SC/BIOL 3100 2.0 – Current Topics in Biological Research  
Faculty of Science, Department of Biology  
York University, Winter Term 2014

**Time:**  
Mondays 2:30 – 4:30 pm

**Location:**  
Life Sciences Building, Room 103

**Lecturer:**  
Dr. Samuel Benchimol  
Department of Biology  
Farquharson Building, Room 243A / Room 246  
416 736-2100 Ext. 20726  
benchimo@yorku.ca

**Communication:**

You may contact me by e-mail at: benchimo@yorku.ca  
Please include “BIOL 3100” in the subject line and your full name and student number in your e-mail text. If you wish to have an appointment with me, please contact me by e-mail first.

**Course Description:**

The course provides a review of the research in progress by members of the Department of Biology, and provides students with the opportunity to develop skills to evaluate scientific research papers and to enhance their written and oral communication skills in Biology. This course is designed to prepare students for the Honours Thesis in their 4th year of study (SC/BIOL 4000 8.00 or SC/BIOL 4000 3.00). Two lecture hours per week in the winter term. Two credits.

**Course Text:**


**Important Dates:**

- Last date to ENROL without permission of the course instructor is Jan 19, 2014  
- Last date to ENROL with permission of the course instructor is Jan 31, 2014  
- Last date to DROP the course without receiving a grade is Mar 7, 2014
**Evaluation:**

The final grade for the course will be based on the following assignments weighted as indicated:

1. **Short 2-paragraph summaries on 8 out of 11 faculty presentations:** 20%
   - due on the Friday following the presentation

2. **Critical summary article on a specific research paper:** 25%
   - due on Friday, February 14, 2014 (4 pm)

3. **Review article based on a faculty member’s published research:** 25%
   - due on Friday, April 4, 2014 (4 pm)

4. **Student presentation / Student evaluation:** 30%
   - March 17, 24 and 31

Late submissions will be given a 0 mark. There is no final exam.

**Accommodations:**

Students who feel that there are extenuating circumstances that may interfere with their ability to successfully complete the course requirements are encouraged to discuss the matter with the Course Director as soon as possible.

Students with disabilities who require reasonable academic accommodation in teaching style or evaluation methods should consult with the Office for Persons with Disabilities (OPD) and ensure that requests for appropriate accommodations are arranged with the Course Director early in the term. Please refer to York University’s policy on Academic Accommodation for Students with Disabilities at the following link:

http://www.yorku.ca/secretariat/policies

**Plagiarism:**

Plagiarism is a major academic offence and carries serious penalties, ranging from a failing grade on the work in question to expulsion from the university. For more details about cheating and plagiarism, please refer to York University’s policy on Academic Honesty at the following link:


Additional resources on Academic Integrity for Students are available at: http://www.yorku.ca/academicintegrity/students/index.htm
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Activities</th>
<th>Presentations</th>
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<tbody>
<tr>
<td>Jan 6</td>
<td>1. Feb 13</td>
<td>1. Writing a 2-page summary (Assignment 1)</td>
<td>Benchimol presentation: The p53 tumour suppressor network regulates cell cycle progression and apoptosis</td>
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<tr>
<td>Jan 20</td>
<td>1. Writing a 2-paragraph summary 2. Reading a scientific paper and preparing a critical summary (Assignment 2)</td>
<td>3:30 Vivian Saridakis: Biological applications of macromolecular crystallography</td>
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<tr>
<td>Jan 27</td>
<td>1. Writing a review article based on a faculty member’s published research (Assignment 3)</td>
<td>2:30 Mark Bayfield: RNA folding by the human La protein</td>
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<td>Feb 3</td>
<td>Faculty presentation: 1 x 45 min</td>
<td>3:30 Sapna Sharma: The impacts of climate change and invasive species on aquatic ecosystems</td>
<td>Faculty presentation: 2 x 45 min</td>
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<td>Feb 10</td>
<td>Faculty presentation: 2 x 45 min</td>
<td>2:30 Ron Pearlman: Novel and important insights obtained using an important microbial model system 3:30 Carol Bucking: The front line of comparative physiology</td>
<td>2:30 Dawn Bazely: Deer and disappearing forests</td>
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<tr>
<td>Feb 17</td>
<td>NO class (Reading Week)</td>
<td>3:30 Thilo Womelsdorf: Studying cells and circuits underlying higher cognitive functions: Neural correlates of attentional control</td>
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<td>Feb 24</td>
<td>Faculty presentation: 2 x 45 min</td>
<td>2:30 Laurence Packer: Bee evolution in the world’s driest desert</td>
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<td>Feb 27</td>
<td>Faculty presentation: 2 x 45 min</td>
<td>3:30 Kathi Hudak: Activity and applications of antiviral proteins from plants</td>
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<td>Mar 3</td>
<td>Faculty presentation: 2 x 45 min</td>
<td>2:30 Peter Cheung: Transcriptional regulation through writers, erasers, and readers of the histone code 3:30 Joel Shore: The molecular genetics and evolution of distyly: Seeking the genes determining self-incompatibility and floral polymorphism</td>
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<tr>
<td>Mar 17</td>
<td>Student presentations: 5 x 15 min Student evaluations: 5 x 5 min</td>
<td>LSB 103 SC 203 SC 216</td>
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<tr>
<td>Mar 24</td>
<td>Student presentations: 5 x 15 min Student evaluations: 5 x 5 min</td>
<td>LSB 103 SC 203 SC 216</td>
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<tr>
<td>Mar 31</td>
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<td>LSB 103 SC 203 SC 216</td>
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Eleven Biology faculty members will be giving 1-hour presentations on their research in this course. **You are required to submit 2-paragraph summaries on 8 presentations.** Summaries are due on the Friday following the presentation before 4 pm. Please bring your summaries to the reception in the Biology Office in Farquharson, Room 247 and have the paper date-stamped and placed in my mailbox. If for example, Professor Pearlman is making a presentation on Monday February 10, 2014 and you choose to write a 2-paragraph summary on his presentation, then the assignment is due on Friday, February 14, 2014 before 4 pm. The summary for Professor Pearlman’s talk will not be accepted or considered anytime thereafter.

**Guidelines**

Please note that this assignment is not a literature review. It is a summary of a research presentation. The summaries are to be written clearly and concisely and must demonstrate an understanding of the work presented. The summary should address the following questions:

Paragraph 1.

1. What is being studied? (state the biological question/s)
2. Why is this research topic important? (place the research into context)

Paragraph 2.

3. What methodologies are used to investigate the problem?
4. What are the main findings/conclusions?
5. What did you learn?

**Length**

350 words. Please stay within the range of 300-400 words. Your mark will be 0 if the length is outside this range.

**Learning Objectives**

At meetings, conferences, seminar series, speakers present their research work often using PowerPoint. Slides are rarely posted or made available to the participants before or after the talk since the presentation often includes unpublished material. We will follow the same practice for this assignment; hence, the presentation slides will not be posted. To complete this assignment, you will be required to listen, take notes, understand the material being presented and write a short 2-paragraph summary based on the presentation. You are invited to ask questions at the end of each presentation. In this way, you will also be learning about the research being conducted in the Biology Department at York University.
SC/BIOL 3100 2.0 (Winter 2014)
Assignment 2
Critical summary article on a specific research paper (1000 words): 25%
Due date: Friday, February 14, 2014 (4 pm)

Guidelines

The critical summary article summarizes a specific paper and puts the findings into context. You are required to select one paper to review from a list of papers that I have pre-selected (please see list of papers below). You may not review a paper that is not on the list. The papers selected cover a broad spectrum of biology: cell and molecular biology, animal physiology and ecology. You are encouraged to pose questions not already discussed in the paper, shed new light on the published data, raise concerns with the data or its interpretation, or discuss the findings in a new way. Several journals provide short and timely articles to highlight specific papers. For example: News and Views (Nature), Previews (Cell, Immunity, Molecular Cell, Cancer Cell, and Cell Metabolism). Your paper should be written in an engaging style that is readily accessible to your peers.

Length and format
1000 words. Please stay within the range of 950-1050 words; your mark will be 0/25 if the length is outside this range. Text, left justification, double-spaced with 1.0” margin all around. Use a 12 point font (Times New Roman, Arial or Calibri). Pages must be numbered.

References
Please do not exceed 10 references; include citations in the text and list all references cited in the Reference section at the end. The aim is to reference the paper under discussion and key contributions to the field.

Abstract/summary
Please provide a one sentence, 40-word abstract that summarizes the work.

Acknowledgements
Acknowledgements are not included.

Figures and Table
You may include 1 Figure or 1 Table in the article if this will enhance the reader’s understanding of the article. This is not a requirement.

Submission
You may submit the paper to me in class or bring the paper to the reception desk in the Biology Office in Farquharson, Room 247 and have the paper date-stamped and placed in my mail box. The last day to submit the paper is on Friday, February 14, 2014 at 4 pm. Papers submitted after the due date will receive a 0 mark. There will be no exceptions. There will be no medical exemptions for late submission (unless you document a long-term illness) since you have such a substantial period of time to prepare the paper.
List of Papers

1. Cell and Molecular Biology


2. Animal Physiology


Scott GR, Johnston IA. Temperature during embryonic development has persistent effects on thermal acclimation capacity in zebrafish. *Proc Natl Acad Sci USA.* 2012; 109: 14247-14252.

3. Ecology


SC/Biol 3100 2.0 (Winter 2014)
Assignment 3
Review article based on a faculty member’s published research (1300 words): 25%
Due date: Friday, April 4, 2014 (4 pm)

Guidelines

Write a review paper based on the research of a York Biology faculty member who presents a seminar in BIOL 3100. The schedule of speakers and the title of their talks is shown on the course outline. This assignment is worth 25% of your mark. You don’t need to see the faculty member’s seminar to start on the assignment, as the assignment is not directly based on materials presented in the seminar – the assignment is based on the faculty member’s published research. Review the faculty member’s work citing 3 or 4 primary research articles written in the past 10 years. Most research papers are available online. If not, please contact the professor and request a PDF copy.

The review article should not be a collection of summaries. Present your information selectively (i.e. do not discuss all the results contained in each paper or provide detailed methodology). You need to connect the work and integrate the findings into a broader picture of the professor’s research. The paper should be about the researcher’s general research themes: what type of research does the professor conduct, what are the research questions, what findings have resulted from this research, what are the implications of this work, what has been the impact of this research on the professor’s field of study? The review should reflect your understanding of the work and its significance in the field of study. It should be written clearly and in your own words so that any 3rd or 4th year student can read and understand your paper.

You might receive some insight or guidance from the seminar that the faculty member gives to the class, however within the body of the paper citing the presenter’s seminar is unacceptable. As this is a review, you are not testing a hypothesis; however, a generally worded thesis statement is suitable for inclusion in your Abstract and/or Introduction.

Printed Material for you to refer to: Chapter 5 of the text (McMillan), Writing a Review Paper. That chapter concludes with an abbreviated example of a review paper.

Organization:

a) Title Page: title, presenter’s name, your name and student number, date and word count
b) Abstract (a single paragraph of fewer than 150 words)
c) Introduction
d) Body (not labelled as such but containing sub-titles)
e) Conclusion
f) References
Length: About 5 pages of text (1300 words), not including the Title Page, Abstract and References. Please stay within a range of 1250-1350 words and include the word count (excluding the Title Page, Abstract and References) at the bottom of the Title Page.

Page Format: Text, left justification, double-spaced with 1.0” margin all around. Use a 12 point font (Times New Roman, Arial or Calibri). Pages must be numbered. Please include citations in the text and list all references cited in the References section at the end of the review. You need not include Acknowledgments.

Submission: You may submit the paper to me in class or bring the paper to the reception desk in the Biology Office in Farquharson, Room 247 and have the paper date-stamped and placed in my mail box. The last day to submit the paper is on Friday, April 4, 2014 at 4 pm. Papers submitted after the due date will receive a 0 mark. There will be no exceptions. There will be no medical exemptions for late submission (unless you document a long-term illness) since you have such a substantial period of time to prepare the paper.

Evaluation: The paper will be evaluated on the basis of scientific content (60%) and style (40%)

Scientific content includes: identification of key research themes, critical understanding of the material, understanding of significance of the research, integration of the research.

Style includes: clarity, coherent organization and flow, proper grammar, sentence and paragraph structure, no typos or spelling errors, proper page formatting, inclusion of citations within the text, references correctly formatted, and length of the report.
SC/Biol 3100 2.0 (Winter 2014)
Assignment 4
Student Presentations: 20%
Student Evaluations: 10%

Student presentations will take place during the final three classes of the term (March 17, 24 and 31). **You must work in pairs. You are free to establish your own pairings.** When you know with whom you are working, kindly let me know by email (benchimo@yorku.ca). If you have not informed me by FRIDAY, FEBRUARY 7, I will arbitrarily pair up who is left. There are 90 students in the class so I expect to have 45 pairs of students giving 45 presentations. The 45 student pairs will be divided into 3 groups (15 pairs/group) and the 3 groups will meet separately. I have reserved two additional classrooms (SC 203, SC 216) so that the 3 groups can meet concurrently during the last three classes. I will post the schedule of student presentations by the end of February.

Each pair of students will be given a 15-minute time slot. The two partners will share equally in preparing the talk and in delivering it. Except in unusual circumstances, both members of a partnership will get the same mark. The talk should be long enough to consume 12 to 13 minutes with about 2 minutes for questions. Questions should come from fellow students, but may additionally come from me or the senior marker present in each room (Dr. Mark Vicari, Dr. Tanya Da Sylva).

The 15 minute presentation is based on a primary research paper in the biological sciences published no earlier than 2008. **You may select your own paper to present** but note the following conditions and guidelines:

1. It cannot be a paper that you have covered in any manner in lecture or seminar material in another course. (A breach of this requirement will be considered an academic misconduct, which will entail a process involving a disciplinary procedure through the Dean’s Office).

2. It cannot be a paper that is directly connected to the faculty member whose work you are reviewing in Assignment #3 (Review article based on a faculty member’s published research).

3. It cannot be the same paper used in Assignment #2 (Critical summary article on a specific research paper).

4. It is unwise to select a paper that might be considered a “short communication”. On the other hand, it is unwise to select a paper that delivers multiple results in a longer format (more than 10 pages; long supplementary results section). So, choose something of average complexity and length. **Importantly choose a paper that interests you.**
All the students who are not presenting must fill out evaluation forms. The evaluation forms do not contribute to the presenters’ grade; rather the students evaluating get a grade (10% of the final mark). The evaluation must be critical and helpful in order to receive the mark. An evaluation template will be provided to help you with the evaluation. The evaluations will require about 5 minutes to complete and must be submitted at the end of each presentation class. Each student will be required to submit 14 evaluations (i.e. evaluations for all presentations within the group) in order to be able to receive the maximum mark. The goal is to learn how to evaluate a presentation and to be able to discern the difference between an informative, organized, clearly presented and engaging presentation from one that lacks these attributes. It is hoped that the peer evaluation process will enhance your skills in preparing and delivering your own presentations. I will compile all the comments and provide these, along with my own, to the presenters.

On each day, we must get through 5 presentations (15 minute presentation and 5 minute evaluation). With a 10 minute break part-way, this is 110 minutes per day.

On the day of the presentation, please submit (a) your talk (electronically) no later than the start of the class in which you are presenting, so that the markers will have access to the talk later in determining your mark, and (b) a PDF copy of the paper you are presenting.