

Setting up a research lab

Session Description (8:30 - 9:30am):

Flash forward - you have been offered a job - congratulations! But now the challenges really begin. One of these challenges is setting up your lab. It sounds easy...and fun! Alas, setting up your lab requires critical planning to insure your success and eventual tenure. This session will discuss strategies for setting up your first lab as well as how to get your lab up-and-running.

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disclaimer: below are Dr. Kirby's opinions based on 10 years experience...obviously, there are many other views on how to set up a lab...please consider them all, as appropriate

Setting up a research lab

- What do you need?
- What do you want?
- Who will work in your lab?
- How will you maintain/fund your lab?
- Let's do something fun!
Plan your lab.



Setting up a research lab

- **What do you need?**

- how much space do you require?
minimum...assume you'll never up-grade.
- equipment? now and future?
- always think in terms of tenure!
 - in other words, what do you need to secure tenure?
 - BUT, think carefully!
 - setting up a lab takes longer than you think
 - using your freshly set-up lab takes even longer!
 - plan for set-backs
 - so, let's rephrase the initial question
 - what do you need ASAP to keep your research moving forward
 - there are many examples of faculty who did not receive tenure because their lab took too long to set-up and thus to produce data



Setting up a research lab

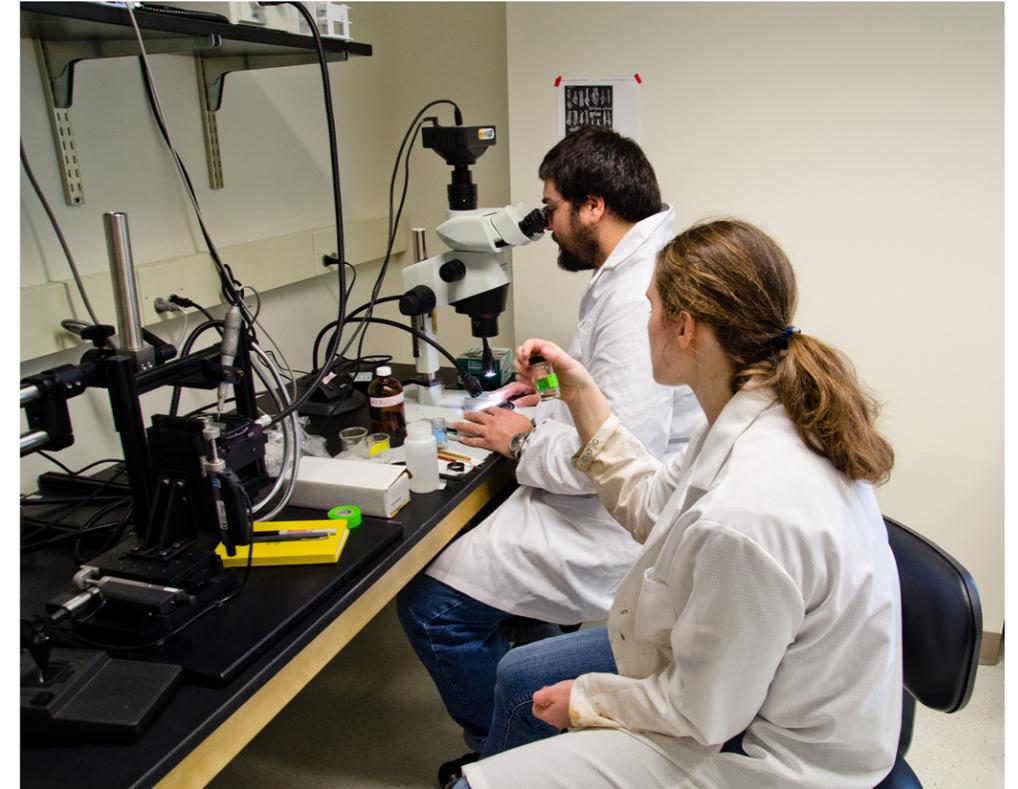
- **What do you want?**

- what you need is not the same as what you want.
- what you want are items that are helpful, but not necessarily critical to your tenure clock
- for example...
 - you want a IRMS, but it is risky because it is temperamental and time consuming
 - is it possible to run analyses elsewhere as you set-up your IRMS lab in, say, two years?
- how do I get expensive equipment I *want* that is not covered in my start-up?
 - grant! e.g., NSF equipment/facilities



Setting up a research lab

- **Who will work in your lab?**
 - will you have a dedicated technician, if necessary?
 - if not, who will manage the day to day duties?
 - as a professor, lab work is a huge time sink IF you intend to also write papers and grants
 - a productive lab requires labor - not yours!
 - who will train your students?
 - what mix of students will use your lab?
 - BS/BA theses? required?
 - graduate level? MS only? PhD? post-docs?
 - how will you fund student work...most students do not work *pro bono*
 - plan to write in \$\$ for undergraduate workers in ALL grants (as allowed)
 - NSF loves it!
 - undergraduate students are particularly helpful, but there is a steep learning curve AND they have a short lab life
 - will you offer paid lab services?
 - if yes, who will manage invoices? billing? labor?



Setting up a research lab

- **How will you maintain/fund your lab?**
 - flash forward...your lab is set-up using start-up funds
 - now, it is up to you!
 - how much support will your department/university provide if a major piece of equipment breaks and there is no warranty?
 - how will your research be impacted if a major piece of equipment fails?
 - can you trouble shoot complex equipment?
 - have you made a budget to fund your lab over time?
 - if you provide paid lab services, have you determined a price capable of covering expendables, labor, AND long term equipment maintenance?



Clean lab/instrument lab

Rosemary Capo

Specific lab needs – check on the space

- ❖ Climate control: temperature, humidity; vibration
- ❖ Electrical: filtering, outlet #, location, 220/110, UPS
- ❖ Air handling issues: filtration, positive pressure?
- ❖ Plumbing: sinks, drainage, water requirements
- ❖ Electrical: benchtop height, turn-around space, material, metal restriction
- ❖ Flooring: seamless, coved
- ❖ Ceiling/lights: type, particulates, dropped ceiling, access to fans, etc.
- ❖ Note ADA and safety restrictions on new labs

Other things...

- ❖ Write down the brand, model # and info about equipment you use **now**
- ❖ Visit other labs to get an idea of other (novel, cheaper) ways to do things
- ❖ Consider lab maintenance
 - ❖ Spare parts
 - ❖ Maintenance contracts – equipment, water, air

Build for the future

- ❖ Air handling – vents, hoods
 - ❖ Do you need perchloric, HF - washdown
- ❖ Positive pressure requirements
- ❖ 220V for additional instruments
- ❖ Space for extra bench space/small HEPA hoods
- ❖ A drain (in the lowest part of the lab)



**Remember your
responsibility**

Lab Safety

In your lab

- ❖ Student and postdoc training
- ❖ Labels/MSDS/antidotes/first aid
- ❖ Written safety policies
 - ❖ Emergency contacts
 - ❖ Lab restrictions
 - ❖ SOPs
- ❖ Safety PPDs – goggles, gowns, gloves, masks
- ❖ Training undergrads and grads
- ❖ Disposal of hazardous materials

Lab Safety

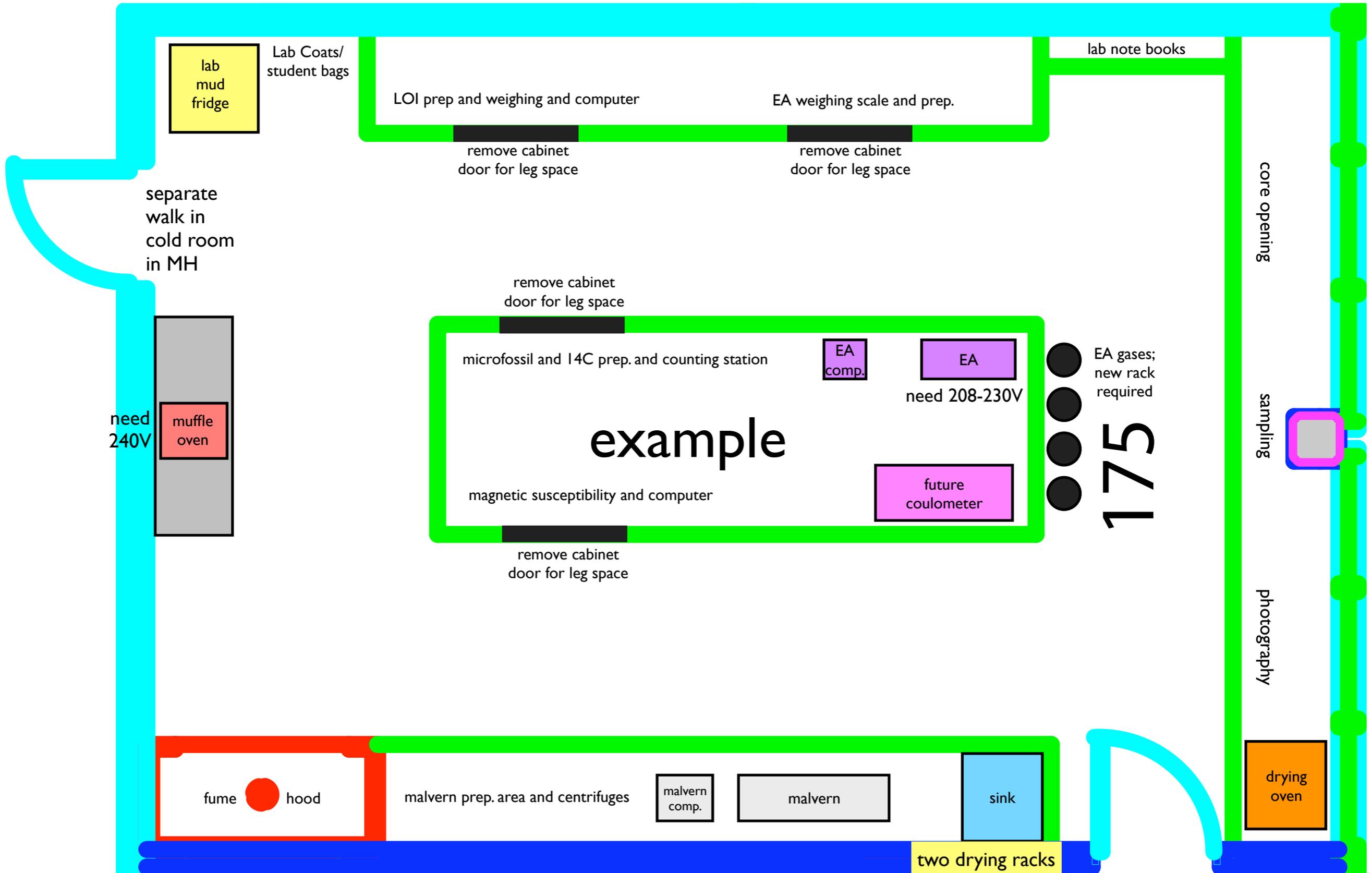
University requirements

- ❖ Office of Health and Safety requirements
- ❖ Hazardous materials – handling
 - ❖ Disposal of hazardous waste
 - ❖ Record of hazardous materials
 - ❖ Shipping of materials
 - ❖ Radioactive materials
- ❖ Required training/certifications
- ❖ Many online training modules

Setting up a research lab

- **Let's do something fun! Plan your lab.**
 - sketch your "dream" lab - JOB SPECIFIC!
 - water, fume hood(s), ductless fume hoods, DI water, ultra-pure water, gases, clean space, wet space, large spaces, storage, cold room, etc...
 - consider work stations to avoid over crowding
 - develop a start-up list- JOB SPECIFIC!
 - both a need and a want list

CSUF Kirby Paleoclimatology Laboratory (DBH 175)



**Design you
dream lab!**

