

## Semester Project Description ENY 3005 Undergraduates

An important part of this class is learning how to interpret and analyze scientific articles. You've already had some good practice with Assignment #2. This project allows you to do this with another article that you choose from the list below. If you work hard on this assignment, we will be able to give you better feedback, and you are likely to get a better score on the subsequent parts. We can't give you good feedback early in the process if you haven't given Part I much thought.

**Your group should choose a paper together. Each manuscript can only be chosen once,** and it's first come/first serve. Groups will be formed by Dr. Miller, though you are welcome to voice your preferences on group members.

### Semester Project Schedule

I tried to not stack too much at the end of the semester, since I know that happens in a lot of classes. So, the Group Presentations will happen on **November 14<sup>th</sup> and 16<sup>th</sup> in class**. We want to give you a lot of feedback before then and to encourage all group members to chip in and help out. Here is the schedule.

What?	Description	Deadline	Where to turn it in	Points
Part I. An assignment.	<u>Everyone does this individually!</u> It makes sure everyone has read through the paper and answered questions.	<b>Oct. 25<sup>th</sup></b>	Canvas	25 – each person graded separately
Part II. A practice talk.	Present your practice presentation (everyone together). We are expecting you to have <i>practiced together</i> before this meeting.	<b>Between Nov. 6<sup>th</sup> and 11<sup>th</sup></b>	Schedule online – appointment times on Canvas	25 – each person graded separately
Part III. The final practice talk.	A video of you all giving the presentation AND a separate file with your Powerpoint slides.	<b>Nov. 12<sup>th</sup> at 11:55pm</b>	Email the video link and the Powerpoint slides	10 – each person graded separately
Part IV. Group Presentation		<b>Nov. 14<sup>th</sup> and 16<sup>th</sup></b>	In class	40 – the group is graded together (one grade)

**We recommend at least 4 group meetings.**

- 1) **Review your answers to Part I and organize your talk.** Everyone chooses their role and the parts of the talk they will be primarily responsible for (do this in October or first few days in November)
- 2) **Get together again. Review each other's sections.** Practice together to work on flow and timing. Give critical feedback from each other (do this before November 6<sup>th</sup>).
- 3) **Schedule a meeting all together (Part II; required).** Get feedback. Then work on your parts individually or together.

- 4) **Meet one final time** to perfect the talk (Part III)! Record it and send us the link to a continuous video of you all participating AND Powerpoint slides as a separate file.

**Part I.** We are asking everyone to do Part I individually so that each group member has a good grasp of the paper before starting to work together. This helps make sure everyone contributes to the presentation! You will get feedback. We will expect that you've taken the feedback into consideration when you put together your presentation with your group members (don't make the same mistake twice ☺)

Answers to Part I should be in your own words, not quoted from the papers. Make sure you include citations of all sources where you got ideas (if you wish to use additional sources), and (of course) a citation of the paper you choose to analyze. You are welcome to read, paraphrase, *and cite* any of the popular press devoted to this work, though this is NOT expected. We will run this assignment through TurnItIn, which will detect copying from each other, the internet, or another source.

**Please address each of the following points.** What you turn in should be 3-5 double-spaced pages long. If it is shorter than 3 full pages, we will mark off 2 points.

- 1) A description of the gap in knowledge that this study attempts to address, background, and an explanation of why conducting this study was important (regardless of actual results; 4 points). Here, think broad questions and/or problems.
- 2) The species-specific research questions or hypotheses and the outcomes they expected (4 points).
- 3) A bulleted list of the major methods used for all observations and experiments. After each method, explain why it was done (3 points).
- 4) A bulleted list of the major research results (3 points).
- 5) Explain what you see as: (6 points)
  - a. The strengths and weaknesses of the study
  - b. The interesting part(s) of the study.
- 6) Two hypotheses that the author(s) of the articles or other researchers should (in your opinion) test next. These hypotheses should be a logical next research step (2 points). Make sure to phrase these as directional, testable hypotheses, not research questions or aims. Also explain why you think these are important.
  - The question that you'd like to ask the class at the close of your presentation. Think about a question that is perhaps controversial or thought-provoking. Choose something that your fellow students would be eager to discuss. Don't get stuck in the details; think big (2 points)
- 7) Proper bibliography for the paper you analyzed (1 point)

Late assignments (like this, Part I of the Semester Project) are dropped 5 points per day they are late. This drop will start at 11:56 pm on the date they are due.

Format of your citations and references?

[https://academic.oup.com/aesa/pages/Manuscript\\_Preparation#References](https://academic.oup.com/aesa/pages/Manuscript_Preparation#References)

**Important descriptions of what I mean by the terms above:** A hypothesis (plural hypotheses) is a proposed explanation for an observable phenomenon. It must be testable, falsifiable, and directional (i.e. "A" will be BIGGER than "B", not just "A" will be different than "B"). If the authors do not indicate their hypothesis or hypotheses, they will be implied. You should figure out these hypotheses and write them as directional and testable. Often, researchers opt to indicate their research questions or research aims either instead of or in addition to their hypotheses. Research questions and aims are often not directional. However, it is often clear what the researchers expected as an outcome.

**Part II. Your Practice Talk.** We expect a good talk! You should already have practiced this together and provided feedback to one another. We are fine with you reading off cards at this stage (you don't need it completely memorized), but everything else should be as good as you can make it. If you do not show up for this meeting, you will lose 25 points. The only excuses accepted are official notes (doctors, etc.). Your group will have the option to drop you from the group if you do not show up (whatever the reason). Please don't waste your TA's time. Present something good to him/her so she/he can pitch in and help you make it even better.

Rubric for Part II.

	Points
You are on time	10
There is clear evidence that you have practiced and rehearsed	5
You have followed the rules (rubric) for Part IV that are relevant to your role in the group.	5
You can clearly explain the work that you have done on the project and your role	5
<b>total</b>	<b>25</b>

**Part III. Your Video (final practice talk).**

Rubric for Part III. If you do not show up for this meeting with your group, you will lose all points. The only excuses accepted are official notes (doctors, etc.). Your group will have the option to drop you from the group if you do not show up. If they do drop you, do not panic. You can do an alternative assignment (talk to Dr. Miller). We will not have sufficient time to provide feedback on the videos before the actual presentation. If you have questions, though, contact us!

	Points
You have memorized your part of the talk and speak clearly and confidently.	5
Your slides are clear and easy to understand (upload separately)	5
<b>total</b>	<b>10</b>

**Part IV.** Presentations should be made in **PowerPoint**. If you wish to make them in another program, you must discuss this with Dr. Miller before proceeding. If anything below is unclear, please ask me or your TA. You will be graded on your understanding of the study and your communication of the study to the class. All group members will get the same grade. Each presentation must contain the following:

Slides and content	Points
1) Title slide: presenter names, study title, author names, publication year, study journal, volume and page numbers.	2
2) Introduction: presents the motivation for the study, the research question, and any hypotheses and predictions.	2
3) Methods: clearly describes how, when, and where the study was conducted, introduces study system	2
4) Results: summary of findings	2
5) Discussion: present the author's interpretation of findings	2
6) The group responded to TA's advice and made improvements accordingly	5

You will also be graded on your ability to give a presentation and communicate science *well*:

7) Clear evidence of being prepared and having rehearsed the talk. Speak clearly and confidently (watch um's, no gum!), and do not read the talk to the audience. Each student presents approximately an even portion of slides.	4
8) Slides should be simple, clean, and easy to read <i>while we listen to you</i> . Listening to you is more important! Make text large and keep text to a minimum. No typos or grammatical errors. Avoid color combinations that make text hard to read (e.g, red on green).	4
9) Use of appropriate photos, graphics, and/or diagrams. Please do not fill your presentation with unnecessary images, but please do use images when they will help clarify your story. Show a picture of the study organism. Do not overdo Powerpoint animations (spinning text, etc.)!	4
10) Use of at least one figure from the manuscript to show results. You must orient the class to the figure and highlight any important trends. (If you are unclear, visit me or your TA during office hours)	4
11) Presentation length: well-paced and does not run over time	4
12) Question for the audience that is open-ended and likely to inspire critical thinking	5

**40 points total**

**A few notes:**

- You may divide up the work in a way that seems fair to all group members. However you do it, make sure you all get a chance to give feedback to each other!
- Remember to set up the “big question” or “big problem” first. This is usually NOT specific to a single species, but instead describes a larger issue that the research in the paper addresses.
- **Minimize text on your slides.** Text and pictures are there to support what you are saying and to emphasize the major “take home” points, not to distract people from what you are saying.

- Practice, practice, practice. I generally practice a bit each day for 2 weeks before I give a talk at a conference. Giving a good talk is like acting. You may have a script, but you should sound natural and not like you are reading.
  - Your question for the audience should be something non-technical, fun, or thought-provoking. Remember to get your audience thinking! The question, “so, what did you all think?” is not sufficient. If you are stumped, ask your TA to help you out.
  - The time limit for your presentation is 8 minutes with 2 minutes for questions. I will stop you from speaking at 8 minutes with a helpful signal at 7 minutes (so you know to finish up).
  - The day of your presentation, please show up 10 minutes before class to load your presentation.
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**Scientific manuscripts available for your semester project (Parts I through IV) Choose just 1.** Check several out first and make sure to select some possibilities that interest you and that you can understand! This list includes papers to suit a range of interests. You will be given the opportunity to select from the list in class. You can also email [cwmiller@ufl.edu](mailto:cwmiller@ufl.edu) to reserve that paper for you or your group. Make sure you get the correct paper, not another one by the same authors! (it has happened before...)

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### **Papers to Choose from for the Undergraduate Semester Project**

- 1) Beckers, O. M., Kijimoto, T., & Moczek, A. P. (2017). doublesex alters aggressiveness as a function of social context and sex in the polyphenic beetle *Onthophagus taurus*. *Animal Behaviour*, 132, 261-269.
- 2) Brandley, N., Johnson, M., & Johnsen, S. (2016). Aposematic signals in North American black widows are more conspicuous to predators than to prey. *Behavioral Ecology*, 27(4), 1104-1112.
- 3) Clayborn, J., & Koptur, S. (2017). Mortal combat between ants and caterpillars: an ominous threat to the endangered Schaus swallowtail butterfly (*Heraclides aristodemus ponceanus*) in the Florida Keys, USA. *Journal of Insect Conservation*, 21(4), 689-702.
- 4) Dennenmoser, S., & Christy, J. H. (2013). The design of a beautiful weapon: compensation for opposing sexual selection on a trait with two functions. *Evolution*, 67(4), 1181-1188.
- 5) Edelaar, P., Baños-Villalba, A., Escudero, G., & Rodríguez-Bernal, C. (2017). Background colour matching increases with risk of predation in a colour-changing grasshopper. *Behavioral Ecology*, 28(3), 698-705.
- 6) Gangur, A. N., Smout, M., Liddell, M. J., Seymour, J. E., Wilson, D., & Northfield, T. D. (2017, September). Changes in predator exposure, but not in diet, induce phenotypic plasticity in scorpion venom. *Proc. R. Soc. B*, 284 (1863), 20171364.
- 7) Gols, R., Bukovinszky, T., Van Dam, N. M., Dicke, M., Bullock, J. M., & Harvey, J. A. (2008). Performance of generalist and specialist herbivores and their endoparasitoids differs on cultivated and wild Brassica populations. *Journal of chemical ecology*, 34(2), 132-143.
- 8) Goyens, J., Dirckx, J., & Aerts, P. (2016). Jaw morphology and fighting forces in stag beetles. *Journal of Experimental Biology*, 219(18), 2955-2961.
- 9) Gress, B. E., & Pitnick, S. (2017). Size-dependent ejaculation strategies and reproductive success in the yellow dung fly, *Scathophaga stercoraria*. *Animal Behaviour*, 127, 281-287.
- 10) Hamel, J. A., Nease, S. A., & Miller, C. W. (2015). Male mate choice and female receptivity lead to reproductive interference. *Behavioral Ecology and Sociobiology*, 69(6), 951-956.

- 11) Lindström, S. A., Herbertsson, L., Rundlöf, M., Bommarco, R., & Smith, H. G. (2016). Experimental evidence that honeybees depress wild insect densities in a flowering crop. *Proc. R. Soc. B* (Vol. 283, No. 1843, p. 20161641).
- 12) Muth, F., Papaj, D. R., & Leonard, A. S. (2015). Colour learning when foraging for nectar and pollen: bees learn two colours at once. *Biology Letters*, *11*(9), 20150628.
- 13) Raveh, S., Vogt, D., & Kölliker, M. (2016, April). Maternal programming of offspring in relation to food availability in an insect (*Forficula auricularia*). *Proc. R. Soc. B* (Vol. 283, No. 1828, p. 20152936).
- 14) Salem, H., Bauer, E., Strauss, A. S., Vogel, H., Marz, M., & Kaltenpoth, M. (2014). Vitamin supplementation by gut symbionts ensures metabolic homeostasis in an insect host. *Proceedings of the Royal Society of London B: Biological Sciences*, *281*(1796), 20141838.
- 15) Schettino, M., Grasso, D.A., Weldegergis, B.T. et al. (2017) Response of a predatory ant to volatiles emitted by aphid- and caterpillar- infested cucumber and potato plants. *J Chem Ecol.*  
<https://doi.org/10.1007/s10886-017-0887-z>
- 16) Schwab, D. B., Casasa, S. and Moczek, A. P. (2017). Evidence of developmental niche construction in dung beetles: effects on growth, scaling and reproductive success. *Ecology Letters* (*in press*)  
doi:10.1111/ele.12830
- 17) Sébastien, A., Lester, P. J., Hall, R. J., Wang, J., Moore, N. E., & Gruber, M. A. (2015). Invasive ants carry novel viruses in their new range and form reservoirs for a honeybee pathogen. *Biology letters*, *11*(9), 20150610.
- 18) Straub, L., Villamar-Bouza, L., Bruckner, S., Chantawannakul, P., Gauthier, L., Khongphinitbunjong, K., ... & Williams, G. R. (2016). Neonicotinoid insecticides can serve as inadvertent insect contraceptives. *Proc. R. Soc. B* (Vol. 283, No. 1835, p. 20160506).
- 19) Thesing, J., Kramer, J., Koch, L. K., & Meunier, J. (2015). Short-term benefits, but transgenerational costs of maternal loss in an insect with facultative maternal care. *Proc. R. Soc. B* (Vol. 282, No. 1817, p. 20151617).
- 20) Torres, C. W., & Tsutsui, N. D. (2016). The effect of social parasitism by *Polyergus breviceps* on the nestmate recognition system of its host, *Formica altipetens*. *PloS one*, *11*(2), e0147498.
- 21) Wright, G. A., Baker, D. D., Palmer, M. J., Stabler, D., Mustard, J. A., Power, E. F. & Stevenson, P. C. (2013). Caffeine in floral nectar enhances a pollinator's memory of reward. *Science*, *339*(6124), 1202-1204.

**How do you find these papers? First, an easy way is to look online (Google search). If they are not freely available online (because you are off campus – they should all be freely available when you are on campus), get onto campus or sign in through the library from home (VPN or “Off-Campus Access”) to get free access to the papers. UF pays a subscription fee to many of these journals. If you still cannot get access, contact Dr. Miller.**