

**Questionnaire:**

**Meeting your needs to innovate, build, modify and fix laboratory tools & equipment.**

The questionnaire is presented in two parts to assess the following areas of interest:

**Part 1: Use of existing NIEHS mechanical and electrical workshop facilities.**

These facilities are typically used to build and/or modify laboratory equipment to end user specifications and perform simple electrical repairs.

**Part 2: Creating a new, self-service NIEHS facility to design, build & modify laboratory equipment.**

This type of facility is commonly described as a 'Makerspace' or 'Fabrication Lab'. It is based around design approaches that are computer-aided (CAD), and production equipment that is computer controlled. This approach operates in a self-service mode, requiring some training and guidance.

1. Please indicate your Branch: \_\_\_\_\_
2. Please indicate your Group: \_\_\_\_\_

**Part 1: Knowledge and use of existing NIEHS mechanical and electrical workshop facilities.**

These facilities are typically used to build and/or modify laboratory equipment to end user specifications and perform simple electrical repairs.

For 30+ years, NIEHS has a fully equipped **mechanical and electrical workshops** capable of fabricating, modifying or repairing laboratory equipment. These NIEHS workshops were located on Main Campus, until 2005 when they were relocated offsite to Bldg 102.

These workshops can only be used by specifically trained staff. Until recently these positions were occupied by Tommy Gates and Jim McDonough. At this time, these NIEHS workshops are not staffed.

**3. Are you aware of the mechanical and electrical workshops?**

Answer: YES NO

Comments:

**4. Has your lab used equipment fabrication previously provided by Tommy Gates?**

(examples; fabrication of plexiglass dosing chambers, vacuum manifolds, equipment stands, etc.)

Answer: YES NO

Comments:

**5. If yes, how often has your lab used equipment fabrication provided by Tommy Gates?**

Answer: Rarely Occasionally Often

Comments:

**6. Has your lab used equipment repairs previously provided by Jim McDonough?**

(examples: repair of centrifuges, gel boxes, power cords, etc.)

Answer: YES NO

Comments:

**7. If yes, how often has your lab used equipment repairs provided by Jim McDonough?**

Answer: Rarely      Occasionally      Often

Comments:

**8. Has the loss of these services impacted your lab?**

Answer: YES      NO      Not sure

Comments: How?

**9. Are you currently seeking outside services for equipment fabrication or repair?**

Answer: YES      NO

Comments (How?):

**10. Do you foresee a need for workshop facilities to help design, modify, build apparatus that you cannot readily purchase, and to keep valuable apparatus running?**

Answer: YES      NO      Not sure

Comments:

## Part 2: Creating a new, self-service NIEHS facility to design, build & modify laboratory equipment.

This type of facility is commonly described as a 'Makerspace' or 'Fabrication Lab'. It is based around design approaches that are computer-aided (CAD), and production equipment that is computer controlled. This approach operates in a self-service mode, requiring some training and guidance.

### Makerspaces/Fabrication Labs:

- Makerspaces/Fabrication Labs are based around computer-aided design technologies, such as:
  - o 3D printing
  - o CNC-milling
  - o laser cutting
- Using these new computer-aided design technologies, Universities and institutions around the world are creating "Makerspaces" or "Fabrication Labs" that enable students and researchers to rapidly develop, prototype and produce new equipment designs, and facilitates the development of new methodological approaches.
- Makerspace/Fabrication Labs are replacing the old model of machine shops, which consist of large pieces of specialized equipment that require significant skill and training. Instead, this entirely new model allows for end-user creativity and collaboration that can be shared in an open source way across labs and across the world.

### Examples of Applications:

- o Lab equipment:
  - o [3D Printing Saves Money and Time in the Lab](#)
  - o [Labware](#)
  - o [How 3D-printing help scientists](#)
  - o [Hardware](#)
  - o [Ready to 'print' designs](#)
  - o [Blood Vessel Networks](#)
- o [Printing with living cells](#)
- o Behavioral Neuroscience:
  - o Miniature Microscopes: [MiniScope](#) vs. [Inscopix](#)
  - o [Lab Equipment](#)
  - o [Animal Monitoring Devices](#)
- o CNC-Milling:
  - o [Compared to 3D-printing](#)
  - o [Microfluidic device](#)
  - o [Factory on a bench](#)

**11. Have you heard of a Makerspace/Fabrication Lab?**

Answer:      YES                      NO

Comments:

**12. Have you used a Makerspace/Fabrication Lab?**

Answer:      YES                      NO

Comments:

**13. Have you heard of 3-D Printing?**

Answer:      YES                      NO

Comments:

**14. Have you used 3-D Printing?**

Answer:      YES                      NO

Comments:

**15. Have you had the need to build or customize equipment but lacked the access to fabrication resources?**

Answer:      YES                      NO

Comments:

**16. Would you like access and training to learn how to use a Makerspace/Fabrication Lab?**

Answer:      YES                      NO

Comments:

**17. Would access to a Makerspace/Fabrication Lab have an impact on your research?**

Answer:      YES                      NO                      Not sure

Comments: