

Ch. 8 (Microbial Genetics):

Be able to define the following terms:

Chromosome	Mutant strain	Replication
Competent	Mutation	Traits
Constitutive genes	Phenotype	Transcription
Gene	Plasmid	Transfection
Genetics	Polyribosome	Translation
Genome	Recombinant	Wild type strain
Genotype	Recombination	
Mutagen	Regulatory genes	

Know the following concepts:

1. Be prepared to differentiate the genomic makeup of eukaryotes, prokaryotes and viruses
2. Be familiar with the structure of DNA and RNA (purines, pyrimidines, nucleotides, base pairing rules, antiparallel structure) (helpful self-review)
3. Be prepared to describe the process of replication and be able to name each of the enzymes involved and describe their function (helpful self-review)
4. Be prepared to describe the process of transcription and translation, including the name of each enzyme and describe their function (helpful self-review)
5. Know the structure and function of the bacterial chromosome as compared to eukaryotic (i.e. histone like proteins, circular, no introns, found in nucleoid region of cytoplasm)
6. Be able to differentiate the function of regulatory genes vs. structural genes
7. Be prepared to describe a polyribosomal complex and why this only occurs in bacteria
8. Be able to state some of the differences between bacteria and eukaryotes during transcription and translation (see table)
9. Have an understanding of prokaryotic cell efficiency as it pertains to pre and post translational regulation (repression and induction)
10. Be able to describe the functioning of an inducible operon and a repressible operon (Use the Lac operon as your example of an inducible operon and the Tryptophan operon as your example of a repressible operon)
11. Know the four major components of an operon and their functions (regulator, control locus (promotor and operator) and structural locus)
12. Have an understanding of what activates the lac operon and what deactivates the trp operon
13. Be able to differentiate plasmids from chromosomal fragments
14. Be able to describe the processes of transformation, conjugation and transduction
15. Be able to describe the fertility "F" factor and state what it codes for
16. Be able to discuss the difference between an F⁺ cell and an F⁻ cell and know the phenotypic changes that happen to the F⁻ cell following conjugation
17. Be able to describe the factors that make a cell a High frequency recombinant (Hfr) donor

Microbiology Genetics Study Guide

Tobias Bleicker



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Microbiology Gerard J. Tortora, 1995-04 *Manual of Veterinary Microbiology* Gustave Mosselman, E. Li'enaux, 1895
Manual of Environmental Microbiology Christon J. Hurst, Ronald L. Crawford, 2002 The new second edition of this essential manual summarizes the information and knowledge of environmental microbiology in a single source It details the natural fate of microorganisms in the environment as well as the intentional attempts to eliminate from the environment microorganisms that are pathogenic to humans or to plants and animals The basic principles of environmental microbiology

and general analytical methodologies common across the range of the environments covered are presented first The core sections are structured with regard to the type of environmental medium being discussed This landmark effort defines the study of environmental microbiology as we know it today and serve as an essential contribution to the literature

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