

2014 OHSU Partnership for Science Inquiry Class Schedule

Faculty: Kathleen Beeson, Dr. Kendra Farris, Dr. Tammy Martin, Dr. Leslie Muldoon, Dr. Edward Neuwelt, Dr. James Rosenbaum, and Dr. Richard Rosenbaum

Class: Attendance is taken and participation is required. All classes meet on Mondays, from 4:30-6:30 pm during the second semester (Feb. 3-June 9, 2014). There will be no class on Feb. 17, Mar. 24 and May 26.

Homework: Written homework is due the Friday after the class in which it is assigned. Turn in all homework online using Engrade. You will get separate instructions with details about logging into Engrade. Please inform us if you have limited access to the internet or have trouble using Engrade.

Communication: We frequently use email to communicate directly with students, so please inform us if you change your email address!

PSI website: Be sure to bookmark this page and check regularly for important class information throughout the semester. <http://portland-psi.wikispaces.com/>

before MONDAY FEB 03 – Preparation

Optional reading: *Understanding Parkinson's Disease* pp 1-13 (sent via email to students)

MONDAY FEB 03 - Class

- Science Talk I: Are Clinicians Scientists?
- Student group discussions: How should we do research on Parkinson's Disease?
- Class handouts, overview, expectations, and other useful information

(No written homework due Friday, 2/7)

before MONDAY FEB 10 – Preparation

- Required reading: Golbe, L. I., et al. "Clinical Genetic Analysis of Parkinson's Disease in the Contursi Kindred." Annals of Neurology 40 (1996): 767-75.
- Required video: Science Talk II: Is Parkinson's Disease Inherited? Dr. Richard Rosenbaum (a link to the video online will be provided to students)
- Suggested reading: *Understanding Parkinson's Disease* pp. 67-76

- Fun reading: Watson, JD *The Double Helix A Personal Account of the Discovery of the Structure of DNA*
- Fun reading: Wexler, A *Mapping Fate*
- Optional video: Ellen Sidransky “The Genetics of Parkinson’s Disease.” Available at <http://www.genome.gov/27549874> or <http://www.youtube.com/watch?v=KSjXhjF54yU> (This is another example of the role of genetics in Parkinson’s Disease.)

MONDAY FEB 10 - Class

- Come early! We will be loaning books and taking student photos. (The photos will not be freely distributed, we will only allow the class faculty to use them in an effort to get to know each of you.)
- Come prepared! Be sure to have read the Golbe article and have viewed the video of Lecture #2 (the video link is on the PSI website).
- Student groups: problem sessions on genetics
- Mentor Talks

FRIDAY FEB 14 – Written Homework #1 Due

Write an essay (absolute maximum length 750 words) on the topic:

Question for American Society of Human Genetics DNA Day Essay Contest

Complex traits, such as blood pressure, height, cardiovascular disease, or autism, are the combined result of multiple genes and the environment. For ONE complex human trait of your choosing, identify and explain the contributions of at least one genetic factor AND one environmental factor. How does this interplay lead to a phenotype? Keep in mind that the environment may include nutrition, psychological elements, and other non-genetic factors. If the molecular or biological basis of the interaction between the genetic and environmental factors is known, be sure to discuss it. If not, discuss the gaps in our knowledge of how those factors influence your chosen trait.

- Essays are limited to 750 words, not including references. An essay title is optional and will be counted towards the word limit.
- Your complex trait could be parkinsonism or other conditions or traits.
- Include references to the peer reviewed medical literature.
 - For references, please use the MLA reference style. Insert the name of the author and date of publication at the end of the sentence in which the book or article is cited, like this: (Rosenbaum, 2006). The actual references are listed in alphabetical order at the end of essay. We expect each essay to include at least 2 references from the peer-reviewed medical literature as listed on PubMed. For example, you might want to cite the article on the Contursi kindred (Golbe, 1996).

References

Golbe, L. I., et al. "Clinical Genetic Analysis of Parkinson's Disease in the Contursi Kindred." Annals of Neurology 40 (1996): 767-75.

Rosenbaum, Richard B. Understanding Parkinson's Disease. A Personal and Professional View. Westport, CT: Praeger Publishers, 2006.

- We will enter the 6 best essays from our class in the DNA Day High School Student Essay Contest of the American Society for Human Genetics. The National winner gets \$400!

MONDAY FEB 17 – No Class (President’s Day)

TUESDAY FEB 18 – Check your email!

- The 12 best essays will be emailed back with comments. These 12 students will have until **FEB 22** to amend and resubmit their essays.

MONDAY FEB 24 - Class

- Science Talk III: Where in the brain is Parkinson’s disease?
- Mentor Talks

FRIDAY FEB 28 – Written Homework #2 Due

- Read Sacks, O. *Awakenings* or see the movie *Awakenings* with Robin Williams and Robert De Niro
 - Answer these questions:
 1. What was Leonard’s initial illness?
 2. What were his symptoms and problems when he was in the hospital before treatment?
 3. How was the patient able to catch the ball?
 4. What medicine was Leonard given?
 5. What were the initial benefits, side effects, and long-term results of the drug treatment?
 - Fun reading: Sacks, O. *Musicophilia*; see especially the sections on music and Parkinson’s disease, which may help answer question #3.
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MONDAY MAR 03 - Class

- Science Talk IV: Journal Club: Does an Infection Cause Parkinson's Disease?
 - Mentor Talks
 - The writers of the 6 best essays will be announced.
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FRIDAY MAR 07 – Written Homework #3 Due

- Read: Langston, Ballard, Tetrud, Irwin. Chronic Parkinsonism in humans due to a product of meperidine-analog synthesis. *Science* 1983; 219:979
 - Write a journal club report on Langston et al. The report must contain:
 1. Article citation
 2. Background
 3. Methods
 4. Results
 5. Interpretation
 6. Critique
 - Fun reading: Langston, JW and Palfreman, J. *The Case of the Frozen Addicts*
 - Optional reading: *Understanding Parkinson's Disease* pp. 60-66
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MONDAY MAR 10 - Class

- Science Talk V: The Frozen Addicts
 - Mentor Talks
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FRIDAY MAR 14 – Written Homework #4 Due

- Read: Messerli FH "Chocolate consumption, cognitive function, and Nobel laureates." *N Engl J Med.* 2012 Oct 18;367(16):1562-4.
- Write a journal club report of Messerli's paper. Use the same format that you used last week. Your interpretation and critique should include, at the very least, the answers to the following questions:
 1. Is eating chocolate associated with winning the Nobel prize?
 2. Can you quantify the association?
 3. Has the association been confirmed in many studies?
 4. Is there any relationship between when in his or her life a person eats chocolate and the chance of winning the Nobel prize?

5. Is there a dose-response relationship? (This means: does the chance of winning the Nobel vary with how much chocolate a person eats.)
 6. Are there any potential biases or weaknesses in this study?
 7. Can you identify any biological reason why chocolate might help someone win a Nobel?
 8. Can you say whether eating chocolate helps win a Nobel prize based on the data available to you? Can you think of any other explanations for the data?
- Optional reading: *Understanding Parkinson's Disease* pp. 39-54
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MONDAY MAR 17 - Class

- Science Talk VI: Association Does Not Prove Causation
 - Mentor Talks
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FRIDAY MAR 21 – Written Homework #5 Due

- Read: Cotzias GC et al. "Aromatic Amino Acids and Modification of Parkinsonism" *New England Journal of Medicine* 1967; 276:374-379
 - Write a journal club report of Cotzias et al. Use the standard journal club format.
 - Optional reading: *Understanding Parkinson's Disease* pp. 94-102
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MONDAY MAR 24 – No Class (Spring Break)

MONDAY MAR 31 - Class

- Science Talk VII: Translational Research (L-DOPA)
- Mentor Talks

(No written homework due Friday, 4/4)

before MONDAY APR 07 – Preparation

- Required reading: Shults et al. Effect of Coenzyme Q10 in Early Parkinson's Disease *Arch Neurol* 2002; 59:1541
 - Required video: "Science Talk VIII: Coenzyme Q10" Dr. Richard Rosenbaum
 - Optional reading: *Understanding Parkinson's Disease* pp. 117-121
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MONDAY APR 07 - Class

- Student discussion groups to answer the following questions:
 1. What is coenzyme Q10?
 2. Why was it chosen for trial in early Parkinson's disease?
 3. What was the method of the drug trial? Be sure to include: a) the design of the trial and b) the primary outcome variable to be measured
 4. What were the results?
 5. Critique the methods as we did for the Cotzias paper.
 6. If your grandfather had early Parkinson's disease, would you tell him to take Coenzyme Q10?
- Mentor talks

(No written homework due Friday, 4/11)

before MONDAY APR 14 – Preparation

- Required reading: The Parkinson Study Group "Effects of tocopherol and deprenyl on the progression of disability in early Parkinson's disease" NEJM 328:176-183 1993
 - Required video: Science Talk IX: What does *randomized double-blind controlled* mean? Dr. Richard Rosenbaum
 - Optional reading: *Understanding Parkinson's Disease* pp. 109-116
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MONDAY APR 14 - Class

- Student discussion groups to answer the following questions:
 1. Why were tocopherol and deprenyl chosen for the trial?
 2. What was the primary outcome measure? What were secondary measures?
 3. What were the null hypotheses?
 4. Was the null hypothesis disproved for deprenyl? For tocopherol?
 5. Was the effect of deprenyl clinically significant? Why or why not?
 - Mentor Talks and/or Student Journal Club Presentations
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FRIDAY APR 18 – Written Homework #6 Due

- Read: Freed et al. "Transplantation of embryonic dopamine neurons for severe Parkinson's disease" NEJM 2001; 344:710
- Write a journal club report on Freed et al. Use the same format that we have been using. Include in the critique a discussion of whether this study was ethical.

- Optional reading: *Understanding Parkinson's Disease* pp. 155-174
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MONDAY APR 21 - Class

- Science Talk X: Brain surgery for Parkinson's disease
- Student Presentations (includes journal club by 1-2 students on assigned gene therapy paper).

(No written homework due Friday, 4/25)

before MONDAY APR 28 – Preparation

- Optional reading: *Understanding Parkinson's Disease* pp. 177-183
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MONDAY APR 28 - Class

- Science Talk XI: My Research Proposal
- Student Presentations

(No written homework due Friday, 5/2)

before MONDAY MAY 05 – Preparation

- Optional reading: *Understanding Parkinson's Disease* pp. 102-108
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MONDAY MAY 05 - Class

- Science Talk XII: Thinking about neurotransmitters
- Student Presentations

(No written homework due Friday, 5/9)

before MONDAY MAY 12 – Preparation

- Required reading: The Nuremberg Code. 1949.
 - Suggested reading: World Medical Association, Declaration of Helsinki, 7th (Fortaleza) amendment. 2013.
 - Optional reading: Carlson et al. The revision of the Declaration of Helsinki: past, present and future. *Br J Clin Pharmacol* 2004; 57:695. (See especially the introduction and the original version of the Declaration of Helsinki in Appendix 1 of the article.)
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MONDAY MAY 12 - Class

- Guest speaker on ethics and IRB; mock IRB to discuss research proposal on gene therapy (includes research proposal by 1-2 students on gene therapy experiment)
- Student Presentations

(No written homework due Friday, 5/16)

before MONDAY MAY 19 – Preparation

- Optional reading: *Understanding Parkinson's Disease* pp. 203-214
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MONDAY MAY 19 - Class

- Science Talk XIII: Understanding Parkinson's disease, 2014
- Student Presentations
- Return loaned books

(No written homework due Friday, 5/23)

MONDAY MAY 26 – No Class (Memorial Day)

MONDAY JUN 02 - Class

- Student Presentations
- Return loaned books

(No written homework due Friday, 6/6)

MONDAY JUN 09 – Final Class

- Student Presentations
 - Return loaned books
 - **Written Research Proposals Due!**
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