



مقدم من فريق أفق الطبي



HISTOLOGY

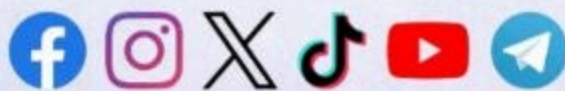
MCA

CYTOGENETICS

104

- Department Book
- Previous Years

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HISTOLOGY

CYTOGENETICS

MCA

- Department Book
- Previous Years

INDEX

- DEPARTMENT BOOK... 3
- PREVIOUS YEARS 195... 9
- PREVIOUS YEARS 196... 12
- PREVIOUS YEARS 197... 14
- PREVIOUS YEARS 198... 16

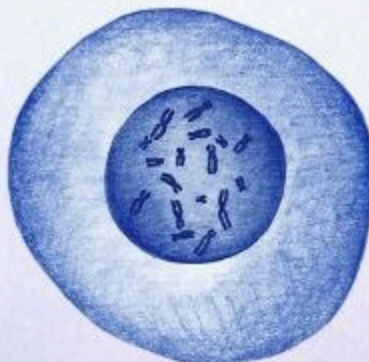
HISTO[🔬]LOGY

MCQ

CYTOGENETICS

DEPARTMENT

BOOK



CYTOGENETICS DEP BOOK

1. Duplication of the centrioles occurs at:

- a. G1 phase.
- b. S phase.
- c. G2 phase.
- d. G0 phase.

2. Mitosis is characterized by the following:

- a. Exchange of genes.
- b. Absence of crossing over.
- c. Daughter cells contain n chromosomes.
- d. Daughter cells are not identical to mother cells.

3. One of the following is a potentially renewable cell:

- a. Liver cell.
- b. Sperms.
- c. Plasma cell.
- d. Macrophages.

4. One of the following is a non-renewing cell:

- a. Hepatocyte.
- b. Epidermal cell.
- c. Nerve cell.
- d. Cartilage cell.

5. One of the following has a pluripotential stem cell:

- a. Blood cells.
- b. Hepatocytes.
- c. Bone cells.
- d. Nerve cells.

6. Which description is correct for karyorrhexis?

- a. The nuclei become small and darkly stained.
- b. The nuclei and chromatin are swollen.
- c. Dissolution and disappearance of nuclei.
- d. The nuclei and chromatin are fragmented.

ANSWERS

1.B 2.B 3.A
4.C 5.A 6.D

CYTOGENETICS DEP BOOK

7. Using specific chemical chromatids are stopped from separating during mitosis at:

- a. Prophase.
- b. Anaphase.
- c. Metaphase.
- d. Telophase.

8. In karyotyping the chromosomes are obtained in:

- a. Prophase.
- b. Anaphase.
- c. Metaphase.
- d. Interphase.

9. Tubulin is synthesized in:

- a. S phase.
- b. G2 phase.
- c. G1 phase.
- d. Prophase.

10. One of the following is a balanced aberration:

- a. Reciprocal translocation.
- b. Ring chromosome.
- c. Terminal deletion.
- d. Isochromosome.

11. Which of the following is true for Barr body?

- a. Lies on the inner aspect of the nuclear envelope in all buccal epithelial cells.
- b. It appears as a drum stick like mass in 3-5% of female neutrophils.
- c. Number of Barr bodies equals to the number of X-chromosomes in nucleus.
- d. Patient with Turner syndrome has one Barr body in her cells.

12. One of the following is a numerical aberration in sex chromosomes:

- a. Down's syndrome.
- b. Turner's syndrome.
- c. Isochromosome.
- d. Translocation.

ANSWERS

7.C 8.C 9.B
10.A 11.B 12.B

CYTOGENETICS DEP BOOK

13. Philadelphia chromosome:

- a. Translocation between chromosomes 22 & 9.
- b. Duplication of chromosome 22.
- c. Terminal deletion of chromosome 9.
- d. Inversion affecting chromosome 9.

14. Down syndrome:

- a. May be caused by centric fusion between chromosomes 21 & 14.
- b. May be due to multiple X syndrome.
- c. May be caused by chromosome 21 monosomy.
- d. May be due to 47 chromosomes (XXY).

15. Structural aberrations include:

- a. Aneuploidy.
- b. Deletion.
- c. Turner's syndrome.
- d. Klinefelter's syndrome.

16. Trisomy of chromosome X is:

- a. Turner's syndrome.
- b. Klinefelter's syndrome.
- c. Down's syndrome.
- d. Multiple X syndrome.

17. Monosomy of sex chromosome is:

- a. Turner's syndrome
- b. Klinefelter's syndrome.
- c. Robertsonian translocation.
- d. Mongolism

ANSWERS

13.A 14.A 15.B
16.D 17.A

CYTOGENETICS DEP BOOK

PROBLEM SOLVING QUESTIONS:

1. A mentally retarded female patient with short stature, primary amenorrhea and underdeveloped secondary sex organs was asked to perform karyotyping. Her karyotype would probably be:
 - a. 47, XXY
 - b. 45, XO
 - c. 47, XY trisomy 21
 - d. 47, XXX
2. A Child with mental retardation, hypotonia and mongol- like features has performed karyotyping test. He was found to have 46 chromosomes. One of the following could be seen in his karyotype:
 - a. 46, Robertsonian translocation (21 & 14)
 - b. 46, Philadelphia chromosome
 - c. 46, duplication of chromosome 14
 - d. 46, deletion of chromosome 21
3. A swab from the buccal mucosa of a newly born infant showed more than one Barr bodies in the nuclei of nearly all epithelial cells. This condition may be diagnosed as:
 - a. Multiple X syndrome
 - b. Klinefelter syndrome
 - c. Normal female
 - d. Turner syndrome
4. A male child at puberty is presented with mental retardation, tall stature, small testis and widely separated nipples. This condition could be due to:
 - a. Trisomy of chromosome 21.
 - b. Loss of autosome during mitosis.
 - c. Loss of Y chromosome during meiosis.
 - d. Non disjunction of the X chromosomes.

ANSWERS

1.B 2.A
3.A 4.D

CYTOGENETICS DEP BOOK

PROBLEM SOLVING QUESTIONS:

5. A child presented with mental retardation, muscular hypotonia, cardiac abnormalities, small genital organs. You have to think about:

- a. Klinefelter's syndrome.
- b. Down syndrome.
- c. Monosomy of chromosome 21.
- d. Turner syndrome.

6. If a parent is a carrier of a chromosome 21 translocation, he might have a child with:

- a. Turner's syndrome.
- b. Down syndrome.
- c. Klinefelter's syndrome.
- d. Chronic myeloid leukemia.

7. A female patient presented with mental retardation, edema of upper and lower limbs, short stature and primary amenorrhea.

- a. Her karyotype is 47 XO.
- b. She has two X chromosomes.
- c. Her condition is due to trisomy of sex chromosome.
- d. Her karyotype is 45 XO.

8. A patient was diagnosed as having chronic myeloid leukemia. His condition might be due to:

- a. Reciprocal translocation between chromosome 22 and 9.
- b. Deletion of short arm of chromosome 4.
- c. Deletion of short arm of chromosome 5.
- d. Centric fusion of chromosomes 14 and 21.

ANSWERS

5.B 6.B
7.D 8.A

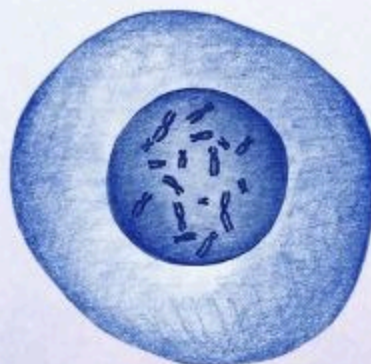
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CYTOGENETICS

EOM - EOY

195 - 2022



CYTOGENETICS

EOM - 195 [2022]

1- Karyorrhexis:

- a. Occurs in mitosis
- b. The nucleus become small and dark
- c. The nucleus dissolve and disappears
- d. Occurs in cell death

2- Meiosis:

- a. Two successive divisions with intervening S-phase
- b. In 1st division, each chromosome divides longitudinally at the centromere
- c. Daughter cells are four with diploid number of chromosomes
- d. Aberration in first meiotic division could lead to numerical aberration

3- In mitosis, chromosomal microtubules of mitotic spindle are attached to the kinetochore in the following stage:

- a. Prophase
- b. Metaphase
- c. Anaphase
- d. Telophase

4- Necrosis is characterized by the following:

- a. Can be physiological or pathological
- b. Cells break into large vesicles
- c. Cells and organelles swell and burst
- d. Is active programmed process

5- Sex chromatin (Barr body)

- a. Represent the inactive x chromosome in turner syndrome
- b. Represent the active x chromosome in turner syndrome
- c. Could be seen in a cell containing y chromosome
- d. Is the active extra x chromosome in Klinefelter syndrome

6- In meiosis, crossing over occurs at the chiasmata in:

- a. Prophase I
- b. Metaphase II
- c. Anaphase II
- d. Telophase I

ANSWERS

1.D 2.D 3.B
4.C 5.C 6.A

CYTOGENETICS

EOY - 195 [2022]

1- Regarding the meiotic cell division (Meiosis):

- a. It occurs in somatic cells
- b. Daughter cells with haploid number of chromosomes
- c. It is a single division
- d. No crossing over of chromosomes occurs

2- The centromere in metacentric chromosome is located:

- a. At the center of chromosome
- b. Midway between the center and upper end
- c. Close to the upper end
- d. At the terminal end of chromosome

3- Segments of DNA molecules that code for formation of specific proteins are:

- a. Kinetochore.
- b. Genes
- c. Centromere.
- d. Chiasmata

4- Concerning the necrosis:

- a. It is programmed cell death
- b. Cells decrease in size
- c. It results from toxins or anoxia
- d. Occurs normally at the end of cell's life

5- One of the following is a characteristic of Barr body:

- a. It is inactive X chromosome
- b. It is inactive Y chromosome
- c. It is seen in Turner syndrome
- d. It is absent in Klinefelter syndrome

6- Addition of a fragmented segment of one chromosome to the homologous chromosome is known as:

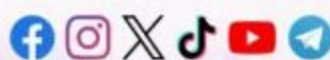
- a. Duplication
- b. Isochromosome
- c. Translocation
- d. Inversion

7- Down syndrome is characterized by:

- a. It is a form of triploid aberration
- b. Cells of Mongol child contain 47 chromosomes
- c. It is an aberration in sex chromosomes
- d. Caused by transverse division at centromere

ANSWERS

1.B 2.A 3.B
4.C 5.A 6.A
7.B



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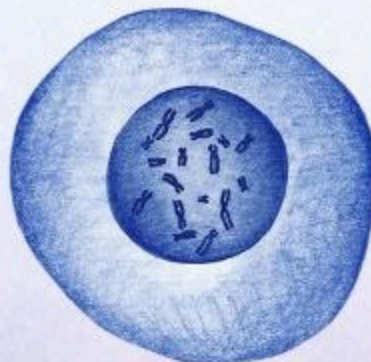
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CYTOGENETICS

EOM

196 - 2023



CYTOGENETICS
EOM - 196 [2023]

1. Regarding interphase of the cell cycle, G1 phase shows:

- a- Daughter cells grow in size and acquire ATP.
- b- Duplication of DNA.
- c- Duplication of centrioles.
- d- Formation of tubulin.

2. Regarding mitosis:

- a- It is two successive divisions.
- b- It occurs in somatic cells.
- c- Exchange of genes occurs.
- d- Daughter cells have haploid number of chromosomes.

3. Crossing over occurs at chiasmata in:

- a- Prophase I.
- b- Metaphase I.
- c- Metaphase II.
- d- Prophase II.

4. Regions at chromosomal ends protecting from destruction are.....

- a- Kinetochores.
- b- Genes.
- c- Telomeres.
- d- Centromere.

5. Chromosomes with centromere midway between center and upper end, is known as:

- a- Metacentric chromosome.
- b- Submetacentric chromosome.
- c- Acrocentric chromosome.
- d- Telocentric chromosome.

6. A karyotyping (47, XXY) refers to:

- a- Down Syndrome.
- b- Multiple x syndrome.
- c- Klinefelter's syndrome.
- d- Turner's syndrome.

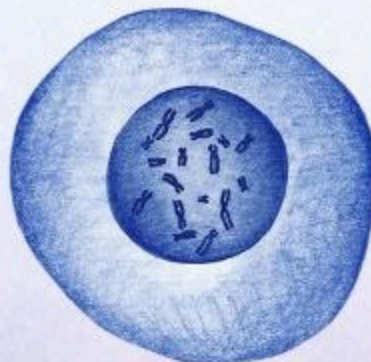
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MCQ

CYTOGENETICS

EOM

197 - 2024



CYTOGENETICS

EOM - 197 [2024]

1. In the interphase of cell cycle, synthesis (S) phase shows:

- a- Cells grow in size and acquire ATP
- b- Nucleus contains 46 single chromosomes (chromatids).
- c- Duplication of centrioles
- d- Formation of tubulin.

2. The cell division occurring in somatic cells is characterized by:

- a- Chromosomes appear bivalents.
- b- No crossing over & no exchange of genes
- c- Two successive cell divisions
- d- Four daughter cells with (1n) are produced

3. Apoptosis is characterized by the following:

- a- It is only pathological condition
- b- Is an active programmed cell death
- c- Cells and organelles are swell & burst.
- d- Results from anoxia or exposure to toxins.

4. Protein discs located at centromere for attachment for spindle fibers:

- a- Kinetochore.
- b- Genes.
- c- Telomeres.
- d- Centromere.

5. The chromosome with centromere at its center is known as:

- a- Metacentric chromosome
- b- Submetacentric chromosome
- c- Acrocentric chromosome
- d- Telocentric chromosome.

6. When the chromosome divides transversely during anaphase:

- a- It results in isochromosome
- b- It gives rise to Philadelphia chromosome
- c- A ring chromosome is formed
- d- It results in terminal deletion.

ANSWERS

1.C 2.B 3.B
4.A 5.A 6.A

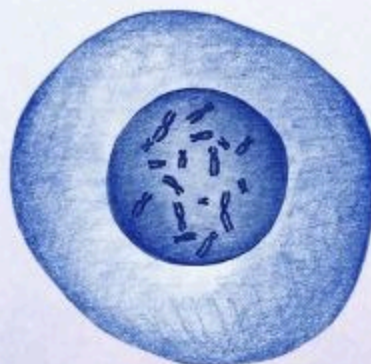
HISTO[🔬]LOGY

MCQ

CYTOGENETICS

EOM

198 - 2025



CYTOGENETICS
EOM - 198 [2025]

1.Regarding interphase of cell cycle, G1 phase shows:

- a- Daughter cells grow in size and acquire ATP.
- b- Nucleus of daughter cell contains 46 D-chromosomes.
- c- Duplication of centrioles.
- d- Formation of tubulin.

2.Longitudinal splitting of chromosomes happens in the following phase:

- a- Prophase.
- b- Metaphase.
- c- Anaphase.
- d- Telophase.

3.Regarding meiosis:

- a- Occurs in the somatic cells.
- b- No S phase in between the two successive cell divisions.
- c- No pairing and crossing over.
- d- Occurs in the somatic cells.

4.Regions of repeated sequence at chromosomal ends are:

- a- Kinetochores.
- b- Genes.
- c- Telomeres.
- d- Centromere.

5.The astral microtubules:

- a- Arise from MTOC to kinetochore.
- b- Are continuous for elongation of the cell.
- c- Establish the axis of spindle.
- d- Arrange chromosomes on equatorial plane.

6.A male is presented to a clinic with Klinefelter's syndrome (47,XXY), this condition could be due to:

- a- Trisomy of chromosome 21.
- b- Loss of autosome during mitosis.
- c- Loss of the X chromosome.
- d- Non- disjunction of X chromosomes.

ANSWERS

1.A 2.C 3.B
4.C 5.C 6.D