General Course Information

Course Title: Neurobiology, BIOL-417/617. Three credits.


Time and Place: 11:45 am to 12:45 pm, MWF, IRV1, Room 208

Instructor: Pierre Deviche, Ph.D.
Associate Professor of Animal Physiology
Department of Biology and Wildlife

Office Hours: Room 413, IRV1
Monday, 2:00 pm to 3:00 pm or by appointment

Readings:


Additional requested reading: Discussion papers listed in the course outline.

Need more information? Then visit the mother of all websites (http://www.genetics.gla.ac.uk/neil/toc.html, see attached copy of Table of Contents). Once in there, you will be able to access just about any information related to neurobiology that you might need. This includes book reviews, animations, neuroscience Internet guides, professional organizations, images, software, list of electronic journals, and more.... An amazing place indeed!
Grading Policy and Course Content

a. Attendance and class participation (12% of final grade)
All students are requested to attend all lectures, paper discussions, and short presentations. If for any reason you are NOT able to attend a specific lecture or a discussion/presentation, you do not necessarily have to let me know in advance although this may be a good idea. However, you will be responsible for catching up with the material covered during your absence.

If you are not able to attend an exam, you must let me know in advance, otherwise you will not get any point for it. There will be NO partial exam makeup. Students who are not able to attend the final exam because of a summer job must inform me at least two weeks in advance, and they must arrange to take it at another time. Failure to do so may result in your not being able to take the final at all and consequently of not receiving points for it.

b. Exams
There will be three partial exams (see course outline), each counting for 10% of the final grade. Exams will cover any material presented in class from the beginning of the course (exam 1) or since the last exam (exams 2 and 3). The final exam (20% of final grade) will be comprehensive. This exam will be optional for students who have earned an “A” grade for the rest of the class. There will be no pop quizzes.

Note that all exam questions will be based on material presented in class (including discussion articles and short presentations). In other words, sections of the main textbook or other information not presented in class will not appear on the exams. For your information, exams that were given the last time I taught this course (spring 1996) are available for your perusal in the AHRB library.

c. Quizzes
Each student-led paper discussion (see course outline) will be preceded by a 10 min-long quiz. Quizzes (each 2.5% of final grade) will consist of one or two short essay questions that are directly related to the article to be discussed that day.

d. “Neurobiology in the real world” presentations (8% of final grade)
Each presentation will be 20 min. long (including discussion: see below) and will be organized and run by a team of two students, both of who will get the same number of points. The goal is to demonstrate how neurobiology and its applications affect our everyday life. The topic of the presentation is entirely up to you, but each team must come up with a different one. In case two teams come up with the same topic, the second team to let me know of their choice will have to identify another topic. Dates for presentations are listed in the course outline and will be filled on a first-come, first-served basis.

Points will be given based on the following:
- Relevance, organization, and clarity of the oral presentation (3 points);
- Quality of visual aids (overheads, ...; 2 points)
Ability of the speakers to stimulate relevant questions and discussion (3 points)

Examples of potential topics for class presentation:
- Discuss a specific neurological disorder. For this, you might want to first describe the clinical symptoms of the disorder and its diagnostic, then its neurobiological origin (e.g., genetic vs. environmental factors), and finally talk of potential treatments that are available or under development.
- Positive and/or negative effect on the nervous system of a specific food/drug, and underlying mechanisms and treatment.
- Effects of aging on the nervous system. Why does it age? What are the neurological and behavioral consequences of aging? Can we (should we?) do something about it?
- Seasonal affective disorders. What are they all about? Why are they apparently more prevalent at higher latitudes? Is it “all in the head”? How can they be treated? Compare the effectiveness of different treatments.
- Etc.

!!! It is essential that you keep in mind that the topic of this course is neurobiology, not, e.g., sociology or psychology. You must select your topic and prepare your presentation accordingly. If you have any problem identifying a topic or if you are concerned about its appropriateness, please do not hesitate to ask....

Feel free to come up with transparencies or other material that you find relevant and useful. Also, please make sure to leave a few minutes at the end for class discussion (i.e., your actual presentation should not exceed 15 min).

e. Research paper Discussions (12.5% of total points)
Lectures and short presentations will offer a broad view of modern neurobiology. This will be complemented by class-wide discussions of recent research articles (see course outline) that are directly related to specific lecture topics. All students are requested to read these papers beforehand (see quizzes) and be ready to discuss them in class.

A team of two students will introduce each paper. This introduction, not to exceed approximately 20 min., will include an overview of the objective of the research, the methods used by the authors, the results that were found, and the discussion of these results. It will be followed by a class-wide discussion on any aspect of the article. As you prepare for this exercise, you should ask yourself the following kind of question:
- Is the research of sufficient interest that its publication was justified?
- Do the authors provide enough information on the why and how the research was done?
- Are the methods and experimental design appropriate?
- Could the same or more information on the question of interest have been obtained using alternative/non-invasive methods?
- Are the data analysis techniques appropriate?
- Are group sizes sufficient to justify the conclusions?
➢ Do you agree with the authors’ conclusions? If not, why?
➢ Could the results be explained differently?
➢ What follow-up studies could/should be done?

Points will be given to the team members based on the following:
Relevance, organization, and clarity of the oral presentation (5 points);
Quality of visual aids (overheads, ...; 2.5 points)
Ability of the speakers to answer relevant questions and to stimulate discussion (5 points)
### Summary of point distribution

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>10%</td>
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<tr>
<td>Exam 2</td>
<td>10%</td>
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<tr>
<td>Exam 3</td>
<td>10%</td>
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<tr>
<td>Final Exam</td>
<td>20%</td>
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<tr>
<td>Quizzes (7 @ 2.5 points/quiz)</td>
<td>17.5%</td>
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<tr>
<td>Neurobiology in the Real World</td>
<td>8%</td>
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<tr>
<td>Research Article Discussion</td>
<td>12.5%</td>
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<tr>
<td>Class Participation</td>
<td>12%</td>
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<tr>
<td><strong>Total:</strong></td>
<td><strong>100%</strong></td>
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*Students taking the class at the 600-level*: All of the above will count for 70% of final grade. The remaining of the grade will be determined based on evaluation of the research proposal.
Table of Contents

View the entire Table of Contents in outline form below or

View a Section: Neurosciences on the Internet Home Page

Server Location: US UK Germany Australia

Table of Contents in Outline Form

- Neurosciences on the Internet Home Page
  1. Getting Started
     - What This Site Is
     - What This Site Isn't
  2. How to Use This Resource
  3. Please Contribute!
     - Comments and Suggestions
     - New Features
     - Original Material
     - Sponsorship
  4. About This Site
     - Overview
     - Servers
     - Tools
     - Graphics
     - CGI Scripts
     - Publications and Presentations
     - Recognition
  - How to Contribute Materials to This Site
  - Most Recent Additions
  - Best Bets
  - Original Contributions
    1. 1st Conference of Neurology - Santiago de Cuba, June 25 to 27 1998
    2. A Tour of Neuroscience Web Sites
    3. Amyotrophic Lateral Sclerosis Information from the Western Pennsylvania Chapter of the ALS Association
       - Information About Amyotrophic Lateral Sclerosis (ALS)
       - What is the ALS Association?
■ What is the Western Pennsylvania Chapter of the ALS Association?
5. Book Reviews
   ■ Review of COMPARATIVE VERTEBRATE NEUROANATOMY
   ■ Review of ELEMENTS OF MOLECULAR NEUROBIOLOGY
6. Clinical Trial of 3,4-Diaminopyridine (DAP) in Lambert-Eaton Myasthenic Syndrome (LEMS)
7. Cutaneous Fields of Peripheral Nerves
9. International Meeting on Polemics and Alternatives in Neurology - Panama City, July 6-10, 1998
10. Molecular Neurobiology: A Gallery of Animations
    ■ Animation of Acetylcholinesterase in Action
    ■ Animation of Cocaine Blocking Dopamine Reuptake
    ■ Animation of Neurotransmitter Release
    ■ Animation of Nicotine Blockade of Acetylcholine Receptors
11. Neurosim for Windows: Teaching Software
12. NeuroWires: Intelligent Agent Technology Comes to Neurosciences on the Internet!
13. Two New Mailing Lists of Interest for Pediatric Neurologists
14. Use of Functional Magnetic Resonance Imaging to Investigate Brain Function

• Searching Tips
  1. Overview
  2. The Database and the Search Engine
  3. An Example of a Search
  4. Current Limitations
  5. Perform Your Own Search

• Search with a Configurable Unified Search Index (CUSI)
  1. Search This Database
  2. Play NeuroRoulette
  3. Online Mendelian Inheritance in Man
  4. WWW Indices
  5. Robot Generated WWW Indices
  6. Alta Vista
  7. Excite
  8. InfoSeek Search
  9. Internet Sleuth
10. Magellan
11. Yahoo
12. Other Internet Indices
13. Software
14. People
15. Documents
16. Dictionaries

• Neurosciences Resources
  1. Neuroscience Internet Guides
     ■ Neurosciences
     ■ Neurology and Neurosurgery
     ■ Psychiatry
2. Resources from Academic Centers: Basic Neurosciences
   - Neuroscience Centers and Laboratories
   - Non-Human Systems
   - Neuroscience Online Exams and Tutorials
   - Databases

3. Resources from Academic Centers: Neurology, Neurosurgery, Psychiatry, Psychology
   - Neurology
   - Neurosurgery
   - Psychiatry
   - Psychology

4. Professional Organizations and Meetings
   - Professional Organizations
   - Meetings

5. Images
   - Human Neuroanatomy and Neuropathology
   - Neuroscience Images and Methods
   - Medical Imaging Centers
   - Medical Illustration
   - Medical Imaging Indexes
   - Neuroanatomy Atlases of Animals

6. Software
   - Programs
   - Software Collections

7. Electronic Journals
   - Journals with Full Text of Articles Available on the Internet
   - Journals with Abstracts Available on the Internet
   - Journals with Tables of Contents Available on the Internet
   - Other Journals
   - Indexes of Journals

8. Information on Human Neurological Diseases

9. Newsgroups and Web Forums
   - Newsgroups
   - Web Forums

10. Neuroscience Mailing Lists

• Some Essential Biological Resources
  1. Biology Internet Guides
  2. Academic Resources
  3. Commercial Resources

• Some Essential Medical Resources
  1. Medicine Internet Guides
  2. Academic Resources
  3. Commercial Resources

• World Wide Web Gateways
  1. About the World Wide Web
  2. Starting Points
  3. Searchable Indexes
# Neurobiology, BIOL 417/617
Spring 1998

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<th>Lecture #</th>
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<td>01/21</td>
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<td>History of neurobiology</td>
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<td>Ion channels I</td>
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<td>Peptide transmitters; metabotropic receptors</td>
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<td>02/27</td>
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<td>Nervous system Development I</td>
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<tr>
<td>03/02</td>
<td>17</td>
<td>Nervous system Development II</td>
</tr>
</tbody>
</table>
Team members: Carla Richardson/Stephanie Dloniak

03/06  18  Gustation

03/09  19  Olfaction
●03/11  Exam 2.
03/13  Instructor OUT of Town

03/16  Spring Break
03/18  Spring Break
03/20  Spring Break

Team members: Audrey Rasmussen/Neil Wright

03/25  20  Audition
03/27  21  Visual Systems 1

03/30  22  Visual Systems 2
04/01  Research Article Discussion 4 K. E. Binns and T. E. Salt
Team members: Patricia Hamer/Jennifer Schurmeier

04/03  23  Control of Reproductive Behaviors

Team members: Erik Harrington/Gerry Frost

04/08  24  Biorhythms
●04/10  Exam 3.

Team members: **Shawna Karpovich**

04/15  25  Learning and Memory

04/17  26  Avian vocal control system

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Team members: **Andy Elsberg/Adlai Burman**

04/22  **Deadline for turning in grant proposal (grad. level)**

**Neurobiology in Real Life**

Team 1: name: **Andy Elsberg/Gerry Frost**

  topic: PTST, Depression

Team 2: name: **Neil Wright/Erik Harrington**

  topic:

Team 3: name:

  topic:

04/24  **All Campus Day**

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04/27  **Neurobiology in Real Life**

Team 4: name: **Carla Richardson/Stephanie Dloniak**

  topic: schizophrenia

Team 5: name: **Patricia Hamer/Jennifer Schurmeier**

  topic:

Team 6: name: **Emma Taylor/Rebecca Hoffman**

  topic:

04/29  **Neurobiology in Real Life**

Team 7: name: **Audrey Rasmussen/Adlai Burman**

  topic:

Team 8: name: **Shawna Karpovich**

  topic:

05/01  **Last Lecture**

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* 05/04, 10:15 am to 12:15 pm  **Final (Comprehensive) Exam**