

Chapter 7 Patterns + Geographic variation

1. What is a polymorphic species?
2. What is Bergman's rule? Give an example.
3. Explain Gloger's rule in detail.
4. What is a property of melanin?
5. What is Allen's rule?
6. Why did we lose our fur?
7. What is a hominine? What are the traits of hominines, why are they so versatile?
8. What are the characteristics of a hominine cranium?
9. Why were there so many human species?
10. What type of information does a jaw provide us?
11. What are the advantages of a stronger jaw? In terms of selective pressure?
12. What happened after the general cool down?
13. What protections does skin provide? (regardless of color)
14. How many years ago did this happen?
15. Make a hypothesis to explain the loss of fur.
16. What is folic acid and why is it important?
17. What are the advantages of dark skin?
18. What is Vitamin D3? Why is it important?
19. What are the advantages of white skin?

Chapter 7 Species concept

20. What are the differences between the two types of species concepts?
21. What are paratypes?
22. Which species concept is more used?
23. What condition is there in the BSC concept?
24. What are the Prezygotic barriers?
25. What are the Postzygotic barriers?
26. What is phyletic (anagenesis) speciation?
27. What is cladogenesis?
28. What is allopatric speciation? Provide examples.
29. What are dispersal capabilities? Give an example with hominine.
30. What is sympatric speciation?

Chapter 7 Hybrid zones

31. What are the three types of hybrid zones? Provide at least one example for each.
32. What was the topic of the debate between scientists 15 years ago?

Chapter 8 Phylogenetics

33. What is a taxon?
34. What is phylogeny and taxonomy?
35. What is homoplasy? What are the related ideas?

Chapter 9 Ecology

36. What is landscape ecology? Give an example.
37. What is ecosystem ecology? Give an example.

38. What are the changes in ecosystems associated with ocean wind going over a mountain?
39. At what geographic degrees do you find deserts?
40. What is a eutrophic lake?
41. What is a oligotrophic lake?
42. What is a holomictic lake?
43. What is a meromictic lake?
44. What is the relationship between algae and coral reefs?
45. Why is coral reef resilient to physical destruction but not change in temperature?
46. What can you use to help understand continental drift?
47. Give an example of a species with a very limited distribution.
48. What is the meningeal worm? Go over the process quickly.
49. What are the limiting factors of the wood turtle?
50. What are some example of animals, where their population distribution is linked with human activity/impact?
51. What are the effects of climate change on population distributions? Provide examples of species that are effected.
52. How can a biotic factor impact the distribution of a species?
53. What are the effects of climate change on the cycles of animals?
54. What are the three methods of direct counting?
55. Talk about the example with the birds on the island. What happened to their food source? Where did the fish go? Why?
56. How does counting provide us with dynamic information. Provide an example with Gannets.
57. What are the types of survival curve?
58. What is a "J" curve?
59. Life history traits are a result of what process?
60. What is semelparity?
61. What is iteroparity?
62. What is the effect of climate change on the moose population of the island?
63. How can factors like stress effect populations?
64. What are meta-populations?

Chapter 11 Conservation Biology

65. What are the levels of genetic diversity?
66. What is the main reason for loss of populations?
67. What is extirpation?
68. What are hot spots?
69. What are endemic species?
70. What are dominant species? Provide an example.
71. What are eco system engineers? Provide an example with a positive and negative one.
72. What are key stone species? Provide an example with starfish.
73. What are trophic structures?
74. Whats the difference between top down and bottom up effect?

75. What does costa rica have such a good biodiversity?
76. What is the albedo effect?
77. What are the effects of ocean acidification? Regarding bottom up effect.
78. What is the extinction vortex? Talk about bottleneck.
79. What is the effective population?
80. How can you exit an extinction vortex?
81. What is the minimum viable population size?

Chapter 12

82. What is a protoplanetary disk?
83. What is the oldest life activity we have? Where were they found?
84. How was amino acid formed? Provide details and goals of the experiment.
85. Whats the idea of seeding of the planet?
86. What is the ideal environment for all this? Looking for one area.
87. How were the amino acids chained together? What do you call these chains?
88. What are protocells?
89. What does the cell membrane allow for? Regarding chemistry? Think of a country with sealed borders, or a calorimeter.
90. Talk about the third step for origin of life, regarding replication and metabolism.
91. How can things enter the membrane?
92. What is the use of ribozymes? (RNA) What did they allow for?
93. What molecule did natural selection call for after RNA?
94. What times were mammals most active?
95. How do extinctions give a chance for certain groups to take off?
96. What does anaerobic mean?
97. What does heterotroph mean? What did Luca consume?
98. What are cyanobacteria?
99. What was one of the first mass extinctions?
100. Why are prokaryotes a non-monophyletic group?
101. What does pathogenic mean? Provide examples.
102. What is a microbiome?
103. Explain how there can be parasitism, mutualism and commensalism in the microbiome. Provide examples of this.
104. What are the three common shapes of prokaryotes?
105. What's the effect of the size of a bacteria on surface area.
106. What does it mean when a bacteria is capable of taxis?
107. What is the peptidoglycan layer?
108. What are the koch postulates used for?
109. Describe the mechanism of Helicobacter Pylori. What do they secrete?
110. Where does Helicobacter Pylori attack?
111. What disease is it linked with Helicobacter Pylori?
112. What is a photoautotroph?
113. What kind of lakes can photoautotroph prokaryotes create? Why?
114. What is an extremophile?

115. What is the difference between a photoautotroph and a photoheterotroph?
116. What are chemoheterotrophs? Provide an example. What does it do?
117. What is an endospore? Provide another example.
118. What are archaea? What are its characteristics?
119. What are bacteria's main roles? Why are they important?
120. What kind of symbiosis is associated with bioluminescence?
121. Give an example of how bacteria can be a pathogen? Relate that to global warming.
122. What are the two types of toxins, explain the differences.
123. What are the advantages of doing research on bacteria? What other information can bacteria research provide us?
124. What is vertical transfer? Provide an example and explain.
125. What is horizontal transfer? What are the two ways it is done? Briefly explain.

Chapter 14

126. Are protists Eukaryotes?
127. What created the nuclear envelope?
128. What are polyphyletic groups.
129. Why don't eukaryotes have a solid cell wall?
130. What is the origin of mitochondria and plastids?
131. What are the requirements required to be considered as a multicellular organism?
132. What are the multicellularity advantages?
133. What are complex vs. simple multicellular organisms?
134. How is volvox multicellular? How does it have some form of cell differentiation?
135. What is parthenogenesis?
136. What is hermaphroditism (hermaphrodite)?
137. What is a perfect hermaphrodite?
138. What are the advantages between asexual and sexual reproductions? What did the volvox do that was very useful?
139. How did sex evolve in eukaryotes?
140. When did complex multicellulars start appearing, what caused this?
141. Give a quick description of each. Diplomonads, Parabasalids, Euglenozoans, Alveolates, Stramenopiles, Amoebozoa,
142. Give a quick description of each thing. Brown Algae, Red Algae, Green algae
143. How does endosymbiosis explain the mitochondria and chloroplasts?
144. What is the most common means of reproduction?
145. What water thing is part of the sister group of plants?

Chapter 15

146. What happened during the Ediacaran period? Describe the organisms in detail.
147. During what period do we start seeing good skeletal fossils? Thanks to what mineral?
148. What animal type has an inner structure made of that molecule?
149. Explain in detail the history of endoskeletons.
150. Explain the two theories regarding calcium.

151. What did the appearance of this new mineral in animals allow for?
152. What are the functions of a skeleton?
153. Why is calcium important for the beginning of the cambrian explosion?
154. What is the "arms race", in the context of the cambrian period?
155. What are the causes of the cambrian explosion?

Chapter 16

156. What is the oldest known animal?
157. What are choanoflagellates? Whats their relation to animals?
158. What kind of protein do we find in choanoflagellates, thats related to animals?
159. What do choanoflagellates do in presence of bacteria (food)?
160. Whats the relation between choanoflagellates and sponges?
161. How do sponges eat?
162. How can we define animals?
163. What are heterotrophic eukaryotes?
164. What do gap junctions allow for?
165. What is a Eumetazoa?
166. Talk about bilateral vs. radial.
167. Talk about diploblastic vs triploblastic
168. What does the mesoderm do?