

CELL BIOLOGY 301

Course #: 34-BIOL-301
 Office & hrs: EDS 215 P, 12-1, M-F
 email: David.Fankhauser@uc.edu
 home page: <http://Biology.clc.uc.edu/Fankhauser>

SYLLABUS
 Autumn Quarter
 2008-2009

David B. Fankhauser, Ph.D.
 Professor of Biology/Chemistry
 U.C. Clermont College
 Batavia OH 45103

COURSE OBJECTIVES FOR CELL BIOLOGY 301: To learn: 1) the history of our understanding of the cell, 2) the structure and function of biomacromolecules (*i.e.*, protein, nucleic acids, polysaccharides, lipids), 3) principles of enzymology, 4) elements of bioenergetics, 5) cell organelle structure & function (in particular glycolysis, respiration and photosynthesis), 6) regulation/coordination of cellular processes, 7) cytology nomenclature and its etymology.

REQUIRED TEXT:

Becker, Wayne M., Kleinsmith, Lewis J., Hardin, Jeff, *The World of the Cell*, 7th Ed., Benj/Cummings Pub., (2008).

OPTIONAL RESOURCE TEXT:

Borror, Donald J., *Dictionary of Word Roots and Combining Forms*, Mayfield Pub., (1960).

Please fasten this calendar inside the front cover of your text, bring the text to class daily.

| MONDAY | WEDNESDAY | FRIDAY |
|--|--|---|
| Lab/recitation meets on Tuesday afternoon, 2:00-5:00 (Pop pre-lab quizzes will happen.) | 9/24 Introduction to Course History: the threads of Cytology 1-13 | 9/26 Short History of Biochemistry 18-37 (read for chemistry review) |
| 9/29 Cellular Macromolecules I: Proteins 41-54 [9/30: QUIZ I] | 10/1 Cellular Macromolecules II: Nucleic acids & Polysaccharides 54-66 | 10/3 Cellular Macromolecules III: Lipids 66-72 |
| 10/6 Cellular Components Bioenergetics 75-125 | 10/8 Enzymes: protein catalysts 129-138 | 10/10 Enzyme Kinetics Classes of Enzyme Inhibitors 138-142 |
| 10/13 Enzyme Regulation Lineweaver-Burk Plots 142-152 [10/14: QUIZ II] | 10/15 Membrane Structure 156-173 | 10/17 Membrane Proteins 173-190 |
| 10/20 Movement across a membrane 194-206 | 10/22 Active Transport, Permeases 207-220 NOTEBOOKS DUE | 10/24 Cell energy, ATP 224-231 |
| 10/27 Glycolysis and fermentation 231-247 [NOTEBOOKS RETURNED 10/28] | 10/29 Respiration: Mitochondrion structure, TCA cycle 252-269 | 10/31 Electron Transport Oxidative Phosphorylation 269-279 Midterm Review questions? |
| 11/3 MIDTERM [10/30: Midterm returned, discussed] | 11/8 Chemiosmotic ATP synth. Intro to Photosynthesis 279-297 | 11/10 Chloroplast structure Photosynthesis I: Light Reactions 297-309 |
| 11/10 Photosynthesis II: Dark Rxns: reductive carboxylation 309-321 | 11/12 Intracellular Compartments Endoplasmic reticula 324-337 | 11/14 Golgi Apparatus 337-342 |
| 11/17 Exocytosis and endocytosis 342-352 [11/18: QUIZ III] | 11/19 Lysosomes & Peroxisomes 352-362 | 11/21 The Cytoskeleton 425-449 |
| 11/24 Motility and Contractility 452-477 | 11/26 Cell Junctions and Walls 480-506 NOTEBOOKS DUE | 11/28 THANKS FOR EVERYTHING (No classes, among others) |
| 12/1 The Nucleus, Cell Cycle [11/27 QUIZ IV] 530-572 [NOTEBOOKS RETURNED] | 12/3 Mitosis and its regulation 572-596 | 12/5 Catch up day... Review for Final Bring your questions from reviewing. |
| 12/4 Tuesday FINAL EXAM 4:00 - 6:00 (in Lab) (Slot for classes meeting during 3:00) | Assigned readings are to be complete prior to class on the date in which they appear. Grades are determined by your position on a histogram of student cumulative points. For sophomore courses, midline generally marks the middle of the B. See <i>How To Take A Fankhauser Course</i> for additional information and suggestions. | |