



MODERN GENETICS

Question: Why do some traits exhibit a large number of phenotypes?

COMPLEX PATTERNS OF INHERITANCE

Incomplete dominance — when neither allele of the parents is completely dominant, the phenotype of the heterozygous offspring is a mix of parents
Ex. red snapdragons x white snapdragons $\Rightarrow$ pink snapdragons

Codominant alleles — both alleles show equally
Ex. black chicken x white chicken $\Rightarrow$ speckled chicken

Multiple alleles — there are more than two alleles for a genetic trait
Ex. a rabbit's coat color — four possible colors

Humans have 23 pairs of chromosomes. 22 pairs of autosomes, which are indicated by a number (1-22).

Sex-linked traits — traits controlled by genes on the sex chromosomes
Ex. color blindness

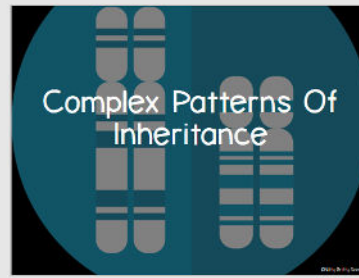
Polygenic inheritance — inheritance pattern of a trait that is controlled by two or more genes. Ex. skin color and height

•Nutrition, light, chemicals, and infectious agents such as bacteria, fungi, parasites and viruses can all influence how genes are expressed.

EDITABLE student notebook pages - digital links included for students to complete guided notes on Google Drive



1



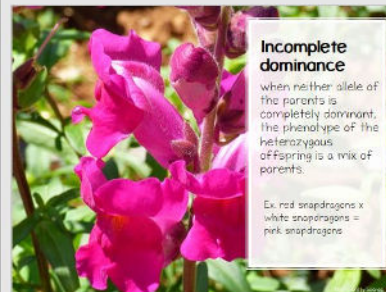
2



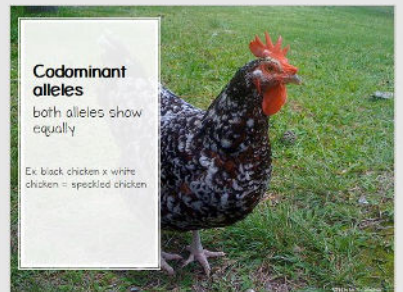
5

Multiple alleles

Humans have 23 pairs of chromosomes. 22 pairs of homologous chromosomes are called autosomes. The 23rd pair



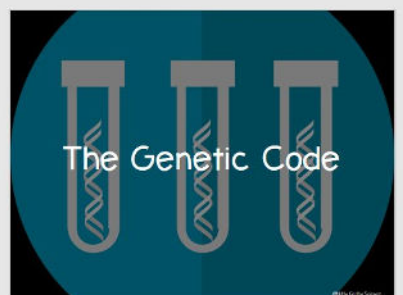
3



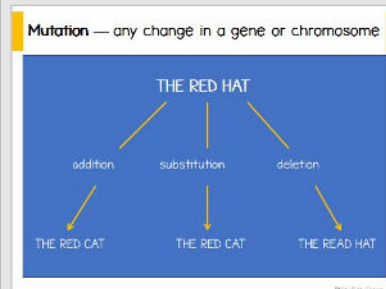
4



7



8



11



12

EDITABLE PowerPoint presentations include high-resolution graphics and feature all topics and vocabulary covered in the notes

Name _____ Date _____

CHAPTER TEST: MOLECULAR BIOLOGY

Multiple Choice

Choose the answer that best completes each statement.

1. What determines the genetic code?
 - a. the order of nitrogen bases along a gene
 - b. the number of nitrogen bases in a DNA molecule
 - c. the order of amino acids in a protein
 - d. the number of guanine and cytosine bases
2. What is a mutation?
 - a. any change that is harmful to an organism
 - b. any change in the DNA sequence
 - c. any change in the amino acid sequence of a protein
 - d. any change in the number of chromosomes
3. Which are the bases of DNA?
 - a. adenine
 - b. guanine
 - c. adenine
 - d. cytosine
4. The backbone of DNA is made of:
 - a. phosphorus and deoxyribose
 - b. deoxyribose and phosphate
 - c. phosphate and ribose
 - d. ribose and deoxyribose
5. The parts of a nucleosome are:
 - a. nucleosome
 - b. nucleosome
 - c. chromatin
 - d. nucleosome
6. The process of DNA replication is:
 - a. binary
 - b. mitosis
 - c. replication
 - d. translation
7. The type of mutation that changes the sequence of amino acids in a protein is:
 - a. insertion
 - b. insertion
 - c. deletion
 - d. deletion

© 2000 Pearson Education, Inc.

EDITABLE Chapter test includes multiple choice, fill in the blank, interpreting diagrams, & short Answers questions

35. Down's syndrome is caused by the presence of an extra _____.

36. A gene from one organism is inserted into the DNA of another organism in the process known as _____.

37. A karyotype can be used to _____ a person's cells.

Use the diagrams to answer each question.



38. Identify structure A and of _____.

39. Identify structures B and C _____.

40. Identify structure D and of _____.

41. Identify structure E and of _____.

42. If one of the nitrogen bases _____ might that have an protein _____.

© 2000 Pearson Education, Inc.

23. A carrier is a person who has _____.

- a. one recessive and one dominant allele for a trait
- b. two recessive alleles for a trait
- c. two dominant alleles for a trait
- d. more than two alleles for a trait

24. Down syndrome most often occurs when _____.

- a. a person inherits a recessive allele
- b. chromosomes fail to separate properly during meiosis
- c. sickle-shaped cells become stuck in blood vessels
- d. blood fails to clot properly

25. What genetic disorder results in abnormally shaped blood cells?

- a. hemophilia
- b. Down syndrome
- c. cystic fibrosis
- d. sickle-cell disease

Fill-in-the-blank

Complete each statement with the correct vocabulary term.

26. _____ RNA carries coded messages from the nucleus to the cytoplasm.

27. A male is represented by a _____ in a pedigree.

28. The technique called _____ produces an organism that is genetically identical to its parent.

29. The goal of the _____ Project is to identify the DNA sequence of every gene.

30. Watson and Crick called the three-dimensional shape of DNA a _____.

31. A set of three bases codes for one specific _____ in a protein.

32. _____ RNA adds amino acids to a growing protein.

33. A section of DNA has the base sequence TGAAG. The corresponding section of a messenger RNA molecule will have the base sequence _____.

34. The substitution of one base for another during DNA replication is an example of _____.

© 2000 Pearson Education, Inc.

© 2000 Pearson Education, Inc.

Answer key included – Images are blurred for copyright reasons



Thank you for sharing NGS Magnified with your students!

Terms of Use

Copyright © NGS Magnified, LLC (formerly Nitty Gritty Science, LLC.) All rights reserved by author Dr. Erica Colón. This product is to be used by the original downloader only. Copying for more than one teacher, classroom, department, school, or school system is prohibited. This product may not be distributed or displayed digitally for public view. Failure to comply is a copyright infringement and a violation of the Digital Millennium Copyright Act (DMCA). Clipart and elements found in this PDF are copyrighted and cannot be extracted and used outside of this file without permission or license. Intended for classroom and personal use ONLY.

Contact Information:

Email: admin@nittygrittyscience.com

Website: www.NGSmagnified.com

TPT: <https://www.teacherspayteachers.com/Store/Nitty-Gritty-Science>

