

### Contact Information

Shawn Garner  
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[sgarner3@uwo.ca](mailto:sgarner3@uwo.ca)  
Office hours by Appointment

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### My role as the TA

- Comments on any writing project (see me early)
- Input on experimental setup
- Don't hesitate to ask me to have a look at your setup or animal care protocol
- Invite me to watch a trial in progress
- Keep me informed via regular meetings

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### Two major writing components

- Scientific critiques
  - 12 Feb: Critique 1 due (5%)
  - 10 Mar: Critique 2 due (10%)
- Group project
  - 27 Jan: Project proposal due (10%)
  - 17 Mar: Presentations begin (10%)
  - 7 Apr: Project reports due (25%)

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**Nonvisual mate choice in the Pyrenean mountain newt (*Euproctus asper*): females prefer small males**

Jean R. Poschadel · Annette Rudolph · Martin Plath



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**Critique**

- **BRIEF** summary including key hypothesis
- Importance of research
- Prediction(s) tested
- Evaluation of authors' methods and conclusions
- Overall rating of study

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**Critique**

- Formatting guidelines and article available from course website
- Reference other literature to support your arguments
- Explain how your arguments affect the authors' conclusions
- For comments, bring a rough draft to me by February 3

Due: February 12, 1:30 PM

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## Two major writing components

- Scientific critiques
  - 14 Feb: Critique 1 due (5%)
  - 14 Mar: Critique 2 due (10%)
- Group project
  - 31 Jan: Project proposal due (10%)
  - 28 Mar: Presentations begin (10%)
  - 11 Apr: Project reports due (25%)

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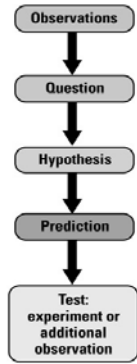
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## The Scientific Method



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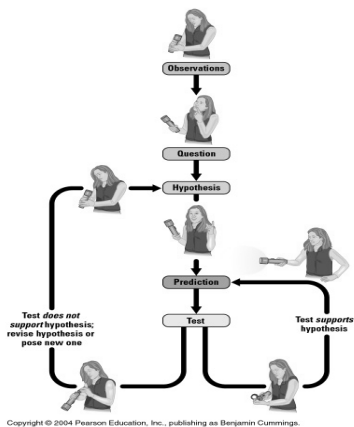
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### Observations

1. Select a topic
  - First come first serve
2. Do a literature search on “Web Of Science”  
<http://www.lib.uwo.ca/taylor/>
3. Collect and read literature on your topic (these are the “observations”)

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### Question

- Partners discuss literature
- Develop a “question” based on the literature
- Interesting and informed question to address

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### Hypothesis and Predictions

- A “hypothesis” is a *tentative explanation proposed for a specific phenomenon that has been observed*
- Based on the literature
- Suitable for experimentation
- Determine “predictions” based on the hypothesis

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### Experiments

- Design experiments that unambiguously test your hypothesis
- Consider every variable you may need to control for and how to do it
  - biological control vs. statistical control
- Determine EVERY detail of the experiment
- Get approval from the TA

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### Experiments: Frequently asked questions

- What should my sample size be?
  - Determine what number is feasible given the available time, and the supply of animals, tanks
  - No sample size is too large
  - Project should take a minimum of 3hrs/week

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### Experiments: Frequently asked questions

- What statistical test should I run on these data?
  - Design your experiment so that you can do statistics on the data
  - If you cannot identify the test you should run, then your experiment design is probably inappropriate

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Limited Space in the Behaviour Lab

- 3 Convict cichlid projects
- 3 Guppy projects
- 3 Crayfish projects
- 3 Snail projects
  
- Talk to Sarah Lee about feasibility
  
- Give me rough methods (in writing) by **Jan 16**

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Research Proposal

Five components:

1. Introduction
2. General methods
3. Detailed methods
4. References
5. Tables, Figures, Appendices

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Title

- Bad: Mate choice in humans
- Better: Effects of facial symmetry on mate choice in humans
- Best: Facial symmetry but not whole body symmetry affects mate choice in humans

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### Introduction

- Broad statement of research question
- Review of RELEVANT literature (follow guide to authors)
- Statement of hypothesis
- Brief experimental approach (1-2 sentences)
- Predictions

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### General Methods

- Clearly outline the general design you will use and how it unambiguously tests your hypothesis
- If a series of experiments are proposed, state which hypothesis each tests and how and why they are linked

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### Detailed Methods

- Specific details of what is done in a single trial
- Method of recording data
- Include numbers

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### Detailed Methods

- Dependent and independent variables
- # treatment groups
- # of organisms in each group
- Time of day / temperatures
- List any uncommon equipment needed

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### Detailed Methods - Statistical Analysis

- Based on your experimental design you will have to determine the appropriate statistics
- Names of the statistics to be used
- Which statistic will be used to test what part of your data (i.e., do not just list statistics)

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### References

- List all references that you cite
- Follow guide to authors for format
- Picky picky picky

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### Tables, Figures and Appendices

- Each gets a new page (up to 2 pages more – be selective)
- Each gets a caption that is concise and clearly conveys what the table etc. is about
- Each must be referred to in the text

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### Research Proposal

- NO LONGER than 5 PAGES, typed and double spaced, 12 pt font, 1 inch margins
- Tables, Figures and Appendices up to 2 extra pages
- Suggest you bring preliminary proposal to second lab on **18 Jan** for feedback
- Final copy due **27 Jan** (10%)

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Happy Experimenting!

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