

**Mycology Lab Space Requirements**

1. Natural gas hookups for burners, water/plumbing for autoclaves
2. Two Biosafety hoods with UV lights (one for isolating fungi, one for DNA extractions); One chemical cabinet for storing alcohols; One chemical cabinet for storing acids; One cabinet for storing media
3. Moveable or Fixed lab casework, no preference
4. Epoxy sink—option to have millipore filtered/reagent grade water available in lab would be nice/central source of this type of water for department also an option.
5. Option to have millipore filtered/reagent grade water available in lab would be nice/central source of this type of water for department also an option.
6. N/A (perhaps biosafety hoods?)
7. Autoclave for sterilizing media and materials for lab; 2 Biosafety hoods needed, 1 for isolating fungi and 1 for DNA extraction and setting up PCR reactions.
8. Lactic Acid/Phenol/Alcohols/Culture Media—low temperature storage (freezer/refrigerator for DNA).
9. Cold room is not required for Mycology lab would be nice if one central cold room available for department

It would be nice to have 20 to 24 moveable seats/tables with gas hookups and electricity for Mycology lab. One central source of water is suitable for entire lab.

*Physiology Lab - near Micro + Molecular Labs*

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9/25/09 meeting

Carina Howell

Genetics/Developmental Biology lab (16-20 students)

Biology Dept.

1. What services are required in labs (gas, vacuum, air etc...)?  
-Gas and vacuum. Not necessary at every bench. A few in the lab on perimeter benches.
2. Fume hood requirements-
  - a. Size of fume hood (5ft, 6ft or 8ft).  
-5 ft fume hood is sufficient. Just one is necessary
  - b. Services required inside fume hood (gas, air, cold water, cup sink, etc...).  
-gas, vacuum, cold water, small sink
  - c. Quantities of fume hood required (No. of students per hood).  
-one fume hood in the lab
  - d. Flammable and acid cabinets.  
-both
3. Lab casework type (Fixed or moveable).  
-probably fixed, possibly moveable depending on how they can be set up. Would prefer tables for 4-5 students facing front of classroom, all in a row at desk height. If tables could be moveable so that groups of 4 could work together (2 students facing 2 students configuration), that would be ideal.
4. Lab sink type and material required (Stainless steel or epoxy).  
-either is fine
5. Is reagent grade water required at the lab sinks?  
-2 sinks are needed (1 in main lab on a perimeter bench / 1 in prep room), reagent grade water would be good at both sinks
6. Identify equipment requiring 208V or higher.  
- -80 degree freezer, ice machine, autoclave (these three items can be in a shared prep room space with the Molecular lab), tissue culture hood (potentially in the main lab area, possibly in a separate space in the department)
7. Define or identify special/and or large equipment.  
- 80 degree freezer, ice machine, autoclave, tissue culture hood (see above), microscope storage for 40 microscopes (ideally in student work bench spaces), -20 degree fridge, table top centrifuge
8. Provide list of chemicals used and storage capacity requirements.  
- standard Molecular Biology chemicals
9. Is controlled environmental room (Cold Room or Warm Room) required? If so,
  - a. Required size.  
- a small walk in cold room for the department
  - b. Will this be used as a lab or storage? storage

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LTH MTG.

Gene or Genetics, Molec.,  
Phys.

Student work spaces would ideally have storage for 2 microscopes per student and 2 drawers per student space. Also they would have outlets and Ethernet for each student. No sinks, gas, and air would be needed at student work spaces. Lots of bench space and storage around the perimeter of the lab would be ideal; lots of shelves and cabinets. Potential

to share space w/ Molec. Lab for prep room / Student research as long as the prep room is large.

East Campus, questions 9-25-09

By Dr. Nuttall

Responses to Jacobs Consultancy questions for MOLECULAR LAB

- Question 1 Gas (per pair of students) and electrical, 1-2 sinks in teaching lab, 1 in prep room
- Question 2 a. 5ft fume hood (similar to existing)  
b. no services needed other than electrical  
c. 1 chemical hood for the room  
d. cabinet for acids and flammables needed (under hood?)
- Question 3 Fixed cabinets (possibly movable since no water to desks)
- Question 4 Epoxy sinks are fine (one or two in lab, one in prep)
- Question 5 No reagent grade water at sinks needed
- Question 6 Autoclave is probably 220V.
- Question 7 All 120V instruments

**Molecular Biology Teaching Lab:**

**Free Standing in the classroom:**

- Refrigerator
- Biosafety cabinet, 6ft, (existing)
- Safety shower and eyewash, fire blanket (clear area around them)
- Instructor's station (small)?

**Bench top around the classroom:**

Clustered in back of lab for occasional and research use:

- ABI 310 with computer, with access to back of instrument critical
- LS32 with computer
- Thermal cycler (s)

Along edges of classroom for constant use:

- Bench-top Plexiglas clean box for PCR setup
- 2 incubators
- Occasional water baths (stored under bench)
- Occasional heat blocks (stored under bench)
- Hybridization oven
- Desktop microfuge
- Future speed-vac (at back of room)
- Microwave

**Prep room:**

Free Standing:

- Refrigerator (or 2)
- Autoclave (ducted steam removal, DI water supply nearby) (220V?)
- Lab cart
- Ice Machine

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East Campus, questions 9-25-09

By Dr. Nuttall

Responses to Jacobs Consultancy questions for **MOLECULAR LAB**

Page 2

Note: prep area may be shared with Genetics lab if properly designed (separate areas for storage and preparation, and a common area for ice machine, autoclave)

Question 8

gallons: ethanol, isopropyl, acids, bases, chloroform

< gal: other alcohols, volatiles

Others: shelf space for standard molecular chemicals (prep room)

Question 9 others will answer

# JACOBS CONSULTANCY/GPR

*Amy Kutay*  
*information for*  
*Entomology*  
*lab (Birdlab)*

September 14, 2009

Project: Lock Haven University  
Renovation and Construction of Science Center  
East Campus, Lock Haven, PA

## Questionnaires-

### **Biology Dept.**

1. What services are required in labs (gas, vacuum, air etc...)?
2. Fume hood requirements-
  - a. Size of fume hood (5ft, 6ft or 8ft). *5ft ?*
  - b. Services required inside fume hood (gas, air, cold water, cup sink, etc...).
  - c. Quantities of fume hood required (No. of students per hood). *1*
  - d. Flammable and acid cabinets. *need 1 small one*
3. Lab casework type (Fixed) or moveable).
4. Lab sink type and material required (Stainless steel or epoxy).
5. Is reagent grade water required at the lab sinks? *No*
6. Identify equipment requiring 208V or higher. *N/A*
7. Define or identify special/and or large equipment. *storage lockers for nets, boots; shelf system for student collections, space for insect cabinets... are we moving the cabinets in the bird room?*
8. Provide list of chemicals used and storage capacity requirements.
9. Is controlled environmental room (Cold Room or Warm Room) required? If so,
  - a. Required size. *No*
  - b. Will this be used as a lab or storage? *ethyl acetate + EtOH flammable cabinet*

### **Chemistry Dept.**

1. What services are required in labs (gas, vacuum, air, etc...)?
2. Fume hood requirements-
  - a. Size of fume hood (5ft, 6ft or 8ft).
  - b. Services required inside fume hood (gas, air, cold water, cupsink, etc...).
  - c. Quantities of fume hood required (No. of students per hood).
  - d. Flammable and acid cabinets.
3. Lab casework type (Fixed or moveable).
4. Lab sink type and material required (Stainless steel or epoxy).
5. Is reagent grade water required at the lab sinks?
6. Identify equipment requiring 208V or higher.
7. Any special/large equipment required?
8. Provide list of chemicals used and storage capacity requirements.

### **Geology Dept.**

1. What services are required in labs (gas, vacuum, air etc...)?
2. Fume hood requirements-
  - a. Size of fume hood (5ft, 6ft or 8ft).
  - b. Services required inside fume hood (gas, air, cold water, cup sink, etc...).
  - c. Quantities of fume hood required (No. of students per hood).
  - d. Flammable and acid cabinets.
3. Lab casework type (Fixed or moveable).
4. Lab sink type and material required (Stainless steel or epoxy).
  - a. Do you require sedimentary trap?
5. Is reagent grade water required at the lab sinks?

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Laboratory Programming, Planning & Design

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6. Identify equipment requiring 208V or higher.
7. Any special/large equipment required?
8. Provide list of chemicals used and storage capacity requirements.
9. Is controlled environmental room (Cold Room or Warm Room) required? If so,
  - a. Required size.
  - b. Will this be used as a lab or storage?

**Physics Dept.**

1. What services are required in labs (gas, vacuum, air etc...)?
2. Fume hood requirements-
  - a. Size of fume hood (5ft, 6ft or 8ft).
  - b. Services required inside fume hood (gas, air, cold water, cup sink, etc...).
  - c. Quantities of fume hood required (No. of students per hood).
  - d. Flammable and acid cabinets.
3. Lab casework type (Fixed or moveable).
4. Lab sink type and material required (Stainless steel or epoxy).
5. Is reagent grade water required at the lab sinks?
6. Identify equipment requiring 208V or higher.
7. Any special/large equipment required?
8. Provide list of chemicals used and storage capacity requirements.

**Nano Technology (Clean Room)-**

- What classification?
- Provide list of equipment and type of services required.

**Biology Needs: Teaching Laboratory and support/prep/storage room complex (5 rooms) for teaching Ecology/Aquatic Biology/Zoology/Comparative Anatomy/Ichthyology/Environmental Science**

September 24, 2009

Contact Dr. Kenneth Thompson for questions.

The original description calls for a teaching lab with attached prep and aquarium rooms and a wet collection room. The teaching lab should be for 16 – 18 students and will be used to teach Ecology, Aquatic Biology, Zoology, Comparative Anatomy, Ichthyology and possible Environmental Science. The wet collection room is to store preserved fishes, crayfish, and any other wet specimens that may be needed. These were labeled 326, 326A and 326B in original plans that Dr. Nuttall is using. A fifth very important room labeled 114F in Nuttall's document is for a storage room for field equipment to be on the ground floor with an outside door opening on to a loading dock (see item 5 on attachment).

The needs of this set of rooms don't fit your questionnaire very well so I am attaching the original description at the end of this document.

1. Services required in labs:

Electricity, gas & air at student benches

Distilled water in area of each sink in teaching lab and prep room

2. Fume hood requirements:

Each student bench to be equipped with vent hoods with downward flow (beneath table??) so student view is not obstructed (students in this lab will work with specimens preserved in either 50% isopropyl alcohol or 70% ethyl alcohol (see item 1. d. iv below). Each student station should have one intake.

3. Lab casework type: what is casework??

4. Sink type: all stainless steel (see below for placement etc...)

5. Distilled water at main sinks in each room (see below.....)

6. No equipment with 208V requirements.

7. Some large aquariums, refrigerator, freezer see prep room requirements below.

8. The wet storage room will have specimens in 50% isopropyl alcohol, as much as 1500 gallons.

Other Chemicals: 95% isopropyl 3 – 5 gallons, 1 gallon 95% ethanol, 2 – 3 gallons formaldehyde, 400 gms of KCl, 500 ml Glacial acetic acid, 500ml Giemsa stain (Gurrs concentrate), 100 ml Depex mounting medium, 100 ml Xylene and miscellaneous chemicals as needed for future projects.

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**Biology Needs: Teaching Laboratory and support/prep/storage room complex (6 rooms) for teaching Ecology/Aquatic Biology/Zoology/Comparative Anatomy/Ichthyology/Environmental Science**

**Ken Thompson**

**Oct. 2004**

**1. Description of Lab (similar to U326)- about 930 sq. ft.**

- a. For 16 (18 max) students
- b. Peripheral space should include one 6 - 8 foot stainless sink similar to the one in U326 (you could move the one in 326 and cut it down). Drain board/bench/work space needs to be attached or located adjacent to the sink. There should be piped in distilled water near this area.
- c. Peripheral areas should include sufficient space to set up displays of various types such as skeletons, preserved specimens, drying ovens, aquaria, etc. Will need space for at least one large (50 gallon +) display aquarium. To be equipped with electricity, water, air and gas.
- d. Student benches
  - i. to be equipped with electrical, air and gas outlets, drawers and microscope storage.
  - ii. to be desk height to allow for comfortable sitting while working
  - iii. must have unobstructed view
  - iv. each to be equipped with vent hoods with downward flow (beneath table??) so student view is not obstructed (students in this lab will work with preserved specimens, mostly alcohol preserved with some in 10% formalin)
  - v. benches to be fixed to floor
  - vi. two long benches instead of 4 small benches
- e. This room to be equipped with SMART technology for instruction, including projection of videos/CD's and microscope views and should have necessary equipment for using wireless laptop computers. No fixed podium and an area for installation of computers.
- f. Teacher must have unobstructed view of all students/benches
- g. Appropriately located safety shower and eyewash (with drains), and fire blanket (this should be standard in all labs).
- h. To have lockable glass enclosed bulletin board/display case outside main door in hallway.
- i. If possible there should be a display aquarium built into the wall outside this room or the prep or aquarium room (visible from hallway, accessible from inside the room for feeding and cleaning).

**2. Prep room (similar to U326A) - about 200 sq. ft.**

- a. Attach to lab, with hall-side door and lab door
- b. Large stainless steel sink, distilled water, electricity, gas, air, refrigerator, large freezer, work/prep benches, cabinets/drawers, file cabinets

**3. Aquarium room- about 200 sq. ft.**

- a. Attach to lab, with hall-side door and lab door
- b. Needs room for 20 or 30 aquaria (these would be 10 - 30 gallons each)
- c. A minimum of 4 electrical outlets per aquarium (each will have a light, filter, heat, protein skimmer).
- d. Adjustable shelves that can support heavy aquaria (a 10 gal. aquarium weighs about 90 pounds)
- e. Water supply should be convenient to fill all aquaria

*Note must be separate from  
Animal room - vent etc - - -*

f. Floor drains for draining aquaria and to prevent damage if tanks break or overflow

**4. Wet storage room (similar to U326B + 1/3 of U126) - about 450 sq. ft.**

- a. Attach to lab, with hall-side door and lab door
- b. To have appropriate safety equipment for museum specimens stored in alcohol and formalin. This room will be used to store specimens of fish, crayfish and any others that may be needed. Most specimens are preserved in 50% isopropyl alcohol (as many as 1500 one gallon jars). There are presently 800 jars in the fish collection.
- c. Will need heavy adjustable storage shelves to hold heavy specimens (a 1 gal. jar of alcohol is about 8 pounds). There should be no bottom shelves or obstruction to rolling large specimen storage tanks under the lowest shelf. Shelves should be able to support about 200 lbs per sq ft. (Dr. Thompson should be consulted about this)

**5. Storage for field equipment (similar to U114F) - about 185 sq. ft.**

- a. Located near loading dock because this is for storage of equipment used for field trips.
- b. Should be supplied with electricity

**6. Faculty office (similar to U323) - office/research - about 235 sq. ft.**

- a. To be similar to present U323, should be located close or adjacent to the lab complex described above
- b. To have outside window
- c. To have research/work space with electricity, sink, storage cabinets, shelves and work bench (the present U323 is just right). To be used for office/research/microscopy/photography/class prep.
- d. No black board, lots of adjustable book shelves attached to walls, bulletin board, method to hang posters etc. on walls.
- e. there should be a bulletin board in hallway outside this office.

