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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| January | 23  | Discussion of independent research opportunities and final project papers  
by Bruce Bowler, Chemistry & Biochemistry |
|        | 30  | Research presentation by Sandy Ross, Chemistry & Biochemistry  
• Protein:DNA interactions  
• Introduction to Watson and Crick and the DNA Double helix |
| February | 6   | Discussion of Watson and Crick and the DNA Double helix  
Reading: Watson, J.D.; Crick, F.H.C. A Structure for Deoxyribose Nucleic Acid  
|        | 13  | Research presentation by Ekatarina Voronina, Division of Biological Sciences  
• Protein-RNA Interactions  
• Introduction to Blobel’s paper: poly-A binding protein |
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| 20    | 20  | » *Discussion* of Blobel’s paper: poly-A binding protein  
| 27    |     | » *Research presentation* by Klara Briknarova, Chemistry & Biochemistry  
- NMR structural studies on proteins  
- Introduction to Kurt Wüthrich and 2D NMR of proteins |
| March | 6   | » *Discussion* of Kurt Wüthrich and 2D NMR of proteins  
| 13    |     | » *Research presentation* by Kasper Hansen, Biomedical and Pharmaceutical Sciences  
- Structure and function of ligand-gated ion channels  
- Introduction to paper tba |
| 20    |     | » *Discussion* of paper tba  
Reading: tba. |
| 27    |     | » Spring Break, no class |
| April | 3   | » *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. |
| 10    |     | » *Research presentation* by Brent Ryckman, Division of Biological Sciences  
- Human cytomegalovirus (HCMV) replication  
- Introduction to the Hershey-Chase experiment |
| 17    |     | » *Discussion* of the Hershey-Chase experiment  
| 24    |     | » *Research presentation* by Steve Lodmell, Division of Biological Sciences  
- RNA viruses  
- Introduction to Harry Noller’s paper: Peptidyl transferase activity of the ribosome |
| 8     |     | Exam Period: Final project papers should be uploaded to Moodle by 5 pm on Tuesday, May 8. |