EYP minutes

To:	Attendees	Date of meeting:	June 10, 2019
Project Name:	Bull Run Hall Addition	Time of meeting:	12:30-2:30
Project No.:	1019004.01	Location of meeting:	Sci Tech, IABR, Conf Rm 1004
		Meeting Number:	2.2

Meeting Purpose: Programming for Instructional Wet Labs Bio Chem Intensive & Support Spaces

Attendees:

George Mason University:

- Tony Falsetti, COS-FRSC
- Gerald Weatherspoon, Chem
- Martha Wescoat-Andes, COS
- Joyce Rose, VSE
- Geri Grant, Biology
- Kim Rule, Forensic Science
- Larry Rockwood, Biology
- Peggy Einhorn, COS
- Remi Veneziano, Bioengineering
- Ben Allen, ITS
- Paul Didier, EHS
- Liza Wilson Durant, VSE
- Mary Ellen O'Toole, COS
- Caroline Holman, Bioengineering
- Carrie McVicker, COS
- Laura Manno, Provost/Planning
- Colby Grant, Sci Tech Admin
- Debbie Brady, Facilities
- Virginia Steele, Facilities
- Joy Staulcup, Facilities
- LeAnn Pittman, CaLT/Learning Space Design
- Barney Bishop, Chemistry
- Mikell Paige, Chemistry

EYP:

- Melissa Burns, Academic Planner
- Brian Tucker, Lab Planner
- Rebecca Ross, Planner/Architect
- Suzanne Klein, Project Director

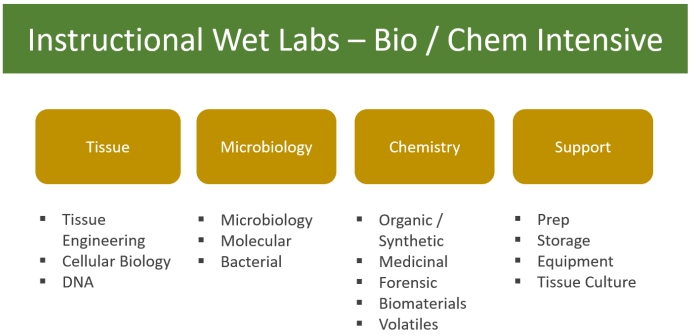
EYP minutes

Minutes:

General Comments:
The group met on George Mason University's SciTech campus. The purpose of the meeting was to discuss each functional space type in more detail and to identify the following for each space:

- Number of students
- Type and style of teaching
- Timing of courses (Fall/Spring/Summer, Frequency, Time)
- Key adjacencies,
- Prep/Storage needs
- Major equipment

1. **Introductions**: Laura Manno introduced the meeting and provided a brief project overview to the group for new attendees that were not in the last programming meeting. She explained the process and purpose of the building and that there will be ongoing conversations on scheduling, logistics and budget. There were diagrams on the wall which were presented at the last building committee meeting and were the starting point for this set of interviews.



The green bar represents a typology in the building and the gold groups represent a function of the type followed by a list of uses. The function could be representative of one or more spaces and are a way to think holistically and collaboratively about space within the building.

2. **Microbiology (BSL-1)**:
    a. Equipment: * indicates equipment that lives out in lab (cannot stored away)
        - Chemical fume hoods (2) *
        - Compound Microscopes (24)
        - Higher level microscopes
        - PCR *
        - Plate reader *
        - Gel documentation *
        - Bacterial shaker (2) *
        - Benchtop centrifuge *
        - Nanodrop *
        - Water baths (4) *
        - Stir plates and PH meters
        - Spectrophotometers (12)
        - Electrophoresis Equipment (12)
        - Vortex Mixers (12)

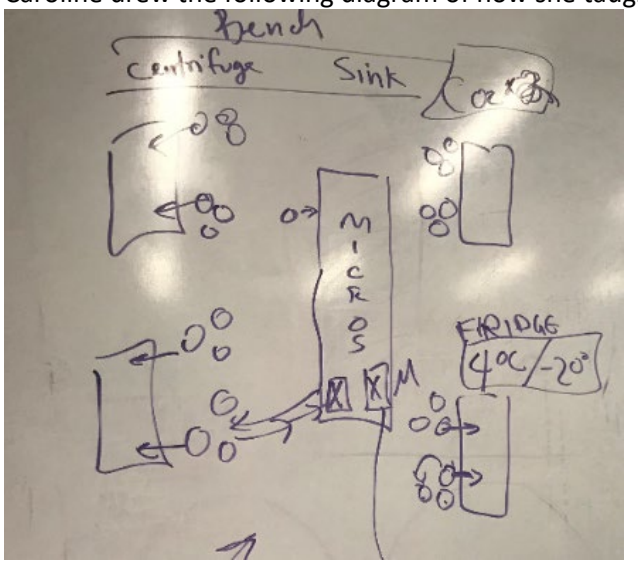
- Incubators: one for each section (minimum 5) *
- Combination tall fridge / freezer (minimum 5)

b. Utilities: Gas, Vac, DI + polishing, Natural Gas, (no air)
c. # of Students: 24 students
   - Assume 5 labs, each one is 3 hours. (**Homework**: confirm # of sections at SciTech)
   - At Fairfax: 7:30 am to 10:00pm T/W/Th
   - Monday prep bacteria for the week; Friday clean-up
d. Need 5 sinks in the instructional lab
e. Fixed Benches w/gas for Bunsen burners
   - Students are using Bunsen burner on the lab workbench, not in the hood
   - 72" Bench per group of 2 students
f. Incubators and fridge/freezers should be in the instructional lab or adjacent room, so students are not walking down the hall.
   - Keep in mind noise, heat and CO2 use.
   - Group decided adjacent room is preferred.

3. **Microbiology Prep Lab (BSL-2)**:
   a. Equipment:
      - Large Refrigerator (deli case size)
      - Refrigerator for bacteria
      - Two tall Incubators to grow bacteria
      - Plate pouring setup: 6' long x 4' tall w/dedicated sink
      - Water purification system
      - Fume hood w/ gas and vacuum (1)
      - Laminar flow hood (BSC - recirculating) w/natural gas (1)
      - Refrigerator/Freezer combination (explosion proof)
   b. 12'of bench open workspace
   c. 3 sinks
      - One Handwash Sink
      - One at plate pourer w/pure water
   d. Chemical storage
      - Below the hood
      - Tall cabinet
   e. Lots of dry good storage is necessary

4. **Tissue Engineering / Cell Culture Lab**
   a. Confirmed since the last programming meeting
      - Tissue Cell Culture Lab is compatible between Biology and Bioengineering, but is not compatible with Forensic DNA Lab due to contamination issues.
   b. Two students sit at the Biosafety Cabinet (BSC) at a time
      - Concern about people walking behind students working at the BSC (disruptive airflow around BSC can compromise containment)
      - Brian drew a diagram on the whiteboard showing an example layout of a central teaching lab with 4 dedicated tissue culture rooms (each with a BSCs) adjacent.

- Caroline expressed that this is not her vision of teaching.
- Caroline drew the following diagram of how she taught at a former institution:



c. Equipment:
   - Bio Safety Cabinets, 6', low noise, with vacuum (4)
   - Epifluorescence microscopes with computer ~4 ft setup (4)
   - Inverted microscopes ~3 ft setup (4)
   - Tall Refrigerator/freezer combo (2)
   - CO2 benchtop incubators (or stacked) (4)
   - Benchtop cell culture centrifuge (2)
   - Vortex mixers
   - Water bath (1)
   - Plate readers
   - Balances / stir plates
   - Utility Carts (4 to 8)
   - Bioprinters (in storage) (4)

d. Utilities: Water, Vac
e. # of Students: 24 Students
f. 2 Sinks
   - One hand washing, One glass washing

5. **Tissue Prep Lab (BSL-2)**:
   a. Equipment:
      - Microfuges (1)
      - Tall Refrigerator / Freezer
      - Bio Safety Cabinet, 4'
      - Incubator (1)
      - Fume hood, 4'
      - Cell Sorter, 3' x 2'
      - Glass washer (undercounter)

- Balances
- Pasture Oven
- PH Meter / Stir plates

b. Utilities: Vac, Gas, PW/DI Water
c. 12' of bench workspace
d. 2 Sinks
e. Chemical storage
f. Adjacencies:
   - Utilize Central Prep Lab for the Autoclave, but the tissue culture lab should be adjacent to the autoclaves.

6. **Central Shared Prep & Equipment Labs**:
   a. Create a central prep space that can utilize some of the same larger equipment for multiple departments.
   b. Equipment:
      - Autoclaves (2 clean, 2 dirty)
      - Ice Maker (2)
      - Glass washer (undercounter)
      - -80 Freezers
      - Cryofreezer

7. **DNA Sequencing Lab**:
   a. Equipment:
      - Sequencing equipment:
        (5) medium, 3' each
        (2) small, 3' each
        (4) large, 5' each
        (5) x-large, 5' each
      - -80 Freezer
      - Refrigerator / freezer combination
      - 4' Laminar flow hood / BSC (1)
      - Thermocycler
      - PCR
   b. PCR for forensics needs to be adjacent to sequencing, in a separate room or closet.
      - It cannot share a door with the DNA lab.
      - Space to accommodate 5-6 students.
      - **Homework**: Mary Ellen is going to email more information on this room.
   c. Sinks
   d. Need a separate gowning vestibule
   e. The group likes the idea of a "sequencing center" to be used by everyone.
      - This center could be located in another facility on SciTech campus

8. **Chemistry**:
    a. Equipment:
        - Fume hoods (12), 6' *
        - Dispensing fume hood
        - Waste fume hood
        - Stir plates
        - Glassware
        - NMR - benchtop
        - Mass Spectrometer
        - LC Mass Spectrometer
        - GCs
        - IRs
        - Rotary Evaporators (2) (in fume hood or with snorkel)
        - Shakers
        - Plate reader
        - Microscopes (50) *
        - FTIR *
        - Dusting Hoods (3) 2'x2' *
        - Superglue chamber (3'w x 4't x 1'd) *

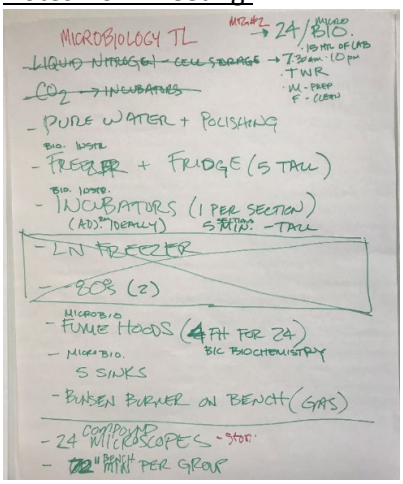
        *Forensic Use
    b. # of Students: 24 students
    c. Utilities: Gases in the hoods, Nitrogen (piped), Helium (local), water, vac, air
    d. Fixed Benches (nothing can roll around)
    e. 4 sinks
    f. Two students working side by side at the fume hood, working individually.
    g. Gerald initially requested 4 hoods in the lab. Brian asked if there should be more hoods and talked with the group about trends at other universities to go to 12 hoods per lab.
        - Gerald added that currently they are not doing all experiments in hoods, but they probably should be doing more in the hoods.
        - Laura added that GMU needs to make sure they are doing best practices.
        - The group decided 12 hoods is ideal but could have anywhere from 8-12 hoods.
    h. All labs need lockers for student belongings.
    i. Forensics mentioned using volatiles inside of the fume hood.
        - **Homework**: Provide clarification

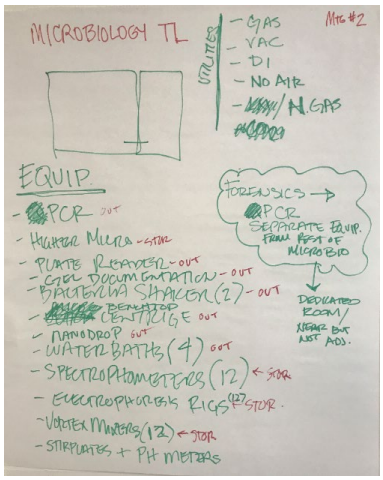
9. **Chemistry Prep Lab**:
    a. Equipment:
        - Fume hood, 6' (2)
        - Drying Oven
    b. Chemical Storage: flammables, dry waste, corrosives, refrigeration
    c. 2 Sinks
    d. Lockable refrigerator for drugs (Forensics)
    e. Small lockable cabinet for drugs (Forensics)
    f. Microscope Storage

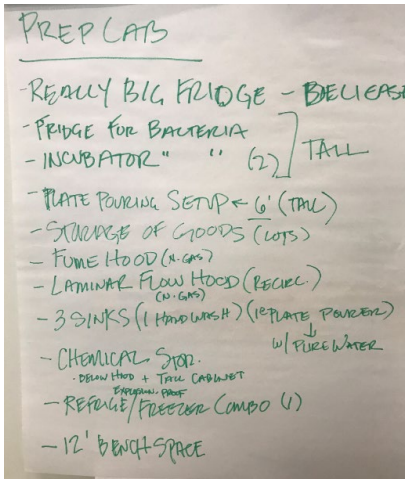
10. **Biochemistry**:
    a. <u>Equipment:</u>
        - Microplate reader
        - Shaking Incubator (floor stacked or benchtop)
        - Incubator
        - Floor Centrifuge (J5)
        - Balances
        - Chemical hoods (4)
        - -80 Freezer (shared)
        - -20 Freezer
        - Refrigerator
        - Spectrophotometer
        - Bench Centrifuges

    b. <u># of Students:</u> 24 Students
    c. Can share with microbiology as long as there are 4 hoods.

<u>Notes from Meeting:</u>







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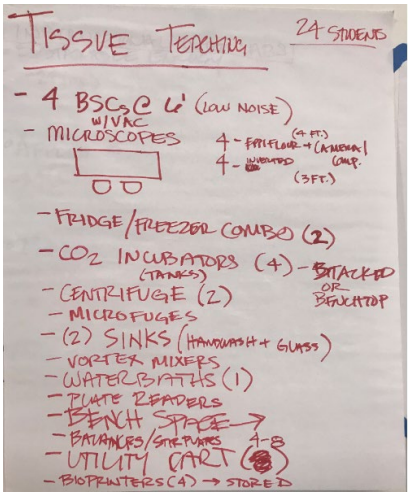

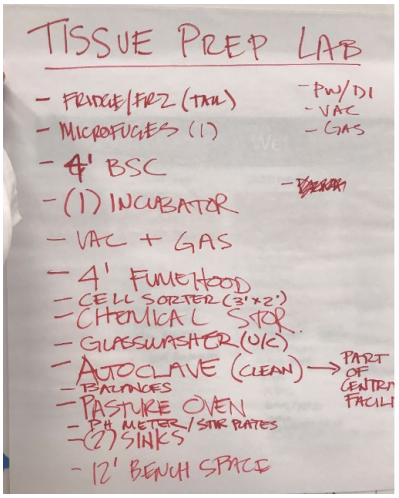

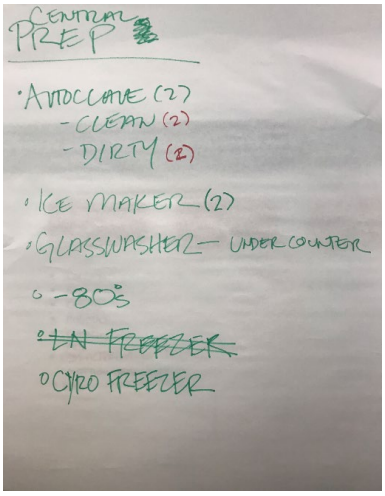

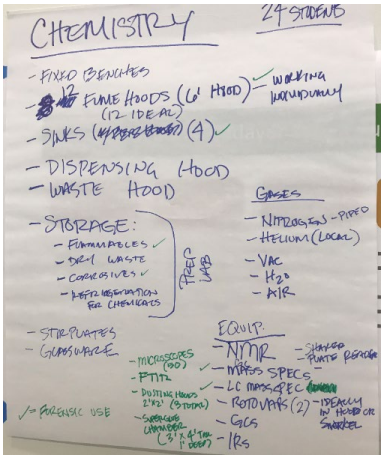

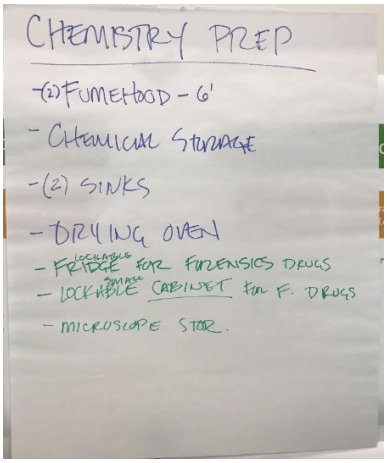

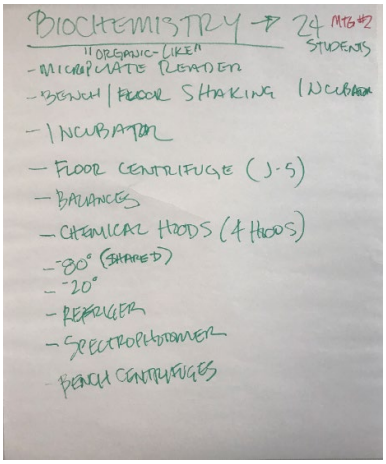

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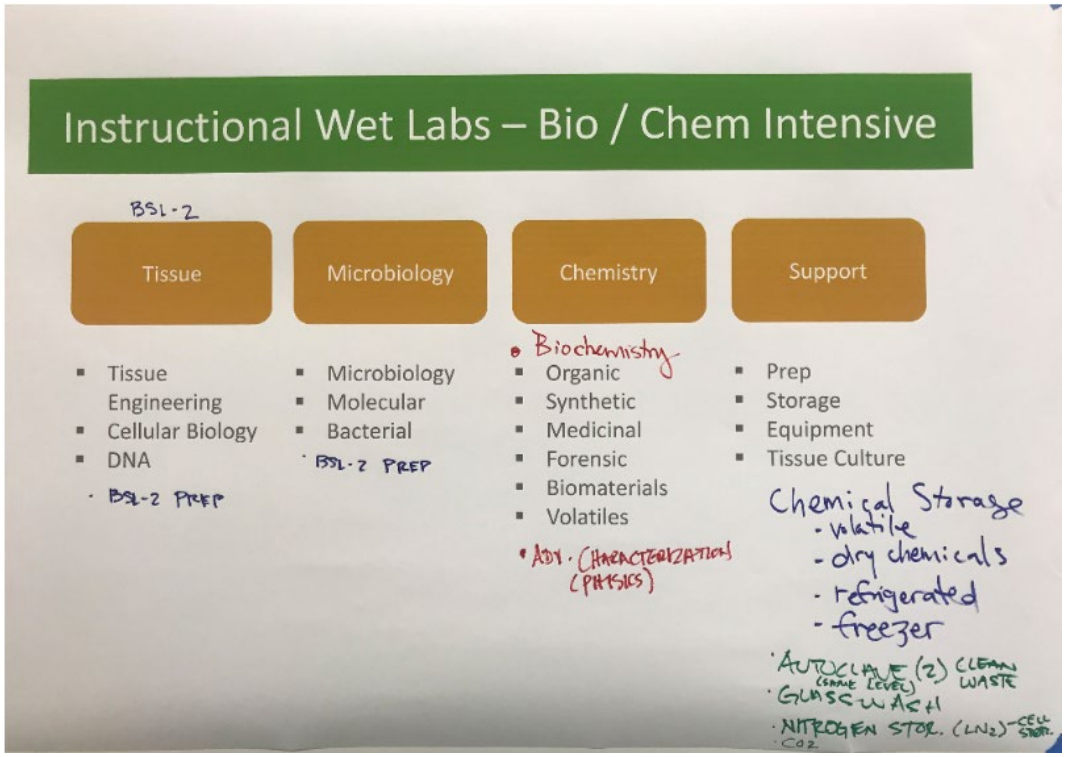

End of Meeting

The above constitutes my understanding of the items discussed and the decisions reached. If there are any additions or corrections, please, contact the undersigned.

Signed:	Rebecca Ross / Brian Tucker
Cc:	Attendees
Date:	June 26, 2019