

## MICRO MIX AND MATCH REVIEW #2

1. **A-B toxin**- toxins are made of two parts (a-b toxins). Usually the “A” part is an enzyme and the “B” part bonds to the host cell allowing the enzyme to enter the cell. Diphtheria, cholera, tetanus, and shingella dysentery produce A-B toxins.
2. **Ameboid movement**- extensions of the cytoplasm
3. **Anagensis**-
4. **Antibiotics**- chemicals ( mostly produced by fungi) that kill bacteria
5. **Archaeobacteria**- (Methanogens, thermoacidophiles, and halophiles)- Cell walls lack muramic acid and peptidoglycan – cells walls lack protein-carbohydrate cross links
6. **Attachment proteins**- or spikes= glycoproteins found on the surface of the capsid or envelope that attach the virus to its host cell. \*some viruses don't have attachment protein.
7. **Autotrophs**- use CO<sub>2</sub> as their carbon source
8. **Bacilli**- rod shaped
9. **Bacteriophage**- a virus that infects bacteria
10. **Budding**- a virus can leave a cell without killing it. The process starts when a region of the host cell plasma membrane forms the viral protein spikes on its outside and then the matrix proteins forms on the inside of the membrane. The virus particle leaves the cell in process similar to exocytosis with part of the cell membrane wrapping around the virus to form its envelope.
11. **Capsid**- the protein layer that surrounds the genetic material
12. **Capsule**- gelatinous sheath that surrounds the cell walls of cyanobacteria morphology
13. **Capsomere**- the proteins that make up the capsid
14. **Chemo**- chemical energy
15. **Cocci**- spherical (round)
16. **Coenocytic**- hyphae that lacks septa between their cells so are multinucleate
17. **Complex media**- ( undefined) it often includes enriched materials that are undefined ( don't know exactly what is in them)
18. **Complex viruses**- have a complex structure that either have a number of the layers of protein around the nucleic acid or have polyhedral capsid with a helical tail

19. **Death phase-** when bacteria die due to lack of nutrients and energy
20. **Differential media-** media that contains materials that change certain groups of bacteria so that they can be identified when they grow on the media. Ex. Coliform bacteria
21. **Differential stains-** stain bacteria with different characteristics differently
22. **Dikaryotic-** hyphae that have cells with two nuclei in each cell
23. **Episomes-** a plasmid that has been incorporated into the host DNA (i.e. an extra-chromosomal piece of DNA )
24. **Endospore- forms** when the cell divides inside the old cell wall forming a new cell wall within the old one. They can last up to 100s or even in some cases 1000s of years, they are seen in bacillus or clostridium genera.
25. **Endotoxins-** are lipopolysaccharides ( A-lipid portion) from within the cell wall that are only released when the cell divides or dies. Found in nearly all gram negative bacteria but not in gram + . Usually do not simulate the host immune system because they are mostly lipids. They are stable when heated (60-100C).
26. **Enrichment media-** media to which compounds have been added to enhance the growth of certain groups of bacteria
27. **Envelope-** layers of proteins, lipids, and glycoprotein that surrounds the capsids in some viruses
28. **Envelope helical-** viruses with a helical capsid enclosed by a spherical envelope envelope
29. **Eubacteria-** bacteria and blue green algae- cell walls have muramic acids and peptidoglycan. cell walls have protein-carbohydrate cross links
30. **Exotoxins-** toxins are proteins a bacteria produces within their cells and are either actively released or released when the cell lysis. Found both in gram + and gram – bacteria, simulate the host immune system, most are heat labile when heated (60 -100c for 30 min.)
31. **Extrusion-** a release of viral particles without killing the host cell
32. **Facultative anaerobes-** can live in an aerobic or and anaerobic environment
33. **Filamentous phages-** the phages have a single strand of DNA and can release viral particles without killing the host cell

34. **Generalized transduction-** can be done by either virulent or temperate viruses. Most viruses break up the bacterial DNA and then some sections of the bacterial DNA ends up in the phage head instead of the viral DNA.
35. **Gram positive-** have a thicker cell wall of peptidoglycan and amino acids. The thicker the cell wall of gram + bacteria causes them to retain gram stains
36. **Gram negative-** have thinner cell wall of peptidoglycan with an outer membrane layer of phospholipids. The outer membrane layer of gram negative bacteria makes them resistant to many antibiotics.
37. **Halophiles-** live in very high salt environment, such as Great Lakes and are photosynthetic, but do not have chlorophyll
38. **Haustoria-** root-like projections that penetrate the cells of other organisms and absorb nutrients from them
39. **Head-** the protein capsid that hold the genetic material
40. **Helical-** viruses with a rod or thread-like capsid (most viruses)
41. **Hemagglutination-** is used to measure the numbers of many animal viruses, because these viruses make red blood cells agglutinate (bond together)
42. **Heterotroph-** use organics as their carbons source
43. **Hyphae-** fungal filament
44. **Hyperthermophiles-** grow at high temperatures (over 80 C)
45. **Chemosynthetic-** use reduced inorganic compounds as an energy source.
46. **Envelope polyhedral-** viruses with a polyhedral capsid that is enclosed by a spherical envelope
47. **Induction-** when the cell's DNA is damaged the repressor gene is inactivated, the virus changes to a lytic life cycle.
48. **Isometric-** viruses with a spherical envelope ( ball shaped)
49. **Litho-** chemical energy from an inorganic source
50. **Log phase-** when it grows rapidly when it is first put on the plate
51. **Lysogenic cycle-** in this cycle the virus enters the cell and its genetic material is incorporated into the host cell's DNA. The viral genetic material is replicated when the host cell replicates. Viruses with this life cycle are the viruses that can cause tumors.

52. **Lysogenic conversion-** when a lysogenic virus changes the genetic characteristics of bacteria. In some bacteria the pathogenic strains of the bacteria are the result of lysogenic conversion. This is caused by viral genes.
53. **Lytic cycle-** in this life cycle the virus enters the cell and breaks the host cell DNA apart. Then virus replicates in the cell, making a number of copies of the virus lyses the cell and the viral particles infect new cells.
54. **Macronuclei-** a larger nucleus found in the cell. It has the chromosomes broken down into small segments with multiple copies of many genes. The genetic material in the macronucleus is the genetic material that is used for protein synthesis.
55. **Matrix proteins-** a layer of protein just inside the envelope
56. **Mesophiles-** grow at medium temperatures (20-40 C)
57. **Methanogens-** use hydrogen gas as an energy source and CO<sub>2</sub> as an electron acceptor forming CH<sub>4</sub> (methane)
58. **Micronuclei-** The smaller nucleus found in the cell. It has a simple diploid copy of the DNA. When cells sexually reproduce, haploid micronucleus fuse to form a new micronucleus. The macronucleus degenerates and a new macronucleus is formed by mitotic division of the micronucleus.
59. **Monokaryotic-** hyphae that have uninucleate cells
- 60. Monophyletic-**
61. **Mycelium-** all the hyphae of a given fungus
62. **Mycology-** the study of fungi
63. **Mycoses-** disease caused by fungus
64. **Naked virus-** virus that lack an envelope
65. **Negative stain-** used to see capsules on most bacteria. This stain colors the background but not the bacteria
66. **Nucleocapsid-** the capsid plus the genetic material inside it.
67. **Obligate aerobes-** must be grown with oxygen
68. **Obligate anaerobes-** must be in an anaerobic environment
69. **Paralytic shellfish poisoning-** red tide makes shell fish toxic and if you eat shellfish during a red tide you may die of poisoning
70. **Periplasm-** the area between the inner and outer membrane of gram negative bacteria

71. **Peritrichous flagella**- flagella all the way around the organism
72. **Photo**- light energy
73. **Pili (fimbriae)**- small hair-like extensions on the surface of the cell that are used to attach the bacteria to surfaces. Pili are much thinner than flagella
74. **Plaque assay**- is used to determine the number of virus particles present. Plaques are areas of a tissue culture that turn clear because the cells have been killed by the virus
75. **Plasmid**- an extra chromosomal loop of DNA
76. **Polyhedral**- viruses with a multi-sided capsid that is usually in the shape of a icosahedrons (polyhedron with 20 triangles faces and 12 corners).
77. **Prions**- are new category of infectious agents. They are proteins that move into cells changing cell proteins making them toxic to the cell. They also cause the cell to form more prion proteins.
78. **Prophage ( provirus)**- DNA from a virus that is incorporated in to a bacteria's DNA loop.
79. **Prothecae**- extensions on the surface of bacteria that give them a star shape
80. **Protoncogenes**- are genes that when activated cause cells to divide abnormally rapidly.
81. **Pseudopodia**- extensions of the cytoplasm that are pushed from the center of the cell and then used to pull the cell along. (movement)
82. **Psychrophiles**- grow at low temperatures (-5 to 20 C).
83. **Red tide**- waves that glow at night which cause the red tide that makes shellfish toxic and if you eat the shellfish during red tide you may die of paralytic shellfish poisoning, they occur in months without a "R" in them (may, June, July, and august). It can also kill fish. Most common red tide organism is a Gymnodinium breve.
84. **Repressor genes**- genes that maintain the virus as a prophage incorporated in the host cell's DNA
85. **Restriction endonuclease enzymes**- the methylation pattern of the DNA controls whether DNA can be moved from one cell to another. DNA with a methylation pattern different than the bacteria receiving the DNA will be attacked by the bacteria's restriction endonuclease enzyme.
86. **Retro virus**- a RNA virus that backs codes for DNA and then the DNA is incorporated into the host cell's DNA.
87. **Reverse transcription**- is enzyme that is used for this process to make DNA from RNA.
88. **Rhizoids**- root-like extensions that anchor hyphae.

89. **Satellite virus-** of plants lack RNA replicase which they need to replicate their RNA. To replicate these viruses need the cell to be infected with a second virus called the helper virus which has the RNA replicase enzyme.
90. **Segmented virus-** have genetic code that is made up of a number of separate RNA molecules.
91. **Selective media-** media to which compounds have been added that kill certain bacteria or only allow certain bacteria to survive.
92. **Simple stain-** stains just color the bacteria so they can be seen better
93. **Single colony isolation-** pure cultures are necessary to correctly identify bacteria, these methods produce colonies that have grown up from a single bacterium and hence are a single species.
94. **Specialized transduction-** is only done by temperate phages. The virus carries both bacterial and viral genes.
95. **Special stains-** stain special structures like flagella or spores.
96. **Spikes-** glycoprotein found on the surface of the capsid or envelope that attach the virus to its host cell
97. **Spirilla-** a long rod that is spiraled like a spring
98. **Staph-** in grape-like cluster. Ex Staphylococcus
99. **Stationary stage-** when growth slows to a steady state because most of the nutrients have been used up.
100. **Strep-** in long chains. Ex Streptococcus or streptobacilli. These clusters are formed when bacteria divide in two planes.
101. **Superantigens-** are another type of exotoxin. They bond to major histocompatibility class II antigens on a wide range of T-helper cells. They cause the release of cytokines throughout the body leading to the failure of the circulatory system and other systems of the body. They affect blood pressure and can cause shock.
102. **Synthetic media-** you know exactly what is in it.
103. **Tail-** long hollow protein that comes off the head to which the tail fibers are attached
104. **Tail fibers-** long proteins that come off the tail and are used in attachment of the virus to its host cell
105. **Toxoids-** are toxins that have been made non-toxic by heating or chemicals, can be used to immunize against diseases that produce exotoxins.

106. **Temperate viruses-** viruses with a lysogenic life cycle
107. **Thermoacidophiles-** live in hot acid environment, such as hot springs. Most are anaerobic and use H<sub>2</sub>S as an energy source oxidizing it to H<sub>2</sub>SO<sub>4</sub> (sulfuric acid). They have been found in springs with pHs near 1 and temperature over 105 C.
108. **Thermophiles-** grow at high temperatures (over 80 C)
109. **Transcapsidation-** if two different viruses infect the same cell, they can switch their protein capsids during the replication process. this can change animals that a virus can infect because it will have different attachment proteins on its capsid
110. **Tumor suppressor genes-** are genes that when activated stop abnormal cell division by cells. Viruses cause tumors by affecting these genes.
111. **Undulating membrane-** a flap of their membrane that is attached to their flagella
112. **Viroid-** virus-like particles that only have genetic material (RNA) with no protein capsid
113. **Virulent viruses-** viruses with a lytic life cycle
114. **Virus-** genetic material (RNA or DNA) surrounded by protein.
115. **Yeast-** single celled fungi that can be from any of the fungal divisions, but are most commonly from Ascomycos
116. **Heterokaryotic-** stage which is a multinucleate stage that has nuclei that differ genetically from one another