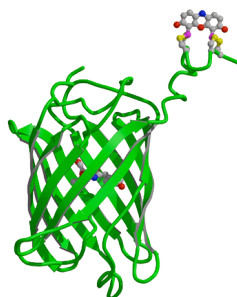


Chem 410 Spring 2008 Biochemistry II

Dr. Joseph J. Provost
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www.mnstate.edu/provost
Phone: 477-5058 / 477-4323
9:30 – 10:20
SL 102



GFP: The remarkable brightly glowing green fluorescent protein, GFP, was first observed in the beautiful jellyfish, in 1962. Since then, this protein has become one of the most important tools used in contemporary bioscience. With the aid of GFP, researchers have developed ways to watch processes that were previously invisible, such as the development of nerve cells in the brain or how cancer cells spread.

(nobelprize.org)

Office Hours: Mon 10:30-11:30 Tues 8-9 Wed 10:30-11:30 Fri 8-9 & 10:30-12:30

I will be in either my office (HA 407) or the lab (SL 208) during the listed hours. Please feel free to visit any of these times but you are welcome to make an appointment if you wish. You should make an appointment or contact me by e-mail before coming in. I don't care how busy I am I will make time for your concerns.

Class Description: A survey of the chemistry and metabolism of living systems and nucleic acids biochemistry. Topics include biosynthetic biochemical pathways and nucleic acids biochemistry, signal transduction, biochemistry and cancer, protein synthesis and recombinant DNA theory. This course is not an approved biology elective for the Biology Major.

Learning Objectives: See the web pages for learning objectives for each semester.

Resources:

(a) Lectures: The most important topics are always identified in class, and are usually discussed in detail. Attending class and accurate note-taking are the only way to learn the material.

(b) Textbook (Fundamentals of Biochemistry; Voet, Voet and Pratt) : The reference chapters will clarify points, fill in gaps, and extend your knowledge. Portions of selected lectures will come from current literature and handouts. Reading the book is required, not suggested.

(c) Help sessions: We will have the help sessions prior to each test as the schedule allows. Please do not hesitate to make an appointment to ask questions (or during lectures). I believe that there is no such thing as a stupid question. Your questions are the best guide I have to your particular needs. If you do not know enough to phrase a question (a situation we all experience at times then meet with me and we can work it out.

Make-up examinations: These will be given only for major, documented emergencies (severe illness, death in family...) **prior notice** is required.

Grades: Most of your grade will be based on the exams. There will be four regular examinations the fourth test will include a cumulative section. Tests grades will be normalized to the high score for each test.

- Each examination will be worth 200 pts regardless of the points for each test. A portion of the last test will be cumulative. Tests are worth ~90% of your grade.
- There are several assignments. Worth ~10% of your grade.
- There will be several opportunities for extra credit. Each event will be announced in class by Dr. Provost or on the web. Each event will be worth three points for a total of 21 maximum points accumulated throughout the semester. Possible ~2% bonus pts.
- There will be a total of 1115 points depending on the homework. The cut off are A-90%, B-80%, C-70%, D-60% and F-50%. These are tentative and may be decreased but not increased. Learning objectives and chapter questions will be provided but not graded.

Homework/Activities: This will be worth 90 - 120 points. About 10% of your total grade.

- Thermodynamic homework – **DUE Jan 21** (35 pts).
- PEPCK Journal article review - **DUE Feb 2** (20 pts).
- Pathways: There will two or three times when you will be required to write out the pathways. Each will be worth 10 points.
- Pentose Phosphate Pathway (HMS Shunt) – 1 pg overview of the pathway (10 pts)
- MSUM Academic Conference **21 April, 2009**. I, you, we, all fully supportive of scientific and creative research at this university and aren't you glad you knew that. We will not have class on this day. You will be expected to attend / visit 2 posters AND 1 oral presentation. The report form is on the web. (15 points). **Due 24 April**.
- You are required to attend **two** of the several seminars offered throughout the semester. To get the points you must attend and submit a short synopsis of the talk with a review of the main point of the talk. See web for handout (5 pts each).

Academic Honesty: See MSUM Student Absence Policy in the student handout or at www.mnstate.edu/sthandbook/policy/index.htm

Special Accommodations: Students with disabilities who believe that they may need an accommodation in this class are encouraged to contact Greg Toutes, Coordinator of Disabilities Services, at 477-2655 (phone) or 477-2047 (TTY), CMU 222, as soon as possible to ensure that accommodations are implemented in a timely fashion.

<u>Lecture</u>		<u>Topic</u>	<u>Chapter</u>
Jan 12 Mon	1	Introduction / Metabolism and Thermodynamics	14
Jan 14 Wed	2	Thermodynamics and Intermediates	14
Jan 16 Fri		Glycolysis	14
Jan 19 Mon	3	MLK Day	
Jan 21 Wed	4	Glycolysis	14
Jan 23 Fri	5	Diabetes and glucose transport	14
Jan 26 Mon	6	Gluconeogenesis	15
Jan 28 Wed	7	Glycogen metabolism	15
Jan 30 Fri	8	Glycogen metabolism	15
Feb 2 Mon	9	Regulation of Glycogen Metabolism	15
Feb 4 Wed		Exam I	
Feb 6 Fri	10	Citric Acid Cycle	16
Feb 9 Mon	11	Citric Acid Cycle	16
Feb 11 Wed	12	The Mitochondria (ETS pt 1)	17
Feb 13 Fri	13	Electron Transport (ETS pt 1)	17
Feb 16 Mon	14	Electron Transport (ETS pt 2)	17
Feb 18 Wed	15	Oxidative Phosphorylation (ETS pt 3)	17
Feb 20 Fri	16	Oxidative Phosphorylation (ETS pt 3)	17
Feb 23 Mon	17	Control of ATP Production (ETS pt 3)	17
Feb 25 Wed		Exam II	
Feb 27 Fri	18	Lipid Digestion and Transport (FA Metabolism I)	10 / 19
March 2 Mon	19	Lipoprotein metabolism (FA Metabolism I)	10 / 19
March 4 Wed	20	Fatty Acid Oxidation (FA Metabolism 2)	19
March 6 Fri	21	Fatty Acid Biosynthesis (FA Metabolism 2)	19
March 9 Mon	22	FA Metabolism	15 / 21
March 11 Wed	23	Regulation of metabolism (Integration of Met.)	
March 13 Fri		Tissue specialization (Integration of Met.)	15 / 21
March 16-20	24	Spring Break	
March 23 Mon	25	Signal Transduction I: Hormone Action	21
March 25 Wed	26	Signal Transduction II: Protein Kinases	21
March 27 Fri		Signal Transduction II: Protein Kinases	21
March 30 Mon		Exam III	
April 1 Wed	28	Signal Transduction III: G Proteins	21
April 3 Fri	29	Signal Transduction III: G Proteins	21
April 6 Mon	30	Signal Transduction IV: Small G Proteins	21
April 8 Wed	31	Signal Transduction V: Phospholipases	21
April 10 Fri		Easter Break	
April 13 Mon		Easter Break	
April 15 Wed	33	Signal Transduction VI: Signaling Pathways	21
April 17 Fri	34	Signal Transduction VI: Signaling Pathways	21
April 20 Mon	35	The Biochemistry of Cancer I	pp.682
April 22 Wed	36	The Biochemistry of Cancer II	pp.916
April 24 Fri	37	The Biochemistry of Cancer III	handout
April 27 Mon	38	Nutritional Biochemistry or Neurochemistry	Web book
April 29 Wed	39	Nutritional Biochemistry or Neurochemistry	Web book
May 1 Fri	40	Nutritional Biochemistry or Neurochemistry	NCBI Web
May 4 Mon		Nutritional Biochemistry or Neurochemistry	NCBI Web
May 6 Wed		Study Day	
May 11 Mon		Exam IV 9:00 am - 11:00 am	