Core Jobs

1. Equipment Trainings
2. Coordinate Trainings
3. Marking accounts as trained
4. Billing Program
5. Email correspondence with requests and advice/consultation/etc.
6. Refill consumables for microscopes (oil, wipes)
7. Delete files from LSM workstation
8. Coordinate repairs with service teams from Zeiss and Abberior
9. Website upgrades
10. ID card submission to lock shop

**How to do Tasks**

ID card submission

1. Enders 613-email Doug Ritchie at [doug.ritchie@childrens.harvard.edu](mailto:doug.ritchie@childrens.harvard.edu) with the users name, ID number and badge number. I have all users fillout this form: <https://research.childrenshospital.org/cfic-core/request-accesstraining>
2. Enders 648: Same as above, but email [Security.AccessControl@childrens.harvard.edu](mailto:Security.AccessControl@childrens.harvard.edu) instead. Same form is used.

File deletion

Every file in drive E on LSM workstation is subject to deletion if it is over 30 days old.

Billing Program

Use python based CFIC billing program on raw CSV file from iLab that Alia generates. Upload processed folder into CFIC dropbox. Alia takes care of rest.

Consumables/Maintenance

1. Refill lens wipes and kim wipes for LSM 880, spinning disk and STEDYCON.
2. Refill sparkle on LSM 880, spinning disk and STEDYCON. Note we are out of sparkle and a case of new lens cleaner from Edmunds optics will be in soon.
3. Inspect LSM 63x and 10x objectives. Clean if needed.
4. Remove dust if becoming significant

Website Upgrades

Make website a place for all info and useful with live links. As of now, no distinct plan for material is set in place.

Mark account

Marco and Ali both email me who needs to be marked as trained in iLab. Search engine is typically very bad and I edit the equipment page, go to permission section and enter the users name in search bar there. Much much more reliable.

Coordinate repairs.

For zeiss, cell US optics customer service number and ask to make repair ticket. Typically Peter Frey is assigned to us.

For Abberior, email Karsten Bahlmann.

Coordinate Trainings

Email with users until day and times that work for both of us are reached.

Training

My main area here is LSM 880 trainings. Here is a breakdown of the major points I hit.

1. How to power on
2. Move microscope condenser arm back to demonstrate movement.
   1. Have users each move back and pull towards until upright to make sure they get a feel for it.
   2. Tell user that if it isn’t forward, the laser will not turn on and its finicky
   3. Say if error come up saying UV-Vis timeout >10sec, then it is 100% that the condenser arm is not fully upright.
3. How to swap insert. Points of emphasis below:
   1. Slide insert is base insert and should be swapped back to
   2. Lower objective using load sample and set work buttons on touch screen unit
   3. Spread wings apart on insert so neither are over objective when placing into stage
   4. Tighten until just barely snug. No need to crank much.
4. Oil objective
   1. Let users see how little oil is on dip stick
   2. Show I only oil up flat part of top of objective
   3. Say if put too much oil on, take a lens wipe and try again. Oil is cheap, oil build up is not.
   4. Load on slide
5. Location navigation
   1. Hit fluorescence button in navigation menu to open up fluorescence shutter.
   2. Click colibri-LEDs on touch screen unit (TSU)
   3. Explain this is not confocal. It is widefield and we cannot record anything we do with it. Its location sample only
   4. 4 LEDs and each can be turned on individually.
6. Acquire Tab
   1. Go to folder icon and load in template.
   2. I use airy scan with 4 wavlengths and frame switch for normal airy template
   3. Fast 4 wavelengths and frame switch for fast air scan
   4. Wait 5 minutes for argon to warm up. Point out red box on wavelength
7. Parameters
   1. Adjust 5 parameters
   2. 1 = zoom. I say this is FOV
   3. 2 = frame size. I say this is pixel sampling grid
   4. 3 = laser power for individual channel. I say this is image quality
   5. 4 – master gain. I say this is dynamic range. Emphasize that it does not influence the image quality. Rule of thumb in 16bit space is for tail of histogram to be at 10-15%.
   6. 5 = scanner speed. I always make = fastest
   7. Bonus! Align airy beam. (go to low frame size, hit continuous and wait for it to say its good)
   8. Note, frame size manually updates. Demo unchecking dapi and click optimal to update it.
8. Fast Airy
   1. Go to proper template
   2. Explain laser reshaping into oval profile and power density goes down
   3. Point to new frame size look. It now auto updates and we can select an Nyquist factor to ‘lock’ it in
   4. Laser power now looks different. Left is absolute laser power. Right is equivalent to previous mode power
   5. Same process of tuning each channel with laser power and gain. Note we are in 8 bit space now so I now place the tail at 40%.
   6. Also note that normal airy can be processed in black and blue, but fast airy can only be processed in black.
9. Z stack
   1. Demo z stack.
   2. Make sure to set a bound with last first and first bound last. Explain zen does not care if one is actually set first or last. Just make sure that they are opposite bounds.
   3. Processing will take longer on this one. While processing move into next section
10. Golden Rules
    1. Explain the golden rules of zen.
    2. 1. Never try to acquire image while it is actively processing. It will crash.
    3. 2. Never try to acquire image while it is actively saving. It will crash.
11. Shutdown
12. Tile
    1. Demo center tile
    2. Move to zen blue and stitch
13. Saving
    1. Save on workstation data drive 1
    2. Explain CFIC on site storage and the CFIC SMB drive
    3. Explain zen is full and free on workstation, but make sure to reserve time.
    4. Aivia is available as well, but it is paid for. Explain what it is.
14. Normal pipeline
    1. Explain how I normally do things.
    2. I acquire images on microscope, save to workstation and later date or time process them.
15. Shut down
    1. Turn lasers off, wait 5 minutes. Most background noise is argon laser cooler.
    2. Turn computer off. Wait until monitor power icon turns orange.
    3. Flip switches.
    4. Point to power down explanation paper just in case forget
    5. Mention I shut it down for training, but check calendar and leave on if user in within 1 hour of yourself.
    6. Emphasize the power down. Say disk drives forget themselves if it is not followed.