

Journal of Emerging Investigators (JEI) Manuscript Protocol

This document is for students enrolled in Honors Scientific Research I, Honors Scientific Research II, and Biotechnology Independent Research. Students in these courses are required to submit their research in a manuscript for peer review. We will primarily submit to the Journal of Emerging Investigators (JEI). This protocol will outline the process of writing, submitting, and revising manuscripts. There are several summative grades associated with this requirement, so please take the time to read through this document and explore the recommended websites. Read articles that have already been published in the JEI.

Overview and Timeline: The timeline will obviously depend on when you take the course(s) and whether you are a junior or a senior. I will serve as your mentor and co-author on the publication. This means that the actual submission and correspondence with JEI and the manuscript reviewers will occur through me. This is JEI policy. Once you begin your research, you will be expected to start writing the introduction and methods sections. These two sections are typically due halfway through the course (i.e., 9-week on block) as a summative grade. The results, discussion, and all other sections will be due by the end of the course; however, there is some leeway on this, depending on how far along you are into your research. Once submitted, JEI will correspond with me and then I will relay the information to you. Expect at least one round of revisions with suggestions from the peer-reviewers.

Writing the Manuscript: The maximum length of your manuscript must not exceed 10 pages (size 11 font, Times New Roman, 1.5 line spacing, 1 inch margins). This length does not include the title page, abstract, figures, and references. It is permissible to submit manuscripts that are less than the 10-page maximum. Please read the following information from JEI and adhere to their recommendations and guidelines. When I proof read your manuscript, this will be the first resource that I will use to check that you followed their requirements:

<http://www.emerginginvestigators.org/how-to-write/> (JEI- Manuscript Requirements)

Citations: Many students are still unsure when to use a citation. To the right you will find an excerpt from one of Dr. Deiner's publications. Notice that nearly every sentence in the introduction section has one or more citations. When you are in doubt, please cite the literature. The introduction and discussion sections typically have the most citations of the manuscript. Please avoid internet references and direct quotes from literature. Put everything into your own words.

Submitting the Manuscript: It is JEI's policy that the mentor deals with the actual submission and peer-review process. So I will take care of this part, but as I mentioned, I will relay of the information that I receive from JEI. We will go through several revisions before I even submit your research to JEI.

Review and Revision of the Manuscript: Once your manuscript has been submitted to JEI, there are usually three phases to complete before you are published. This can take over months to complete. First your manuscript will be reviewed by JEI editors for formatting and presentation (~2 weeks). If acceptable, they will send your manuscript to three reviewers, who are typically experts in the field of your research (~4 weeks). The reviewers will return the manuscript as either "accepted with minor revisions" or "accepted with major revisions". If you need to make major revisions, it is typically because you need a larger sample size, or some additional data. Regardless, we will work diligently to ensure you are able to resubmit as expeditiously as possible. In the final step, JEI will accept the manuscript and the editors will work on the final formatting and editing (~4 weeks). At this stage you are done and you will be a published scientist.

While rivers cover <1% of the landmasses on earth, they are invaluable for biodiversity and ecosystem services, such as drinking water and energy production¹. Rivers, because of their characteristic dendritic network structure, also integrate information about the landscape through the collection and transport of sediments, organic matter, nutrients, chemicals and energy^{2,3}. For example, information contained in sediments allows us to understand how river drainages form and change in time as a result of climate and tectonic forces⁴. Rivers also act as the lung of the landscape by releasing large fluxes of CO₂ derived from terrestrial plant macromolecules, such as lignin and cellulose, through the breakdown and transport of coarse and fine particulate organic matter⁵. River networks additionally play an important role in shaping patterns of genetic and species diversity for many organisms across the landscape by dictating dispersal pathways^{6,7}. Organic matter in the form of DNA is produced from organisms and is also transported through rivers via cells, tissues, gametes or organelles, and is termed environmental DNA (eDNA)⁸⁻¹⁰. DNA can be isolated from these organismal remains in the water, sequenced and assigned back to the species of origin through the method of eDNA metabarcoding^{10,11}. This elegant process of collection and detection of a species DNA is becoming highly valuable for sampling biodiversity in ecology and conservation¹⁰⁻¹⁷. The spatial signal of eDNA, has only recently been