

TEST REVIEW GUIDE: Cell Cycle, Cell Division, Inheritance, and Cancer

Test Format

The test will begin with a multiple choice section (2 points per question). The remaining questions will be short answer response (5 points per question).

Study Resources

- ❑ Cell Cycle, Mitosis, & Meiosis: 9.2 – 9.6
- ❑ Mendelian inheritance: 10.2
- ❑ Non-Mendelian inheritance: 10.3
- ❑ Geneits and meiosis: 10.4
- ❑ Sex-linked traits: 10.5
- ❑ Pedigrees: 12.3
- ❑ Cancer & Inheritance: 12.4 and Case Study
- ❑ Review of Transcription & Translation: 11.2 – 11.6
- ❑ Class notes from 1/5/2009 – 2/3/2009

Study Topics (in question format)

1. How and why is chromatin different from chromosomes?
2. How are chromatids different from chromosomes?
3. What happens during each stage of the cell cycle (G1, S, G2, and M)?
4. When does the body perform mitosis?
5. What happens to the chromosomes during each stage of mitosis (prophase, metaphase, anaphase, and telophase)?
6. What is the difference between a benign tumor and a malignant tumor?
7. When is uncontrolled cell growth considered cancer?
8. What can we use a karyotype for?
9. When does the body perform meiosis?
10. What happens to the chromosomes during each stage of meiosis (metaphase 1, prophase 1, anaphase 1, telophase 1, prophase 2, metaphase 2, anaphase 2, and telophase 2)? Use terms like homolog, diploid, haploid, egg, sperm, crossing over, etc.
11. Compare and contrast mitosis and meiosis.
12. How do we use the terminology of Mendelian inheritance: gene, allele, homozygous, heterozygous, dominant, recessive, genotype, & phenotype?

13. How do you calculate probability of offspring having a certain phenotype when you know the genotypes of the parents?
14. How do you draw and use a pedigree to look for patterns of inheritance within a family?
15. How do transcription and translation occur?
16. How many reading frames exist for any gene? How many open reading frames exist for any functional gene?
17. Describe the different genetic mutations: substitution, insertion, deletion, frameshift, missense, nonsense, and silent.
18. What have you done if you have BLASTED two gene sequences?
19. What will an ORF Finder tool do for you?
20. How can cancer be passed from one generation to the next? Distinguish between a predisposition to cancer and having cancer.
21. What are the three types of genes that can lead to cancer?
22. How are the APC protein and catenin II binding protein involved in colon cancers?

Study Strategies

*Make sure you have what you need – pencil, clean paper, calculator, notes, text, review guide. You may need your computer, but set it aside until you know exactly what resource you need to access. Avoid your email and chat apps!

*Choose a reasonable place to study. Close your computer while you work. Turn off your phone. All you'll usually need are your text and your binder.

*Create a set of study notes that condense your class and reading notes into a neat, organized set of information that reflects what you need to know for the test. You will find that the process of creating these notes is as important to your studying as looking over them later. Do not take study notes from classmates. Make and use your own.

*Identify what information you need to memorize. Make flashcards. As you work through the cards, remove words or ideas that you know well. Keep flashing the words you don't know until you know them.

*Use quiz questions as study questions. Correct any wrong answers using your notes/text. Rewrite the questions and answer them as if you are taking the test. Check yourself for accuracy once you have completed the exercise.

*Anticipate questions that will be on the test. Look at the reading questions at the end of each section of the text. Pick out questions from the chapter test that seem like they address what we have emphasized in class. Answer these questions without help.

*Make a list of questions or concepts that you want to clarify. Come into class early or stay after school for a few extra minutes and talk them over with Mrs. Fitzgerald.