PGS 189Q Seminar in Alcohol Studies – Spring 2020
(Alcohol Journal Club)

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Course Unique Number: 57095

Classroom: MBB 1.210
Class Days/Times: Wednesdays at 10:00 a.m.
Teaching Assistants: n/a

Journal Club Dates

<table>
<thead>
<tr>
<th>Date</th>
<th>Presenter/Discussion Leader</th>
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<tr>
<td>January 22</td>
<td>Scott Tucker (Eberhart Lab; Molecular Biosciences)</td>
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<tr>
<td>February 12</td>
<td>Valeria Tretyak (Fromme/Lippard Labs; Psychology/Psychiatry)</td>
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<td>February 19</td>
<td>Avery Campos (Fromme Lab; Psychology)</td>
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<td>March 10/11</td>
<td>Save the date! Judith Grisel visit and talk</td>
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<td>April 8</td>
<td>Blaine Caslin (Melamed Lab; Neurology)</td>
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<td>April 22</td>
<td>Dylan Kirsch (Lippard Lab; Psychiatry)</td>
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Course Information

Course Description: The Alcohol Journal Club (AJC) class is held together with the Waggoner Center seminar series on Wednesdays at 10:00 am in MBB 1.210. Alcohol fellowship-funded trainees are required to attend during AJC dates and strongly encouraged to attend all other presentations of the series. Trainees are required to present a paper and lead the discussion once a year. Student trainees should register for the class one semester.

Course Learning Objectives:
- Read and review recent literature in the area of alcohol research.
- Develop and practice critical thinking skills required for evaluation of a research report.
- Develop and practice the ability to lead and engage in constructive scientific discussion.

Course Communications: Official course communications will take place in class and through e-mail. Dr. Nixon uses the e-mail address listed on the official University of Texas directory, so please check the University’s online directory to ensure your e-mail address is listed correctly.

Course Website: n/a
Course Policies

Course Grading Policies: Course Grade is for credit/no credit only.

Excused Absences: Trainees are expected to attend all meetings of Alcohol Journal Club. Excused absences that will be considered excused include religious holy days or extenuating circumstances due to an emergency. If you plan to miss class due to observance of a religious holiday, please let Dr. Nixon know at least two weeks in advance, preferably at the beginning of the semester. Lab-related conflicts and/or attendance at professional meetings will be excused with an email from your PI.

Services for Students with Disabilities: Students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities at 471-6259 (voice) or 232-2937 (video phone) or https://diversity.utexas.edu/disability/.

Please provide a copy of the letter to the course coordinator as soon as possible after receipt.

Academic Dishonesty/Penalties: Academic honesty is the cornerstone upon which scientific research and scholarship are based. Experimental discoveries and new scientific insights are built upon a foundation formed by the work and thoughts of others. Thus, utilizing such thoughts in a paper or manuscript, without giving credit to the originator of the idea or result, is dishonest. Such dishonesty is termed plagiarism, and is considered an extremely serious offense by the graduate program, the University of Texas at Austin, and the academic community throughout the world. The penalties for plagiarism are grave, and can range from a zero for an assignment, to an F (failure) in a course, and in grievous instances, suspension, dismissal or expulsion from the graduate program and university.

Article Requirement

Article Requirements: A full-length data paper published in the last 2 years on focused on alcohol, addiction or directly relevant to alcohol or addiction research. Reviews and short reports are not acceptable. All papers are reviewed for appropriateness prior to distribution to the journal club. Choose and send your article to Dr. Nixon at least 3 weeks in advance of your presentation so that she can approve and distribute the article the week before your class.

Journal Club 101 (tips and best practices):

1. Suggestions for choosing a paper:
   a. Choose something relevant to your interests, a manuscript you are writing, or your dissertation direction.
   b. If possible, choose something where you understand and/or have hands on experience in the methods.
   c. Choose something where you have enough background to critique.
2. How to read a paper critically.

The basic questions you need to address in your presentation (keep in mind while reading):

- a. What questions does the paper address?
- b. What is the main hypothesis?
- c. How do they propose to test the hypothesis (what are the methods)?
- d. Are the methods appropriate? Performed correctly? Good controls (well designed)?
- e. What are the main conclusions? What evidence supported those conclusions?
- f. Do the data actually support the conclusions?
- g. What is the quality of the evidence?
- h. Why are the conclusions important?
- i. Do these data contribute knowledge to the field? (was this novel or “me too” science?)

3. How to give the presentation.

There are distinct sections that should be included for presentation. They do not have to be in this order. For example, you can incorporate your comments/critique throughout the presentation or save them until the end or do a little of both.

- a. Why did you choose this paper?
- b. Background of the problem, disease state or mechanism in question. Give a mini primer for that topic THIS IS A BROAD AUDIENCE FROM CLINICAL PSYCHOLOGY TO NEUROSCIENCE.
  Use additional resources such as textbooks, review articles or other papers cited in your chosen paper to help fill in this detail. Add images from alternative sources. Pictures are worth 1000 words!
- c. Methods. Subjects, technique used and experimental design. No need to go into a long discussion of the technique unless you are using all of that detail to make a point in the results. It is OK to say “they ran a Western blot.”
- d. Results. Present each figure and table in the paper. You may wish to consider presenting each method before its appropriate result or present all methods, then all results. It is your choice. This section will be the bulk of your presentation.
- e. Discussion (theirs). What was the primary finding and how was it supported by the data? What statements did they make and did their data strongly support it? Do they acknowledge alternative explanations?
- f. Critique or YOUR Discussion. What did you think?
  - i. Strengths of the article?
  - ii. Weaknesses of the article?
  - iii. Use points 2d – 2i above to critique and discuss.

Helpful hints:
- use more pictures/diagrams and less words.
- do not read your presentation, talk through it. Your slides should provide you with clues on what you want to say, but don’t read each line on your slide.
- practice, practice, practice!

Hints for giving a good talk: [http://www.eecs.berkeley.edu/~messer/Bad_talk.html](http://www.eecs.berkeley.edu/~messer/Bad_talk.html)
Tips for Critically Reading a Scientific Paper

Edited from: http://learning.berkeley.edu/es100/Paper_Critique.htm (no longer available)

Introduction - The intro should give sufficient background of the problem and lead in to the hypothesis to be tested. Some journals limit introductions to 500 words and may be “thinner” than what you need. Use their citations in the introduction to help you form your background section in your presentation. Supplementing with a recent review not cited by the authors may prove helpful and even highlight areas for discussion/critique.

Methods - As a scientist-in-training, it can be difficult to evaluate the methods without having specific experience with that procedure. However, as you read through the article, it may become clear that the methods could be better. If possible, make a list of specific problems, but do not be so general as to be meaningless. For example, "They should have done more work," or "Their analysis was shoddy". You should evaluate specific points, not make vague overall assessments. For example, more work may mean, a greater number of subjects may have improved their variability and resulted in a more definitive answer (clear effect or clear lack of effect). Another characteristic of a good methods section is that the procedures are described in sufficient detail that someone else could repeat the basic study. If you know the method/technique, this will be easy to evaluate. If you do not know the technique well, consider the controls used, the appropriateness of the subjects (or cell lines) used, whether just one method was used or if they back up their findings with alternative or multiple methods or markers (good practice).

Results - Here is where you need to read the most carefully. Compare the statements in the text with the data in the tables and figures, and generally read with a critical and suspicious attitude. You will have to accept the following on faith: That the data presented were actually observed, not concocted out of the author's head to prove his or her point. However, it sometimes happens that the author makes observations that contradict other data in the same paper or previous/other ones. If so, you will need to decide whether you agree or not. Is the author trying to "explain away" data that don’t fit, or has he or she done a good job of showing why the new data are at variance? Have the authors provided statistical support for their statements?

Discussion – Here, the authors try to tie it all up, show that they have achieved their purpose, which is to increase our understanding of the general problem posed in the introduction. No matter how small or narrow their purpose may seem to you, the question is, have they achieved it or partially achieved it? If not, why? Could it have been improved given additional experiments or interpretations? Do any alternative explanations of their data strike you as more obvious than theirs? Does anything seem out of place? Perhaps you can tell that a reviewer asked for a specific experiment? Or what’s missing? Perhaps some obvious interpretations are lacking?

Overall - What would improve the paper? Additional or different experiments, subjects, interpretations, approach? Is the data really new and interesting or just an incremental step and/or regurgitation of the same old thing? Please be sure your suggestions are logical and to the point. Do not suggest measuring all the variables you can think of if these measurements don’t help answer the question posed.

Essentially, you need to evaluate the paper on at least three grounds:
1. Are the experiments and observations well done,
2. Do they help to answer the questions that the author says he or she is trying to answer, and
3. Are there alternative explanations for the results that the author has not considered?
The second skill is deciding if these are the most appropriate experiments to prove what the authors want to claim. Is there a better, more direct way to obtain the same conclusion? Can a particular technique be used in a given situation? This is a difficult aspect of critical reading for a young scientist to develop, as they do not necessarily know what caveats are associated with various techniques or what alternative methods could be used to obtain similar results. This skill also includes evaluating whether all of the appropriate controls are included to show that the technique is working as expected.

**How to read a scientific article**
Laurel S. Collins, Ph.D. Florida International University

When students in the sciences are first faced with using the primary research literature, the prospect sometimes seems overwhelming. Finding pertinent journal articles often seems to involve a maze of abstracting journals, indifferent librarians, missing volumes, CDroms from hell, and bound periodicals that refuse to flatten themselves for photocopi (no matter how hard you press on them, CPR-style). Even once an article has been located--or, in the case of this class, provided--there is the problem of reading it. The worst way to assimilate a research paper is to read it word by word, title to literature cited, as if it were a textbook. This approach is a waste of time, because perhaps as few as 1 in 4 articles that find their way into your hands should be committed to your brain, and is deadly boring.

Before reading one word of an article, ask yourself: What am I looking for in this article? Knowing what I do about the subject, what gaps need to be filled, what knowledge needs to be expanded, and what controversial points need to be corroborated? Generate expectations of a journal article before you read it. This will help your analysis of the work in front of you, plus keep you more interested in the material. Then what:

1. Read the authors' names. Where and with whom are they working? What is their expertise? Names may mean little at first, but as you "wade through" a scientific subject or topic you will find familiar names cropping up, and you will develop those with whom you agree and those whom you question.

2. Read and digest the title. It should summarize the work of the article well, help you to clarify your expectations of the paper, and it should be an attention-getter (if you are reading the article, it has probably already accomplished that task!).

3. Read the abstract carefully and try to understand it (though it may be the densest prose you will ever encounter). Abstracts are as difficult to read as they are to write, because an entire publication must be summarized in an understandable way in only about 200 words. By now, you should have a good idea of what the paper is about and what you have gotten yourself into. At this point, it may be obvious that the paper does not answer your questions. If this is true, move on, but be conservative because the authors' interpretation of the research presented in the abstract may not be the same as yours after reading the full paper. Never cite an article after having read only the abstract!

4. Picture time--flip through the article and study the figures, illustrations, and tables, including the legends. It will probably become necessary to consult the Methods and Results section to clarify figures and understand the experimental design. If the article is closely related to your research, closely examine the techniques described in the Methods section. There may be problems there, but more likely there will be a new, perhaps better, approach to your own research. It should be clear to you by now whether this paper will be truly helpful. If so, now it is time to be critical (please, see the note below about this word).
5. Read the Introduction and be sure the author knows the field, has adequately researched past work, and understands where their work “fits into the puzzle”. Generally, the Intro and Literature Cited sections go hand-in-hand. Most importantly, within the first paragraph or 2 of the Introduction the authors should have made it very clear what their objectives for the research were, and what their paper will tell you.

6. Check to see if the Results adequately and accurately describe the data presented in the paper. Are there additional points that should have been brought up? Is there something in the figures or tables that does not substantiate the authors' claims that was not mentioned? Do the figures and tables clearly, succinctly, and attractively present the results of the paper? Remember that great data presented clumsily or sloppily will not be seen as great, only clumsy or sloppy.

7. Now read the Discussion. This is perhaps the most important section, because it is here that the results (the "what" of the research) are explained. That is, here is where the authors should [at least try to] explain "why" they saw what they saw. Beware of unsubstantiated speculation, though do not fault, off-hand, the presentation of hypotheses for future work or even expectations of findings from those future experiments. On the other hand, there are authors who are prone to timidity, understatement, or who are just plain invertebrate about their ideas. You should not be left guessing, or left to fumble to your own conclusions because an author was unwilling to take even a small step out onto a limb. As a moderate example of such understated conclusions, Watson and Crick ended their historic presentation of the structure of DNA with the sentence: "It has not escaped our notice that the specific pairing we have postulated immediately suggests a possible copying mechanism for the genetic material." In fact, the complimentary base pairing they presented was no less that a quantum leap in our understanding of biological systems, in terms of both modern biochemistry and evolution!

Bear in mind that the ultimate burden of assessing published material lies with you, the reader. Take the time and energy to do this and you will gain more and be further along that the person who depends on the author for interpretation. Having just completed a critical reading and assimilation of a journal article pertinent to your work, you should be able to paraphrase the significance of this paper with 3 or 4 sentences free of technical jargon. You should also be able to both praise and criticize several points of the paper (this is important--see note below). A general rule of thumb, regarding what goes where, when both reading and writing a scientific article is:

Title: Short, succinct, eye-catching, all-encompassing

Abstract: Summary of Methods, Results, and Discussion starting off with a statement of why the research was done and with emphasis on why the results are significant.

Introduction: When was past work done, by whom, why was their work important, what you plan to do in your paper, and why what you did is important.

Materials and Methods: How you did what you did and where you did it--nothing more.

Results: What the data show you--nothing more.

Discussion: Why the data show what they show, and how your analysis relates back to your objectives from the Introduction.

Note: Some journals will allow the Results and Discussion sections to be combined. In this case, the data should be divided up into logical groups, and for each group (generally separated by a subheading) the What and the why are presented together.

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A note on critiques: A critique "considers the merits and demerits of something and judges accordingly" (Webster). When critiquing an article (or anything, really), remember that there are positive points to be found, and made, about everything. To present only negative criticism is wrong. Never forget to acknowledge that, while we all make mistakes and do things incorrectly, we also all do things correctly sometimes. A pat on the back can go a long way.

See also: http://www.sciencemag.org/careers/2016/03/how-seriously-read-scientific-paper