Chemistry 452: Lecture Schedule for second half of the semester  
Dr. Rowena Matthews  
MWF 9:10-10:00 AM, Room 1300 Chemistry

Course pack for my section of Chem452 is available from Grade A Notes at Ulrich's Bookstore for $34.45.

Rowena G. Matthews  
Professor of Biological Chemistry  
4028c Chemistry  
Phone: 764-9459  
E-mail: rmatthew@umich.edu  
Office Hours: Tuesdays 12:00-1:00 (starting 2/23) or by appointment. 4028c Chemistry

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture Topic</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/16</td>
<td>Third take home assignment distributed.</td>
<td></td>
</tr>
<tr>
<td>2/16</td>
<td>Glutamate dehydrogenase Transaminase mechanisms</td>
<td>Chapter 24.1 (Voet &amp; Voet)</td>
</tr>
<tr>
<td>2/18, 2/21</td>
<td>Allosteric regulation of proteins Looking again at the Monod-Wyman-Changeux model. Aspartate transcarbamoylase</td>
<td>Chapters 9.4 and 12.4 *course pack</td>
</tr>
<tr>
<td>2/23</td>
<td>Third take home assignment due at class</td>
<td></td>
</tr>
<tr>
<td>2/23</td>
<td>Regulation of enzyme activity by covalent modification. Glutamine synthetase</td>
<td>Chapter 24.5 *course pack</td>
</tr>
<tr>
<td>2/25</td>
<td>Amino acid degradation. The urea cycle.</td>
<td>Chapter 24.2, 24.3</td>
</tr>
<tr>
<td>3/13: 6-8pm</td>
<td>Exam II. Will cover material through lecture on 2/25</td>
<td></td>
</tr>
</tbody>
</table>

INTEGRATION OF METABOLISM

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture Topic</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/6, 3/8, 3/10</td>
<td>Transcriptional regulation in prokaryotes</td>
<td>Chapter 29.3 *course pack</td>
</tr>
<tr>
<td>3/13</td>
<td>The lactose repressor protein and negative transcriptional regulation. cAMP and positive regulation of lactose assimilation. Inducers &amp; repressors are allosteric effectors of DNA-binding proteins. DNA looping and transcriptional repression.</td>
<td></td>
</tr>
<tr>
<td>3/15</td>
<td>Lambda phage and the regulation of its life cycle</td>
<td>Chapter 32 Ptashne: The Genetic Switch (on reserve)</td>
</tr>
<tr>
<td>3/17, 3/20</td>
<td>Fourth take-home distributed</td>
<td></td>
</tr>
</tbody>
</table>
3/22, 3/24  Regulation of development in *Drosophila melanogaster*  Chapter 33.4

3/27  Chromosome structure and genomic organization in eukaryotes. Gene-chip technology.  Chapter 33.2
(2 hr lecture 8-10 am)  Basic principles of eukaryotic gene expression. Enhancers, multiple weak activator binding sites, and assembly of the preinitiation complex. How repressors and activators work in eukaryotic organisms.  *course pack Chapter 33.3

3/28  No office hours

3/29  No lecture. Fourth take-home due in 4028 Chem by 5 pm.


4/3, 4/5  Hormonal control of metabolism. The β-adrenergic receptor, G proteins and regulation of adenylate cyclase activity. Transducin and response to light  Chapter 34.4  *course pack

4/7 (Peliska)  Prokaryotic phages  Chapter 32

4/12, 4/10 (Peliska)  Eukaryotic viruses  Chapter 32

4/14  Review session

4/25  FINAL EXAM, 4-6 PM
The exam will cover material presented in lectures from 3/6-4/12
READING ASSIGNMENTS IN COURSE PACK (available from Uhlrichs)

2/18
J. Monod, J. Wyman, and J.-P. Changeux
On the nature of allosteric transitions: A plausible model

2/21
J. Foote and H. K. Schachman
Homotropic effects in aspartate transcarbamoylase
What happens when the enzyme binds a single molecule
of bi-substrate analog N-phosphonacetyl-L-Aspartate?

E. R. Kantrowitz and W. N. Lipscomb
Escherichia coli aspartate transcarbamoylase: The molecular basis
for a concerted allosteric transition
Trends in Biochemical Sciences 15:53-59 (1990)

2/23
H. Schutt and H. Holzer
Biological function of the ammonia-induced inactivation of glutamine
synthetase in Escherichia coli

3/10
M. Lewis, G. Chang, N. C. Horton, M. A. Kercher, H. G. Pace,
M. A. Schumacher, R. G. Brennan, and P. Lu
Crystal structure of the lactose operon repressor and its complexes with
DNA and inducer
Science 271:1247-1254

3/13
S. Oehler, E. R. Eisman, H., Krämer, and B. Müller-Hill
The three operators of the lac operon cooperate in repression
EMBO J. 9:973-979 (1990)

3/15
Ptashne, M.
The Genetic Switch: Phage λ and higher organisms
Appendix One: Designing an efficient DNA-binding protein
pp. 177-183
Cell Press, Cambridge

3/27
J. L. DiRisi, V. R. Iyer, and P. O. Brown
Exploring the metabolic and genetic control of gene expression on a

3/31
R. D. Klausner, T. A. Roualt, and J. B. Harford
Regulating the fate of mRNA:the control of cellular iron metabolism