

Reading

Textbook: B.R. Glick and JJ Pasternak (2003) Molecular Biotechnology, ASM Press.

Reader Assignments: Reader for BME155/255, available from Bay Tree Bookshop

(Schedule of reading assignments provided below.)

Students may also be given sets of reading assignments from different online sources. These will include journal articles and patents that can be downloaded from the UCSC library. These assignments will be made available on the course webpage.

URLs of Interest

www.biospace.com

Biospace industry and research news, careers

www.ich.org

ICH (International Conference on Harmonisation), worldwide regulatory oversight

www.fda.gov

FDA (Food and Drug Administration), USA's national regulatory oversight

www.cdc.gov

CDC (Centers for Disease Control and Prevention)

www.who.int

WHO (World Health Organization)

Biotechnology & Drug Development, BME 155 / BME 255 Course Reading Assignments

Spring 2007

Week	Content / Title	Pages*	Notes
		T = textbook, R = reader	
1	The Molecular Biotechnology Revolution	T 1-13	
	Molecular Biotechnology Biological Systems	T 14-22	
	DNA, RNA, and Protein Synthesis	T 23-46	(review)
	Construction of Biologically Functional Bacterial Plasmids <i>In Vitro</i>	R 107-112	Optional
2	Recombinant DNA Technology	T 47-90	
	Chemical Synthesis, Sequencing, and Amplification of DNA	T 91-120	
	Chemical DNA Synthesis and Recombinant DNA Studies	R 115-120	
	Primer-Directed Enzymatic Amplification of DNA with a Thermostable DNA Polymerase	R 123-128	Optional
3	Manipulation of Gene Expression in Prokaryotes	T 121-161	
	Heterologous Protein Production in Eukaryotic Cells	T 163-189	
	Transformation of Mammalian Cells with Genes from Prokaryotes and Eucaryotes	R 131-139	Optional
	Isolation of Chinese Hamster Cell Mutants Deficient in Dihydrofolate Reductase Activity	R 143-148	Optional
4	Directed Mutagenesis and Protein Engineering	T 190-223	

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5	Economic Considerations in Medical Biotechnology	R 1-6	
	Product Development & New Drug Approval	R 9-18	
	Pharmacokinetics and Pharmacodynamics of Peptide and Protein Drugs	R 21-44	Optional
6	Large-Scale Production of Proteins from Recombinant Microorganisms	T 481-509	
	Production and Downstream Processing of Biotech Compounds	R 47-62	
	Challenges and Issues in the Development of Formulations of Protein Pharmaceuticals	R 65-79	
	Good Manufacturing Practices: Regulatory Requirements	R 83-94	Optional
	Manufacture of Large Molecule APIs (Recombinant DNA Methods)	R 97-103	Optional
7	Vaccines	T 309-338	
	Molecular Diagnostics	T 227-232	
	Protection of Mice from Lethal <i>Herpes simplex</i> Virus Infection by Vaccination with a Secreted Form of Cloned Glycoprotein D	R 151-156	
	Glycoprotein-D-Adjuvant Vaccine to Prevent Genital Herpes	R 159-168	
8	Therapeutic Agents	T 256-307	
	Continuous Culture of Fused Cells Secreting Antibody of Predefined Specificity	R 177-179	
	Reshaping Human Antibodies for Therapy	R 191-196	
	Treatment of Patients With Low-Grade Lymphoma With the Combination of Chimeric Anti-CD20 Monoclonal Antibody and CHOP Chemotherapy	R 233-241	
	Generation of Antibody Activity from Immunoglobulin Polypeptide Chains Produced in <i>Escherichia coli</i>	R 183-188	Optional
9	Soluble Tumor Necrosis Factor (TNF) Receptors Are Effective Therapeutic Agents in Lethal Endotoxemia and Function Simultaneously as Both TNF Carriers and TNF Agonists	R 207-220	
	Treatment of Rheumatoid Arthritis With a Recombinant Human Tumor Necrosis Factor Receptor (p75)-Fc Fusion Protein	R 223-229	

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	Humanization of an Anti-p185HER2 Antibody for Human Cancer Therapy	R 283-288	
	Humanization of an Anti-Lymphocyte Function-Associated Antigen (LFA)-1 Monoclonal Antibody and Reengineering of the Humanized Antibody for Binding to Rhesus LFA-1	R 245-254	
	Efalizumab: An Overview	R 269-280	
	Biological Properties of a CD4 Immunoadhesin	R 171-174	Optional
	Protection Against Endotoxic Shock by a Tumor Necrosis Factor Receptor Immunoadhesin	R 199-204	Optional
10	Use of Chemotherapy Plus a Monoclonal Antibody Against HER2 for Metastatic Breast Cancer That Overexpresses HER2	R 291-300	
	From the Molecule to the Clinic – Inhibiting HER2 to Treat Breast Cancer	R 303-304	
	Inhibition of Vascular Endothelial Growth Factor-Induced Angiogenesis Suppresses Tumour Growth <i>In Vivo</i>	R 307-310	
	A Randomized Trial of Bevacizumab, an Anti-Vascular Endothelial Growth Factor Antibody, for Metastatic Renal Cancer	R 323-330	
	Humanization of an Anti-Vascular Endothelial Growth Factor Monoclonal Antibody for the Therapy of Solid Tumors and Other Disorders	R 313-319	Optional