

SES Microbial Methods

Readings 2011

There are no required textbooks in this course, but *Brock Biology of Microorganisms*, 9th ed. by Madigan, Martinko, and Parker (2000) is highly recommended (ISBN: 0130819220)

Source for Topic	Section	pp.
1: Introduction		
Madigan, Martinko and Parker (2000) <i>Brock Biology of Microorganisms</i> , 9th Ed.	1.2 Microorganisms as cells	4 - 6
	1.3 Elements of cell and viral structure	6 - 8
	1.4 Evolutionary relationships among living organisms	8 - 11
	1.5 Microbial populations, communities and ecosystems	11 - 12
	1.6 Laboratory culture of microorganisms	12 - 14
	3.4 Overview of cell structure and the significance of smallness	57 - 59
	4.1 An overview of metabolism	103 - 104
	4.2 Microbial nutrition	104 - 106
	12.3 Eukaryotes and organelles	430 - 432
	12.4 Evolutionary chronometers	432 - 434
	Figure 12.9	435 - 435
	12.7 Microbial phylogeny revealed by ribosomal (stop after organelles)	439 - 440
	15.1 Energy conservation and C metabolism	574 - 575
	16.0-16.3 Microbial Ecology	642 - 648
	16.9 Terrestrial environments	662 - 663
	16.10 Aquatic habitats	665 - 667
16.15 Rumen Microbial Ecosystem	681 - 685	
17.2 Phylogenetic Overview of Eukarya	724 - 725	
2: Bacterial abundance		
Porter & Feig (1980) <i>Limnology and Oceanography</i> 25	The use of DAPI for identifying and counting aquatic microflora	943 - 948
<i>Brock Biology of Microorganisms</i> , 9th Ed.	3.1 Microscopy	50 - 53
	5.4 Measurement of growth	141 - 145
	16.5 Viability and quantification using staining techniques	653 - 654
	24.8 Public health and water quality	974 - 976
	24.9 Waterborne diseases	976 - 980
3: Bacterial production		
<i>Brock Biology of Microorganisms</i> , 9th Ed.	5.1 Overview of cell growth	136 - 137
	5.2 Population growth	137 - 139
	16.7 Microbial activity measurements: radioisotopes	658 - 659
Simon&Azam (1989) <i>Marine Ecology Progress Series</i> 51	Protein content and protein synthesis rates of planktonic marine bacteria	201 - 213

4: Extracellular Enzyme Assays

<i>Brock Biology of Microorganisms, 9th Ed.</i>	4.5 Catalysis and enzymes	110 - 112
Lehninger (1979) <i>Biochemistry</i>	Ch 8. Enzymes: kinetics and inhibition	183 - 195
H.-G. Hoppe (1993) <i>Aquatic microbial ecology</i>	Ch 48 Use of fluorogenic model substrates for extracellular activity measurements of bacteria	423 - 431

5: Chemolithotrophy

<i>Brock Biology of Microorganisms, 9th Ed.</i>	4.4 Energetics	108 - 109
	4.6 Oxidation-reduction	112 - 114
	4.14 An overview of alternate modes of energy generation	129 - 130
	13.1 Purple phototrophic bacteria	455 - 461
	13.2 The Nitrifying bacteria	461 - 462
	13.3 Sulfur and Fe oxidizing bacteria	462 - 465
	13.5 Methanotrops and Methylootrophs	467 - 470
	15.9 Chemolithotrophy	592 - 594
	15.11 Oxidation of reduced sulfur compounds	595 - 598
	15.15 Anaerobic respiration	605 - 606
	16.13 The carbon cycle	676 - 677
	16.14 Ecology of syntrophy and methanogenesis	677 - 681

6: Microbial food webs: Flagellate and ciliate grazing on bacteria

Caron, D.A. (1997) In Hurst et al. <i>Manual of Environmental Microbiology</i> .	Chap 30. Protistan community structure	284 - 294
Azam et al. (1983) <i>Marine Ecology Progress Series 10</i>	The ecological role of water-column microbes in the sea	257 - 263

7: Molecular techniques

Head, Saunders, Pickup (1998) <i>Microbial Ecology 35</i>	Microbial evolution, diversity, and ecology: a decade of ribosomal RNA analysis of uncultivated microorganisms	1 - 21
MoBio: Soil DNA isolation kit	Instruction manual	1 - 8

8: Microbial food webs: bacteria phytoplankton competition

Caron et al. (1988) <i>Hydrobiologia 159</i>	Experimental demonstration of the roles of bacteria and bacterivorous protozoa in plankton nutrient cycles.	27 - 40
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