Greetings Neuroscience majors,

You need only read this if you wish to use your independent research coursework as one of the specialty lab requirements for the MC Neuro track.

**Absolute requirements for all**: A minimum of two semesters of research is required even though you may only get course credit for the final semester (e.g., if you do BIOL 398 internship). You must prepare a 15 page paper summarizing your work, as well as present your work at the LUROP Weekend of Excellence event or at another formal meeting (vs a lab meeting).

If you work in the lab of a neuroscientist in Biology (Dr. Cavanaugh, Dr. Delgado, Dr. Rochlin, Dr. Ye, or Dr. Yu), your work will automatically be counted as a specialty lab requirement for NRMC, no need to read the following.

Otherwise, your work must get approval from me, and this requires that it must be predominantly molecular/cellular in nature. Work in a cognitive/behavioral neuroscience lab or work with human subjects, while important and interesting, usually cannot be used for this since it is not molecular/cellular.

To get approval, find out what lab techniques you will be using, i.e., what you will be doing with your hands in that lab. You could be running gels, PCR reactions, genotyping, detecting proteins, RNAs, or DNAs, carrying out gel filtration, working out biochemical reaction conditions, using mass spectroscopy, etc.

Prepare a document in Word organized as follows:

In the first paragraph, briefly explain the theme of the work, identify the mentor, mentor dept/institution. E.g.,  “I collect and characterize microbes in Dr. John Kelly’s lab in Biology at LUC. I am investigating whether biofilm composition is influenced by microplastics.” That’s enough.

In the second paragraph, list the Methods you use that are molecular/cellular. Using the same example as above, you might write “DNA extraction, PCR, amplicon sequencing, sequence analysis, categorizing of bacterial types revealed by sequence analysis, analysis of chemical composition and microplastic level, and diversity analysis.”

In the third and remaining paragraphs, describe the applicability of the method to the field of neuroscience: e.g., “PCR is used to genotype animals in which transgenic approaches have been used to learn about the role of particular genes in neural development and learning and memory. The diversity analysis software would allow one to analyze heterogeneity among a group of neurons if the RNAs expressed in several cells from a part of the brain had been evaluated.”  Do this for each technique that is relevant to neuroscience. If a technique that you use has no clear application in neuroscience (e.g., in the example above, the method used to assess microplastic level), then leave it off of your list.

Send me your brief, well-written and proofread ~1 page document as early as you can. This could be done prior to beginning work in the lab or a bit later, after you are more familiar with the methods that you will use. Most of you will not understand the methods and how they can be used to tackle neuroscience questions until you have experience with them, but you may want to know if your work is likely to be approved. If you’d like, you can email me the list of methods your mentor expects you to use and I will let you know if I think they will work. However, formal approval requires that you prepare the ~1 page document that shows that *you* know how they can be useful in neuroscience and get this to me prior to enrolling in BIOL 396, BIOL 398 internship, or any other department’s independent research option.

Please let me know if you have questions about this procedure.

Best,

Dr. R

M. William Rochlin, Assoc. Prof.

Director, Molecular/Cellular Neuroscience

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