

Team Trivia – Heredity II

1. A circle on a pedigree is a ____ and a square is a _____. **Female, male**
2. A cross that looks at two contrasting traits is a _____ cross and a cross that looks at one contrasting trait is a _____ cross. **Dihybrid; monohybrid**
3. A piece of DNA breaking away from a chromosome and becoming attached to another chromosome?
Translocation
4. A term to describe an individual who is heterozygous for a trait? **carrier**
5. A trait found equally in males and females and all children who have the trait have parents who both have the trait is probably _____. **Autosomal dominant**
6. A trait inherited equally by males and females is inherited by a child whose parents did NOT have the trait is _____. **Autosomal recessive**
7. Describe the differences between meiosis and mitosis. **Meiosis results in 4 genetically unique cells in 2 divisions; mitosis results in 2 genetically identical cells in 1 division**
8. Describe the heterozygous trait for incomplete dominance. **A blend of the dominant and recessive trait.**
9. Describe the inheritance patterns of sex-linked traits. **Males cannot be carriers; occurs most commonly in males; females can be carriers; carried on sex chromosome**
10. Describe the law of segregation. **Alleles separate from each other during meiosis**
11. Describe the process to make Dolly? **A body cell's (somatic cell) nucleus from one sheep was placed into the egg cell from a 2nd sheep that had the nucleus removed. The cell was fused by electric shock and then began dividing, forming an embryo. The embryo was implanted into a 3rd sheep and developed normally into Dolly.**
12. Describe what a sex-linked trait is. **Typically carried on the X-chromosome, occurs more often in males than females, males cannot be carriers**
13. Give an example of hybridization. **Beefalo, liger, tigon, cockerpool, broccoflower**
14. Having a missing chromosome is called a _____. **Monosomy**
15. Having an extra chromosome is called a _____. **Trisomy**
16. How can DNA fingerprinting be used to identify an individual? **No 2 people, except identical twins, have the exact same DNA**
17. How is the trait being observed designated on a pedigree? **Shaded in**
18. How many chromosomes are in a normal human karyotype? **46**
19. In meiosis I, homologous chromosomes pair up and exchange segments of DNA, what is this called?
Crossing over
20. In what process do mutations usually occur for a single gene? **Replication**
21. List 2 known mutagens. **UV light, chemicals, radiation, tobacco, X-rays**
22. List 2 uses of DNA Fingerprinting/PCR: **forensic identification, paternity/maternity testing, study biodiversity or relatedness of organisms, detect genetic disorders**
23. List a sex-linked trait. **Hemophilia, color-blindness, male patterned baldness**
24. Taking a gene (or genes) from one organism and putting them in another is called _____ and the DNA is called _____. **Genetic engineering; recombinant DNA**
25. The error in meiosis where sister chromatids fail to separate properly that results in monosomy or trisomy. **Nondisjunction**
26. The multiple differences in human skin color are due to what type of trait? **Polygenic**
27. The small, extra ring of DNA in a bacterium is called a _____. **Plasmid**
28. The term used to describe ethical questions related to biotechnology. **Bioethics**
29. There are _____ (#) different amino acids? **20**
30. What are "sticky" ends? **The staggered cut needed when restriction enzymes cut open DNA – allows for recombination of the donor and vector DNA**

31. What are mutations? **Changes in the DNA of an organism**
32. What are the 2 types of selective breeding? **Inbreeding & cross-breeding (or hybridization)**
33. What are the advantages of sexual reproduction? **Species survival in changing environments, greater genetic diversity, adaptability**
34. What are the bands on a DNA fingerprint? **DNA fragments (cut by restriction enzymes), separated by size by electrical current, and stained**
35. What are the genotypic and phenotypic ratios for a monohybrid cross? **G: 1:2:1, P: 3:1**
36. What are the molecular scissors that cut DNA? **Restriction enzymes**
37. What charge does DNA have? **Negative**
38. What is a clone? **A genetically identical organism.**
39. What is a picture of all a cell's chromosomes? **Karyotype**
40. What is bioethics? **Ethical questions related to the use of biotechnology (application of new technologies in biology).**
41. What is codominance? **The heterozygous individual displays the dominant and recessive trait equally.**
42. What is gene therapy? **Technique involving treating a genetic disorder by replacing a defective gene with a functional gene**
43. What is genetic screening? **The process of DNA testing to determine a person's risk of having or passing on a genetic disorder**
44. What is recombinant DNA? **DNA containing segments from more than 1 organism.**
45. What is the phenotypic ratio for a dihybrid cross? **9:3:3:1**
46. What is the problem with inbreeding? **Increased likelihood of two recessive alleles for a genetic disorder**
47. What is the process that quickly copies/amplifies DNA (abbreviation & name)? **PCR – polymerase chain reaction**
48. What is the purpose of selective breeding? **To produce offspring with the desired traits.**
49. What separates in meiosis I and meiosis II? **Homologous chromosomes; sister chromatids**
50. What tool traces the inheritance of a trait over several generations? **Pedigree**
51. What types of chromosomes can be seen in a karyotype? **Sex chromosomes, autosomal chromosomes, & homologous chromosomes**
52. What types of DNA fragments move the fastest in gel electrophoresis? **Smallest (shortest)**
53. Where are the smallest DNA fragments located on a gel (positive or negative end of the gel)? **Positive**
54. Who is the father of Genetics? **Gregor Mendel**
55. Why must the same restriction enzyme be used to cut the donor DNA out and open the plasmid? **So the sticky ends will complement (base-pairing rules) and "stick" together (recombine)**
56. What is the genotypic and phenotypic percentages for a cross between a mouse who is heterozygous black with a brown-hair mouse? **G: 50%:50%; P: 50%:50%**
57. Mitosis results in _____ (diploid or haploid) cells and meiosis results in _____ (diploid or haploid) cells. **Diploid; haploid**
58. Solve the following pedigree for cystic fibrosis. Give the genotype for each individual in the pedigree.
1 – Cc 2 – Cc 3 – cc 4 – C?
59. How many generations and marriages are represented by the pedigree. **Generations – 2; marriages - 1**
60. Does the following pedigree represent an autosomal dominant or autosomal recessive trait and why? **Autosomal recessive – because 3 has the trait, that means that 1 & 2 (the parents) must be heterozygous for the trait; it could not be autosomal dominant or 1 & 2 would be homozygous recessive & could not possibly have a child with the dominant trait**

