Goal: This course introduces biochemical research at the University of Montana in order to familiarize biochemistry majors with the opportunities for independent research as part of their undergraduate studies. The course also acquaints students with the biochemical literature. Papers that mark significant advances in biochemistry over the last 50 years will be discussed.

When: Tuesdays from 3:00 to 3:50 pm, in Chem 204

Instructor: Bruce Bowler, Chem 310, 406-282-1883 bruce.bowler@umontana.edu

Text: Selected articles from the biochemical literature

Website: http://umonline.umt.edu/ All papers are provided on Moodle.

Course Format: The course will alternate weekly between a presentation by a faculty member on their research and discussion of a paper from the biochemical literature. In the Research presentation class period, faculty will discuss their research and then introduce the paper to be discussed the following week.

Written Assignments:
- At the end of each Research presentation class period, there will be a short quiz. The quiz question(s) may relate to the instructor’s research or to the introduction to the paper.
- The day before each Discussion class period, students will upload two or more questions about the reading assignment to the Moodle site for BCH 294. These questions will provide the starting point for the class discussion.
- A 1 to 2 page final project paper on an independent research opportunity.

Evaluation: Course is CR/NCR. Research presentation quizzes count for 40% of the grade and Discussion questions count for 40% of the grade. The final project paper counts for 20% of the grade.

Notes:
- Late assignments will be given a grade of zero.
- See Cyberbear, Catalog, and/or Student Conduct Code for policies regarding incomplete grades, disability accommodations, definition and potential consequences of plagiarism, and late-drop requirements.

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<th>Month</th>
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<tr>
<td>January</td>
<td>15</td>
<td>Discussion of independent research opportunities and final project papers by Bruce Bowler, Chemistry &amp; Biochemistry</td>
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<td>22</td>
<td>Research presentation by Sandy Ross, Chemistry &amp; Biochemistry</td>
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<td>• Protein:DNA interactions</td>
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<td>» Introduction to Watson and Crick and the DNA Double helix</td>
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<td>February</td>
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<td>Research presentation by Ekaterina Voronina, Division of Biological Sciences</td>
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<td>• Protein-RNA Interactions</td>
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<td>» Introduction to Blobel’s paper: poly-A binding protein</td>
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| 12    | »    | Discussion of Blobel’s paper: poly-A binding protein  
| 19    | »    | Research presentation by Klara Briknarova, Chemistry & Biochemistry  
• NMR structural studies on proteins  
» Introduction to Kurt Wüthrich and 2D NMR of proteins |
| 26    | »    | Discussion of Kurt Wüthrich and 2D NMR of proteins  
| March 5  | »    | Research presentation by Kasper Hansen, Biomedical and Pharmaceutical Sciences  
• Structure and function of ligand-gated ion channels  
» Introduction to Clements’ paper: Measurement of neurotransmitter decay |
| 12    | »    | Discussion of Clements’ paper: Measurement of neurotransmitter decay  
| 19    | »    | Final project papers Bruce Bowler, Chemistry & Biochemistry  
Each student will give a brief summary (2 – 3 min) of their plans for their final project; there will be time for questions about the final project paper. |
| 26    | »    | Spring Break, no class |
| April 2  | »    | Research presentation by Brent Ryckman, Division of Biological Sciences  
• Human cytomegalovirus (HCMV) replication  
» Introduction to the Hershey-Chase experiment |
| 9     | »    | Discussion of the Hershey-Chase experiment  
| 16    | »    | Research presentation by Travis Hughes, Biomedical and Pharmaceutical Sciences  
• Nuclear receptors  
» Introduction to: |
| 23    | »    | Discussion of tbd. |
| 30    | Exam Period: Final project papers should be uploaded to Moodle by 6 pm on Tuesday, April 30. |