

# Steps for working as an undergraduate in the Weber lab.

**1) Library training:** An important part of research is keeping up with the current discoveries. When you start working on a project you will be expected to work to become an expert in that area. When you go to present at conferences you will need an in-depth knowledge of the material. As a researcher and scientist, I expect that you will regularly read scientific papers to keep up on discoveries published in the field. The BYU science librarian will train you on how to conduct literature searches for your research and how to access the online resources available at BYU. Schedule an appointment with Dr. Greg Nelson at <http://guides.lib.byu.edu/mmbio> and request instruction on how to do a literature search.

I have completed the library literature research component: Signed \_\_\_\_\_ Dr. Nelson \_\_\_\_\_ Date \_\_\_\_\_

**2) Immunology background:** Immunology is a fascinating field with so many interesting aspects to learn. It will be good to sign up for the Infection and Immunity (MMBIO 261) and Immunology (MMBIO 463) courses in the future if you have not already taken them. In the meantime, there are some good immunology videos online that will introduce you to some terms and concepts you will see in the papers we read. Please go to Khan Academy (<https://www.khanacademy.org/>) and do a search on the term "Immunology". This will bring up several videos you can watch to get up to speed on the basics.

I have watched the online Immunology video's: Signed \_\_\_\_\_ Dr. Weber \_\_\_\_\_ Date \_\_\_\_\_

**3) Lab meeting:** If you want to be able to successfully do scientific research it requires dedication in applying yourself to learn new material and finish projects. If you can attend lab meeting each week you will be able to hear lab members present on their work and papers related to their project. You will be asked to present a short summary of your research progress at the end of the semester. You will have ~15 minutes to present what you have done over the semester (project background, hypothesis tested, and experimental results and conclusions). You need to be prepared to answer questions about your work and the paper. If you are unable to attend lab meeting, please let me know and we can work it out.

I attended lab meeting my first semester in the lab: Signed \_\_\_\_\_ Dr. Weber \_\_\_\_\_ Date \_\_\_\_\_

**4) Student Flow Cytometer Training:** Our lab frequently uses the flow cytometers in the Research Instrument Core (RIC) to generate data and test hypotheses. Please schedule with Dr. Sandra Hope in MMBIO to do the 2-hour training so you can operate the student flow cytometer ([sandra.hope@byu.edu](mailto:sandra.hope@byu.edu); 3134 LSB). I teach a 2-credit flow cytometry course in the Fall (MMBIO 522) that you can consider taking so you understand in depth how to design, run, and analyze flow cytometry experiments.

I completed the Student Flow Cytometer Training: Signed \_\_\_\_\_ Dr. Weber \_\_\_\_\_ Date \_\_\_\_\_

**5A) Lab safety training:** Before you can work in a lab at BYU you must complete safety training. Proper safety training helps prevent injuries or accidents. Go to <https://risk.byu.edu/ehs/shp> and then click on the "laboratory safety" module to complete the online instruction and short quizzes. The safety training described is valid for 1 year. To work in the lab you will need to renew your safety training each year.

I completed the online safety training: Signed \_\_\_\_\_ Dr. Weber \_\_\_\_\_ Date \_\_\_\_\_

**5B) Lab specific safety training:** In the lab we occasionally use the bacteria *Listeria monocytogenes* to infect mice. This is a Biosafety level 2 organism, and we have a Weber lab Biosafety manual in this packet. Please read over it and sign the last page when you are done.

I read the biosafety manual and will follow the safety rules: Signed \_\_\_\_\_ Dr. Weber \_\_\_\_\_ Date \_\_\_\_\_

**5C) Mouse Safety Training:** To have access to the vivarium and work with mice, you need to complete the following CITI and Y-train online modules, be added to the lab IACUC protocol, do in person training with a lab member, and get independent access to the vivarium. Here are the steps to do this:

1. Go to [citiprogram.org](http://citiprogram.org) and click "Login". Next do "Login through my Institution" and click "Brigham Young University – Provo UT". Then "Sign in to BYU account" and enter BYU Net ID and Password
2. Click "I don't have a CITI Program account and I need to create one" (if you already have a CITI account, choose the other option) and then click "Create A New CITI Program Account".
3. You should see the following: CITI Program: Collaborative Institutional Training...To add a course click "Add a course" Brigham Young University-Provo, UT courses
4. Scroll down to choose your curriculum, you should choose and complete:

**1) Undergrad/Grad Students - Working with the IACUC**

**2) Undergrad/Grad students - Post-Procedure Care of Mice and Rats in Research**

**3) Undergrad/Grad students – Working with Mice in Research Settings**

5. You also need to complete an online training module on Y train. Search for "ABSL Training" and enroll and complete the 7-module training. Print up the completed form.
6. Once you have completed the CITI and Y Train online modules, go to [byu.imedris.net](http://byu.imedris.net) and login with your NET ID and then logout (this gets you in the directory). Send an email with your BYU ID number to Dr. Weber and request that he submit an IACUC personal amendment for you to work with the mice.
7. When Dr. Weber lets you know that the IACUC has approved adding you to the IACUC protocol, you will want to ask the graduate student you are working with to give you the hands-on mouse facility training. They can then help you request the vivarium manager give you card access to the vivarium.

**6) Laboratory Technique Training:** Once you have your safety and mouse training completed you start working in the lab. You will want to ask others in the lab to help you learn basic research techniques (e.g., how to make media, pour DNA gels, run a PCR reaction, perform an ELISA, do cell culture, freeze down cells and bring them back up, accurately complete cell and viability counts and other general techniques). If you work hard and are careful and reliable, you can become more and more independent in the lab. This can lead to a number of things including giving presentations at a major science meetings.

**7) Project mastery and consistent effort:** Participation in mentored research can help improve your chances to obtain positions in graduate or professional schools, but only if you are prepared to put in the effort. If you put in the time and effort to master the material for your project (evaluating science and performing laboratory work) you will be able to be able to present your work at National and International conferences. It benefits you and my lab if you become an excellent researcher, take advantage of this opportunity to master your project!