

Prokaryotic Molecular Biology - MMBB 485/585

Text: Essentials of Molecular Biology

http://biology.jbpub.com/molecularbio/sample_chapters.cfm

Spring 2006; TR 9:30 AM; LSS163

Professors: Hartzell and Minnich

Office hours by appointment

Jan 12	Course Introduction		Chapter 1
Jan 17	Function of macromolecules		
Jan 19		Genetic material	99-116
Jan 24		Avery classical paper	Handout
Jan 26		Avery classical paper	Handout
Jan 31		DNA replication	118-143
Feb 2		Transcription	146-167
Feb 7		Cont	
Feb 9		Paper	Handout
Feb 14		Paper	Handout
Feb 16		Translation	168-188
Feb 21		Translation	
Feb 23		Paper	
Feb 28		Mutations, DNA repair	192-216 (Fortunato)
	Coordination of Macromolecular Function		
Mar 2		Regulation of Gene Activity	222-245
Mar 7		Paper	Handout
Mar 9		Paper	Handout
Mar 21		Genomics and Proteomics	284-299
Mar 23		Paper	Handout
Mar 28		Paper	Handout
	Experimental Manipulation		
Mar 30		Transposons, plasmids, phage	304-341
Apr 4		Paper	Handout
Apr 6		Genetic engineering	346-366
Apr 11		Paper	Handout
Apr 13		Molecular biology	370-393
	Special topics		
Apr 18		Protein secretion	Handout
Apr 20		Protein secretion	Handout
Apr 25		Symbiosis	Handout
Apr 27		Symbiosis	Handout
May 2		Microbial model systems	Handout
May 4		Microbial Model systems	Handout

There will be 3-4 take home exams. If there is evidence of copying, you will receive a failing grade on that exam.

Expectations for reading the papers

Work in groups

Read the paper and look to the textbook for background

Ask what the authors were trying to prove

Dissect the experiments (how was the experiment done? look carefully at results and read the discussion – what did the authors conclude from their results?)

Grading:

90-100%	A
80-90%	B
70-80%	C
60-70%	D
<60%	F

Academic Dishonesty. Acts of cheating or plagiarism can result in an automatic 0 for that exam or assignment. A zero on any one exam or assignment can result in an automatic F as a final grade in the course. Please be aware that all parties involved in the act of cheating or plagiarism will be penalized. Cheating refers to the acquisition of answers to test questions or assigned materials in a dishonest fashion. Plagiarism is defined as 1) the use of another student's writing as your own and/or 2) the use of writing from published sources without citation. Plagiarism includes copying or paraphrasing another's writing with only slight changes of wording.

Required reading for MMBB485/585

[Reprinted from **THE JOURNAL OF EXPERIMENTAL MEDICINE**, February 1, 1944,
Vol. 79, No. 2, pp. 137-158]

**STUDIES ON THE CHEMICAL NATURE OF THE SUBSTANCE
INDUCING TRANSFORMATION OF PNEUMOCOCCAL TYPES**

**INDUCTION OF TRANSFORMATION BY A DESOXYRIBONUCLEIC ACID FRACTION
ISOLATED FROM PNEUMOCOCCUS TYPE III**

**By OSWALD T. AVERY, M.D., COLIN M. MacLEOD, M.D., AND
MACLYN McCARTY,* M.D.**

(From the Hospital of The Rockefeller Institute for Medical Research)

PLATE 1

(Received for publication, November 1, 1943)

The Replication of DNA in *Escherichia coli*

Matthew Meselson; Franklin W. Stahl

Proceedings of the National Academy of Sciences of the United States of America, Vol. 44, No. 7 (Jul. 15, 1958), 671-682.

Stable URL:

<http://links.jstor.org/sici?sici=0027-8424%2819580715%2944%3A7%3C671%3ATRODIE%3E2.0.CO%3B2-Y>

Proceedings of the National Academy of Sciences of the United States of America is currently published by National Academy of Sciences.



AN UNSTABLE INTERMEDIATE CARRYING INFORMATION FROM GENES TO RIBOSOMES FOR PROTEIN SYNTHESIS

By DR. S. BRENNER

Medical Research Council Unit for Molecular Biology, Cavendish Laboratory,
University of Cambridge

DR. F. JACOB

Institut Pasteur, Paris

AND

DR. M. MESELSON

Gates and Crellin Laboratories of Chemistry, California Institute of Technology,
Pasadena, California

1961 *Nature*
190:576

Community Proteomics of a Natural Microbial Biofilm

Rachna J. Ram,¹ Nathan C. VerBerkmoes,^{3,4} Michael P. Thelen,^{1,6}
Gene W. Tyson,¹ Brett J. Baker,² Robert C. Blake II,⁷
Manesh Shah,⁵ Robert L. Hettich,⁴ Jillian F. Banfield^{1,2*}

Using genomic and mass spectrometry-based proteomic methods, we evaluated gene expression, identified key activities, and examined partitioning of metabolic functions in a natural acid mine drainage (AMD) microbial biofilm community. We detected 2033 proteins from the five most abundant species in the biofilm, including 48% of the predicted proteins from the dominant biofilm organism, *Leptospirillum* group II. Proteins involved in protein refolding and response to oxidative stress appeared to be highly expressed, which suggests that damage to biomolecules is a key challenge for survival. We validated and estimated the relative abundance and cellular localization of 357 unique and 215 conserved novel proteins and determined that one abundant novel protein is a cytochrome central to iron oxidation and AMD formation.

Science 2005
308: 1915

SsrA-mediated tagging and proteolysis of LacI and its role in the regulation of the *lac* operon. 2000
Abo, T., Inada, T., Ogawa, K., Aiba, H. The EMBO J. **19**:3762-3769

JOURNAL OF BACTERIOLOGY, June 2003, p. 3567-3574
0021-9193/03/\$08.00+0 DOI: 10.1128/JB.185.12.3567-3574.2003
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Vol. 185, No. 12

Flagellar Phase Variation in *Salmonella enterica* Is Mediated by a Posttranscriptional Control Mechanism

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