رَبِّ اشْرَحْ لِي صَدْرِي
وَيَسِّرْ لِي أَمْرِي
وَاحْلُلْ عُقْدَةً مِّن لِّسَانِي
يَفْقَهُوا قَوْلِي

# Dentistry 023

## PAST PAPERS

Done by : Noor Marzooq

Q: Which phase of the cell cycle is the shortest?

A) G1 phase

B) S phase

C) G2 phase

D) M phase

Ans : D

Q: Which type of chromosome has a centromere that is displaced a little bit from the center?

A) Metacentric

B) Submetacentric

C) Acrocentric

D) Telocentric

Ans : B

Q: Which term describes the transfer of a chromosomal segment to a non-homologous chromosome?

A) Inversion

B) Deletion

C) Translocation

D) Duplication

Ans : C

Q: Which of the following cannot be used to study chromosomes?

A) Blood lymphocytes

B) Bone marrow cells

C) Amniotic fluid cells

D) Platelets

Ans : D

Q: Which chromosomal banding technique stains AT-rich regions as dark bands?

A) G-banding

B) Q-banding

C) R-banding

D) C-banding

Ans : A

Q: Which of the following karyotypes is considered non-viable in humans?

A) 47, XXY

B) 47, XYY

C) 47, XXX

D) 47, YYY

Ans : D

Q: Which substance is added to cell culture to stimulate cells to enter the cell cycle and undergo division?

A) Colchicine

B) Phytohemagglutinin (PHA)

C) Ethidium bromide

D) Heparin

Ans : B

Q: In which phase are cells typically arrested for chromosome study

A) Prophase

B) Metaphase

C) Anaphase

D) Telophase

Ans : B

Q: The BCR-ABL fusion gene leads to which of the following effects?

A) Decreased cell proliferation

B) Increased tyrosine kinase activity

C) Inhibition of DNA replication

D) Loss of chromosome 21

Ans : B

Q: Chromosome 22 is?

Ans: acrocentric.

Q: True about complete mole:

Ans: all paternal DNA, no maternal DNA

Q: The type of Triploidy that is described by well formed placenta:

Ans:diandric

Q: Which of the following is the most common cause of tetraploidy?

Ans: Endomitosis

Q: Cry of the cat syndrome:

Ans: specific deletion on chromosome 5

Q: 69,xxy considered :

Ans: euploid

Q: n+1 gamete fertilized with normal gamete:

Ans: trisomy

Q: Zygot has only one copy of particular chromosome :

Ans: monosomic

Q: Which of the following can't be used in karyotype?

Ans: Erythrocyte

Q: what is the initiator used in karyotyping?

Ans: **Phytohemagglutinin (PHA)**

Q: The band that made heterochromatin dark and euchromatin light is?

Ans: G-banding

Q: The location of beta satellite?

Ans: P arm of acrocentric chromosome

Q: Most common sign of edward syndrome ?

Ans: rocker bottom feet

Q: What is the term for a chromosomal abnormality in which an extra identical copy of achromosomal segment is present?

Ans: Duplication

Q: The location of beta satellite?

Ans: P arm of acrocentric chromosome

Q: What is expected in the gametes when nondisjunction occurs during meiosis I?

Ans: All gametes are abnormal

Q: Telomere is:

Ans: maintain chromosomal integrity

Q: Which of the following statements about the centromere is correct?

Ans: helps chromosomal segregation during cell division

Q: Why is Turner syndrome (45, X) considered the most viable monosomy in humans while all other monosomies are fatal ?

Ans: dosage compensation (X-inactivation)

Q: if we want to check for a small deletion in a chromosome, in which phase should we arrest the cells?

Ans: prometaphase or Prophase

Q: Q: A patient presents with fatigue, weakness, and markedly elevated white blood cell count. Despite the high number of white blood cells, they are abnormal and functionally ineffective in fighting infectionWhat is the most likely chromosomal mutation responsible for this condition?

Ans: Reciprocal translocation t(9;22)

Q: Which of the following techniques helps detect small chromosomal abnormalities such as microdeletions and microduplications?

Ans: High resolution banding

Q: How many DNA strands are present in a single chromosome during the G1 phase of the cell cycle?

Ans: **one double-stranded DNA molecule**, which means: **1 chromatid** contains **2 DNA strands**
**( I am not sure)**

Q: According to Mendel's law of segregation, what is being separated during gamete formation?

Ans: **alleles**

| Phase (Mitosis) | # Chromosomes | # Chromatids |
|---|---|---|
| Prophase | 46 | 92 |
| Metaphase | 46 | 92 |
| Anaphase | 92 | 92 |
| Telophase | 92 | 92 |
| End of Mitosis (separated cells) | 46 | 46 |
| | | |
| **Phase (Meiosis I)** | # Chromosomes | # Chromatids |
| Prophase I | 46 | 92 |
| Metaphase I | 46 | 92 |
| Anaphase I | 46 | 92 |
| Telophase I | 46 | 92 |
| End of Meiosis I (separated cells) | 23 | 46 |
| | | |
| **Phase (Meiosis II)** | # Chromosomes | # Chromatids |
| Prophase II | 23 | 46 |
| Metaphase II | 23 | 46 |
| Anaphase II | 46 | 46 |
| Telophase II | 46 | 46 |
| End of Meiosis II (separated cells) | 23 | 23 |

**G1 phase:** 46 double-stranded DNA molecules

**S phase:** increases from 46 → 92

**G2 phase:** 92 double-stranded DNA molecules