

# Thompson & Thompson Genetics in Medicine 8th Edition Test Bank

## Nussbaum: Thompson & Thompson Genetics in Medicine, 8th Edition

### Chapter 02: Introduction to the Human Genome

#### Test Bank

#### MULTIPLE CHOICE

1. How many chromosomes do humans normally have in their somatic cells?

- A. 22
- B. 23
- C. 44
- D. 45
- E. 46

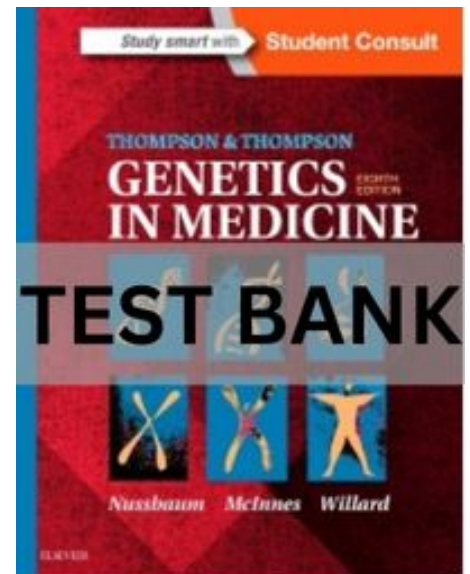
ANS: E

2. In humans, DNA is associated with several classes of proteins and packaged into complexes known as:

- A. Histones
- B. Chromatin
- C. Nuclei
- D. Genomes
- E. Double helices

ANS: B

3. Which of the following represents the pairing of nucleotide bases in DNA?



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- A. Purines-Purines, Pyrimidines-Pyrimidines
- B. Adenine-Cytosine, Guanine-Thymine
- C. Adenine-Guanine, Cytosine-Thymine
- D. Guanine-Cytosine, Adenine-Thymine
- E. Deoxyribose-Ribose

ANS: D

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4. Which of the following are composed of repetitive DNA elements?

- A. Centromeres
- B. Alu elements
- C. LINE elements
- D. Telomeres
- E. All of the above

ANS: E

5. A human somatic cell spends most of its life in this state:

- A. Meiosis
- B. Mitosis
- C. Interphase
- D. Zygote
- E. Prophase

ANS: C

6. The arms of a chromosome are designated:

- A. 1 and 2
- B. Short and long
- C. p and q
- D. Individually for each chromosome
- E. A and B

ANS: C

7. An important and distinct feature of meiosis is:

- A. Recombination

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- B. Chromosome condensation
- C. Chromosome congression
- D. Spindle formation

ANS: A

8. Mitosis and meiosis result in the following chromosome complements, respectively:

- A.  $n, 2n$
- B.  $2n, n$
- C. Haploid, diploid
- D.  $2n, 2n$
- E.  $n, n$

ANS: B

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9. Failure of homologous chromosomes to segregate to opposite poles during meiosis is called:

- A. Disjunction
- B. Missegregation
- C. Nondisjunction
- D. Meiotic failure
- E. Nonsegregation

ANS: C

10. In human males, when is meiosis initiated and completed?

- A. At birth, at ejaculation
- B. At puberty, at ejaculation
- C. At birth, at puberty
- D. At puberty, it is continuous
- E. At birth, it is continuous

ANS: D

11. In human females, when is meiosis initiated and completed?

- A. At birth, at ovulation
- B. At birth, it is continuous
- C. At puberty, at fertilization
- D. Prenatally, at ovulation
- E. Prenatally, at fertilization

ANS: E

### **MULTIPLE RESPONSE**

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1. The extent of the haplotype block surrounding a disease mutation depends on which two of the following factors?
- A. Marker phasing
  - B. Marker association
  - C. Recombination frequency in the region
  - D. Number of generations since the disease mutation arose
  - E. Marker repulsion

ANS: C, D

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#### **Chapter 03: The Human Genome: Gene Structure and Function**

##### **Test Bank**

##### **MULTIPLE CHOICE**

1. Translation involves which type of RNA?
- A. Messenger RNA (mRNA)
  - B. Ribosomal RNA (rRNA)
  - C. Transfer RNA (tRNA)
  - D. All of the above
  - E. None of the above

ANS: D

2. What is the central dogma of molecular biology?
- A. DNA to RNA to protein
  - B. Transcription to splicing to translation
  - C. Meiosis, recombination, fertilization

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- D. Mitosis, cell division, cell death
- E. DNA synthesis, homologous pairing, recombination

ANS: A

3. What types of sequences are located in the 5' region of human genes?

- A. Exons and introns
- B. Start and stop codons
- C. Promoters and enhancers
- D. Splice signals
- E. Polyadenylation sequences

ANS: C

4. Which of the following sequences is located in the 3' region of human genes?

- A. Splice signals
- B. Promoters
- C. Start codons
- D. Locus control regions
- E. Polyadenylation sequences

ANS: E

5. Gene families can arise by which of the following mechanisms?

- A. Transcription
- B. Recombination
- C. Gene duplication
- D. Gene replication
- E. All of the above

ANS: C

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6. DNA sequences that resemble known genes but are nonfunctional are called:

- A. Pseudogenes
- B. False genes
- C. Dead genes
- D. Faux genes
- E. Noncoding genes

ANS: A

7. Which of the following are final products of a gene?

- A. Protein
- B. RNA
- C. Exons
- D. Both A and B
- E. A, B, and C

ANS: D

8. Which of the following steps must a primary RNA transcript undergo before it becomes a fully processed, mature mRNA?

- A. Capping, polyadenylation, and splicing
- B. Splicing
- C. Splicing and reverse transcription
- D. Capping and splicing
- E. Splicing and transport

ANS: A

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9. Translation is always initiated at a codon for which amino acid?
- A. Alanine
  - B. Glycine
  - C. Tryptophan
  - D. Methionine
  - E. Phenylalanine

ANS: D

10. Which of the following describes the system of codons in our DNA?
- A. Each codon encodes a unique amino acid
  - B. It is degenerate
  - C. Each codon specifies an amino acid
  - D. Codons are overlapping
  - E. The molecular link between codons and amino acids is mRNA

ANS: B

11. This modification of cytosine phosphate guanine (CpG) islands is associated with transcriptional repression:
- A. Phosphorylation
  - B. Protein binding
  - C. Methylation
  - D. Lipidation
  - E. None of the above

ANS: C

12. In humans, which of the following are mechanisms by which a single gene can produce multiple gene products?
- A. Suppressor codons

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- B. Alternative stop codons
- C. RNA splicing
- D. Recombination
- E. Use of tumor-associated transplantation antigen (TATA) boxes

ANS: C

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#### **Chapter 05: Principles of Clinical Cytogenetics and Genome Analysis**

##### **Test Bank**

##### **MULTIPLE CHOICE**

1. Which of the following is not seen in a normal human karyotype?
  - A. Acrocentric chromosome
  - B. Metacentric chromosome
  - C. Submetacentric chromosomes
  - D. Satellite sequences
  - E. Telocentric chromosomes

ANS: E

2. Cells are arrested at which stage of the cell cycle for use in routine karyotyping?
  - A. Interphase
  - B. Prophase
  - C. Metaphase
  - D. Anaphase
  - E. Telophase