

10. Sickle cell anemia is caused by
- too many heterozygotes
 - a deletion
 - an inversion
 - too few homozygotes
 - none of the above
11. Inbreeding *causes*
- causes an increase in Hardy-Weinberg equilibrium
 - a duplication
 - exposure of deleterious alleles to selection
 - competition
 - higher fitness
12. The role of mutation in evolution is
- to push evolution in a particular direction
 - provide basic variation
 - allow evolvability
 - a and c
 - b and c
13. Sexual reproduction
- requires different allele frequencies
 - causes deviation from Hardy-Weinberg equilibrium
 - requires equal allele frequencies
 - is not a mechanism for evolutionary change
 - decreases variation
14. Hardy-Weinberg equilibrium
- defines the actual state of many organisms
 - provides a theoretical basis for understanding evolutionary change
 - is not used to study evolution
 - reflects the strength of preadaptation
 - is not affected by changes in allele frequency
15. Chromosomal changes that link genes are typically
- mutations
 - deletions
 - polyploidy
 - inversions
 - reversions
16. The immediate source of variation in sexually reproducing organisms is
- mutation
 - inversion
 - recombination
 - selection on genotype
 - clinal distribution of alleles
17. What kind of variation is not observed in protein electrophoresis?
- expressed variation
 - changes that produce no change in proteins (enzymes)
 - mutations
 - non-synonymous protein substitutions
 - all of the above
18. Genetic identity is
- part of Hardy Weinberg
 - necessary for sexual reproduction
 - amount of genetic similarity between populations, subspecies and genera
 - allele frequency taken at random
 - measure of geographic dispersion of populations
19. Under conditions of Hardy-Weinberg equilibrium
- there is clear evolution
 - the frequencies of alleles remain unchanged from generation to generation
 - there are new mutations introduced into each generation
 - selection coefficients are strong
 - sexual reproduction is not allowed

20. To properly understand DNA fingerprint data it is necessary
- to know at least two alleles in the target individuals
 - to be sure that these are dominant alleles
 - that the frequency of alleles is known in the overall population
 - that the frequency of alleles is known for family members
 - that no inbreeding occur
21. Genetic Drift describes
- a situation with mutations building up in a population
 - the act of selection pushing allele frequency
 - the effect of different species separating from each other
 - the effect of chance on allele frequency
 - balanced polymorphism
22. Natural Selection affects organisms
- uniformly throughout their life times
 - unevenly and sometimes unpredictably
 - to keep their allele frequencies from changing
 - only after they are done reproducing
 - based on their genotypes
23. Response to selection (R) is dependent on
- the selection differential (s)
 - the quotient for Hardy-Weinberg (w)
 - the heritability (h^2)
 - a and b
 - a and c
24. An example of stabilizing selection is
- the pepper-moth in industrial England
 - the loss of the mid-range size pollinator for a population of varying flower sizes
 - bill size in Darwin's finches after drought
 - birth weight in human babies
 - all of the above
25. For an allele to increase in frequency it must be
- much better than the other allele
 - somewhat better than the other allele
 - selected against
 - a recessive dominant
 - underdominant
26. An example of pleiotropic effects of selection would be
- length of tail feathers in female peahens
 - the correlation of high protein corn with small, hard kernels
 - the ability of drosophila to be used as laboratory test organisms
 - the strength of selection
 - none of the above
27. Opposing evolutionary forces would be
- mutation and drift
 - mutation and migration
 - selection and drift
 - fixation and selection
 - all of the above
28. Which of the three basic modes of selection act to decrease variation for a trait
- disruptive selection
 - diversifying selection
 - directional selection
 - stabilizing selection
 - balancing selection
29. In our discussion of Big Foot and the Lock Ness monster it was clear that they were unlikely to exist because of the effect of
- mutation
 - drift
 - founder effect
 - effective population size
 - selection

30. For Hawaiian *Drosophila* and evolutionary model predicts
- which species should be most closely related based on geographical distribution
 - relatedness in line with the age of the islands
 - shifts in resource use
 - adaptive radiation from a few founders
 - all of the above
31. The Founder effect
- is part of the Hardy-Weinberg equilibrium
 - creates a different allele frequency from the source population
 - keeps the allele frequency the same as the source population
 - operates as an isolating mechanism
 - is usually overcome by rapid mutations
32. The Biological Species Concept emphasizes
- species with similar niches and behavior
 - morphologically similar populations together
 - the ability interbreed within but not between species
 - an open gene pool
 - founder effects
33. An important cause of species formation is
- inbreeding
 - fixation
 - geographical isolation
 - bottlenecks
 - long necks
34. Which one of these statements was NOT used by Darwin to derive his theory of evolution?
- variation exists in all organisms
 - more individuals are produced than can survive each generation
 - competition exists
 - organisms do not change through time
 - geological processes occur in a uniform manner
35. For the collared lizard populations what factor was most important in their decline
- mutation
 - selection
 - drift
 - disease
 - migration

