have logged in click on the icon (alpha innova AIC). This brings up the visualization program. Click on the camera icon at the top left which says acquire.

Play around with the settings until you get a crisp, well focused image of your gel.

2. Set an exposure (either auto-exposure) or I find 500ms works quite well. You can now play around with the image till you get a nice image then:
   1. Email image to yourself
   2. Print using the attached thermal printer

Centrifuge Rooms SSB 6138/ SSB 7167

SSB 7167 – Contains Avanti J-26XP (superspeed centrifuge), L-90K floorstanding ultracentrifuge and an optima max Ultracentrifuge
SSB 6138 – Contains Avanti J-20XP (superspeed centrifuge)

Note: You must be individually shown by Neil Dobson how to use each centrifuge (see me to set up a time for training). These centrifuges are **easily damaged if used improperly and the repairs are very costly** (eg. $2000 for rotor repair)**.** The repair costs will be charged to your supervisors account so don't hesitate to contact Neil for proper training.

Nanopure H_2O Dispensers

There are nanopure H_2O Dispensers located in **SSB 7167 and 6113**, including a nanopure diamond in SSB 6113. The nanopure H_2O produced by the filter units contains no charged impurities at all and is necessary for experiments such as PCR which is sensitive to any ionic impurity. To use the dispensers:

1. Turn the machine from standby (STBY) to ON, by pressing the button twice. The conductivity (around 17.5~18.3) will be displayed.
2. Use the dispenser to fill your container, by pressing the trigger. If your container is large, you can leave the dispenser on by pressing the trigger and pushing in the small gray button on the side of the handle. To release it, press the trigger again.
3. Please STAY WITH THE CONTAINTER WHILE IT FILLS. The large, 20L containers take about 12 minutes to fill. Bring something to read—overflows will cause damage and take up lots of your time to clean up.
4. Return the machine to stand-by, by pressing the button until STBY is displayed. The machine should never be left off.

Nanopure Diamond

The nanopure diamond is only to be used to fill containers of 1L or smaller. To use it:

1. Turn the machine on by pressing the on/off button on the control pad. If the machine displays a message saying "Autoflush in progress" then wait till the autoflush has finished before proceeding.
2. If you are filling up a 1L container you can press the autodispense button located on the stand carrying the dispenser, this will dispense exactly 1L of water into your container.

3. To fill containers of other sizes press the manual button located on the right side of the dispenser stand. Press the manual button again to turn off the water.
4. Press the standby button when you have finished using it.

If the machine flashes up any messages apart from "change UV lamp"contact me straight away so I can have a look at it.

Green Labs/Sustainability

Green Labs – Science research and teaching labs are SFU's greatest consumers of energy requiring large amounts of electricity and natural gas to power important equipment, such as fume hoods, centrifuges, - 80 C freezers. SSB is temperature controlled which creates an extra energy strain. SSB's green lab members consciously work to reduce energy consumption through simple behaviour changes. Some examples include:

- Shut fumehood sashes when not in use
- Turn off lights, computer monitors and equipment when not in use
- Keep lab doors, external windows and doors shut at all times

For further information please refer to:
http://www.sfu.ca/sustainability/initiatives/energy/green-labs.html

Sustainable SFU – MBB is committed to a sustainable SFU. This applies to offices, common areas, and laboratories. You are encouraged to focus on:

- Transportation - take public transit, ride your bike or carpool
- Reduce the use of, and recycle, all paper products. The photocopiers are set to print double-sides, and are equipped with scanners.
- Zero waste – compost bins and recycle bins (plastic, glass, tin & aluminum, paper and cardboard) are readily available throughout the building
- Water is a precious resource; please do not waste it

For further information please refer to:
http://www.sfu.ca/sustainability.html

Have a great Sustainable/Green lab idea? Let Christine Beauchamp (mbbmas@sfu.ca) know!

Fire Alarms

1. Familiarize yourself with your surroundings including your lab.
2. Learn the location of your nearest Fire Extinguisher and your nearest Fire Alarm pull station.
3. Familarize yourself with the exit routes from the building and where to congregate. Exit using the designated fire stairwells. **Do not exit via the central stairway.**

Computing Facility

Contact Duncan Napier at dgnapier@sfu.ca.

Microscopy

Contact Tim Heslip at trh2@sfu.ca.

There is other equipment available around the department. If you need to use it, ask and we'll find out if it is available and who you should see to be shown how to use it.

NAME:_____.

Equipment that needs extra training

The following list of equipment requires additional training before you can be authorized to use it. This can as little as 5 mins or up to 1-2 hours depending on your knowledge and the piece of equipment. Put a check in the box if you know that you are going to need to be trained up on the equipment.

[ ] Avanti Superspeed centrifuges

[ ] Beckman Ultra-centrifuges

[ ] Carey UV/Vis

[ ] Carey Fluorimeter

[ ] Nanodrop 1100

[ ] Nanodrop 3300 (Fluorimeter)

[ ] Spectramax M5 Platereader

[ ] StepOne RT PCR

[ ] JASCO J-810 specto-polarimeter

[ ] Aglient Bioanalyzer

[ ] GE Typhoon

[ ] Fujifilm LAS-4000 chemi-luminescent scanner