Genetics past 2018-2019

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Lecture 1

لَا إِلَهَ إِلَّا اللهُ وَحْدَهُ لَا شَرِيكَ لَهُ، لَهُ الْمُلْكُ وَلَهُ الْحَمْدُ وَهُوَ عَلَى كُلِّ شَيْءٍ قَدِيرٍ.

Q1. The number of human chromosomes by the end of anaphase of meiosis II is:

a. 69

b. 23

c. 46

d. 115

e. 92

Ans: C

Q2. Imagine if the humans' diploid chromosomal complement is 10 instead of 46. What would the number of possible combinations of meiosis be:

a. 64

b. 32

c. 16

d. 4

e. 8

Ans: b

Q3. Which of the following human triploid is possible to be found in adults:

a. 92, XXXY

b. Triploid cannot be found in adult human because it is incompatible with life

c. 23, XY

d. 92, YY

e. 69, XXY

Ans: b

Q4. This chromosome is:

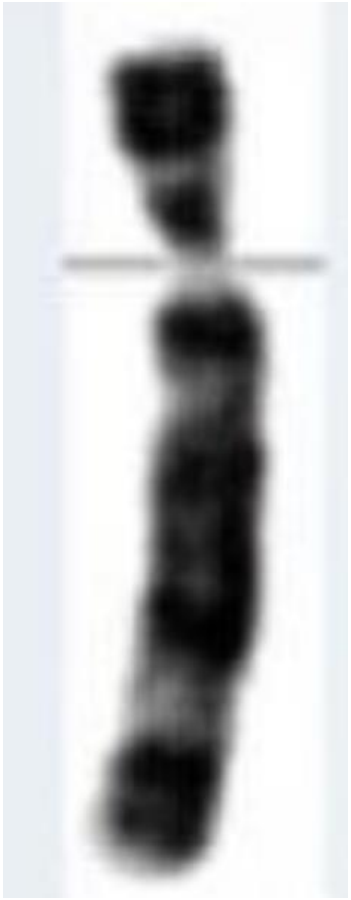
a. Metacentric

b. Acrocentric

c. Submetacentric

d. Interphase chromosome

e. Telocentric



Ans: C

Q5. How many double stranded DNA molecules are in a somatic human cell that is in present G2 phase:

a. 46

b. 23

c. 92

d. There are no double stranded DNA molecules in G2

e. 69

Ans: C

Q6. At the end of meiosis I in a human cell, the correct number of chromosomes and chromatids is:

a. 46 chromosomes, 46 chromatids

b. 46 chromosomes, 92 chromatids

c. 23 chromosomes, 23 chromatids

d. 23 chromosomes, 46 chromatids

e. 92 chromosomes, 92 chromatids

Ans: d

Q7. The correct order of the phases of the cell cycle according to their duration is:

a. S → G1 → G2 → PMAT

b. G2 → G1 → S → PMAT

c. G1 → S → G2 → PMAT

d. PMAT → G1 → S → G2

e. G1 → G2 → S → PMAT

Ans: c

Q8. The longest stage of the cell cycle is:

a. Interphase

b. M phase

c. Cytokinesis

d. Anaphase

e. Telophase

Ans: A

Q9. The structure mainly responsible for recombination during meiosis is:

a. Centromere

b. Chiasma

c. Kinetochore

d. Centrosome

e. Telomere

Ans: b

Lectures 2&3

Q1. Which P arm of the following chromosomes carries rDNA genes?

a. 3

b. 15

c. 6

d. 12

e. 9

Ans: b

Q2. The karyotype where euchromatic regions stain more darkly and the light regions are heterochromatin is:

a. Q-banding

b. C-banding

c. G-banding

d. T-banding

e. R-banding

Ans: e

Q3. Which of the following fetal tissues are used for studying the fetal chromosomes:

a. Lymphocytes

b. Check swap

c. Amniotic fluid

d. Skin biopsy

e. Bone marrow

Ans: c

Q4. The practical way to visualize a karyotype of a suspected very large chromosomal deletion, is to:

a. Arrest the cells at anaphase

b. Arrest the cells at metaphase

c. Arrest the cells at S phase

d. Arrest the cells at telophase

e. Arrest the cells at prometaphase

Ans: b

Q5. In the routinely performed karyotype (G-banding), which of the following would you expect to have more clinical impact and lead to a disease?

a. A duplication of a region with a dark band

b. A duplication of a region with a light band

c. No clinical consequences will be observed due to a single band chromosomal aberration

d. A deletion of a region with a light band

e. A deletion of a region with a dark band

Ans: d

Q6. Which of the following karyotype is expected to be associated with abnormal phenotype [Note: “t” is translocation, and “del” is deletion]:

a. Deletion of the “P” arm of chromosome 5. Karyotype is 46,XX,del5p

b. Balanced double Robertsonian translocation between both chromosomes 13 and both chromosomes 14. Karyotype is 44,XX,t(13q;14q) *2

c. Deletion of the “P” arm of chromosome 22. Karyotype is 46,XX,de22p

d. Balanced Robertsonian translocation between one chromosomes 13 and one chromosome 14. Karyotype is 45,XX,t(13q;14q)

e. 46,XY

Ans: a

Q7. If a T-lymphocyte sample is prepared for G-banding, what is the correct sequence of steps?

a. Colcemid → phytohemagglutinin → hypotonic → trypsin → fixative

b. Phytohemagglutinin → colcemid → hypotonic → fixative → trypsin

c. Phytohemagglutinin → hypotonic → colcemid → fixative → trypsin

d. Trypsin → phytohemagglutinin → colcemid → hypotonic → fixative

e. Colcemid → hypotonic → phytohemagglutinin → fixative → trypsin

Ans: b

Q8. Which of the following statements about G-positive and G-negative chromosomal bands is correct?

a. G-positive bands are gene-rich and GC-rich

b. G-negative bands are heterochromatic and AT-rich

c. G-negative bands contain more genes than G-positive bands

d. G-positive bands are less condensed than G-negative bands

e. G-negative bands stain darker with Giemsa than G-positive bands

Ans: c

Q9. Deletion of the p arm of which of the following chromosomes is least likely to produce a clinical abnormality?

a. 5

b. 9

c. 12

d. 15

e. X

Ans: d

Lecture 4

Q1. What is the possibility for a couple to have a child with Edwards syndrome if the fathers' homologous chromosomes 18 fail to disjoin during meiosis 1?

a. 25%

b. 0%

c. 50%

d. 100%

e. 75%

Ans: c

Q2. A child person with clinical features that include: cardiovascular, brain with neurological, renal, gastrointestinal, respiratory, and skeletal malformations, craniofacial abnormalities such as prominent occiput, hand and feet anomalies including clenched hand. This patient is most probably affected with:

a. Trisomy 18

b. Trisomy 21

c. Turner Syndrome

d. Partial Trisomy 21

e. Klinefelter Syndrome

Ans: a

Q3. Which of the following chromosomal abnormalities must involve at least two chromosomes?

a. Deletion

b. Duplication

c. Inversion

d. Balanced translocation

e. Isochromosome

Ans: d

Q4. Which of the following chromosomal abnormalities is classically associated with chronic myeloid leukemia (CML)?

a. del(5p)

b. t(8;14)

c. t(9;22)

d. trisomy 21

e. monosomy X

Ans: c

Q5. Which of the following disorders is most appropriately diagnosed by chromosomal studies?

a. Phenylketonuria

b. Hemophilia A

c. Cystic fibrosis

d. Cri-du-chat syndrome

e. Sickle cell disease

Ans: d , in others we probably use molecular testing because there's a mutation in a single gene

Q6. Which of the following chromosomal abnormalities is classically associated with Patau syndrome?

a. Trisomy 21

b. Monosomy X

c. Trisomy 18

d. Trisomy 13

e. 47,XXY

Ans: d

Lecture 5

Q1. If an embryo with 46 chromosomes develops from an egg that lost its nucleus, it will most probably become :

a. Partial mole

b. Complete mole

c. Normal conception

d. The fertilized egg will die before dividing

e. Fetus that lacks placenta

Ans: b

Q2. In 47,XXX individuals, two X chromosomes are inactive and only one is active, similarly in 46 XX females also one X chromosome is active. Why do 47,XXX individuals express abnormal clinical features? Because in 47,XXX:

a. three X chromosomes are silent

b. the three X chromosomes are expressed (not silent)

c. one X chromosome is silent and two X chromosomes are expressed

d. the abnormal clinical features are related to autosomal chromosomes

e. affected individuals the dosage of these non-silenced genes will differ as they escape X-inactivation

Ans: e

Q3. Trisomy 47,XYY is a syndrome with signs and symptoms that range from being barely noticeable to learning disabilities, speech delay, low muscle tone. How would you expect this syndrome to have occurred ?

a. Dispremy

b. Endomitosis

c. Fertilization by two sperms

d. Chromosomal rescue

e. Nondisjunction of paternal gametes

Ans: e

Q4.Exchange of cells between two different populations of embryonic cells is called:

a. Mosaicism

b. Chimera

c. Nondisjunction

d. Imprinting

e. Uniparental disomy

Ans: b

Q5 . Which of the following karyotypes is classically associated with Turner syndrome?

a. 47,XXX

b. 46,XX

c. 45,XO

d. 47,XXY

e. 46,XY

Ans: c

Q6. Which of the following is least likely to survive to birth?

a. 47,XXY

b. 47,XYY

c. 45,XO

d. 47,XXX

e. 69,XXX

Ans: e

Q7. A relatively well-grown fetus with a large placenta is most suggestive of:

a. Digyny

b. Diandry

c. Monosomy X

d. Mosaic trisomy 21

e. Maternal uniparental diploidy

Ans: b

Q8. The most common cause of triploidy is:

a. Nondisjunction in maternal meiosis I

b. Nondisjunction in paternal meiosis II

c. Fertilization of one egg by two sperms

d. Mitotic nondisjunction after fertilization

e. Robertsonian translocation

Ans: c

Lectures 6-8

Q1. The clinical features of patients with Marfan syndrome are caused by unusually stretchable connective tissue. The most observed features in Marfan syndrome affect the eye, the skeleton, and the cardiovascular system. This is an example of:

a. Allelic heterogeneity

b. Pleiotropy

c. Anticipation

d. Penetrance

e. Locus heterogeneity

Ans: b

Q2. A disorder shows mild symptoms in one affected individual and severe symptoms in another affected individual with the same disease. This is best described as:

a. Reduced penetrance

b. Locus heterogeneity

c. Variable expressivity

d. Anticipation

e. Epistasis

Ans: c

Q3. When one gene alters the phenotypic expression of another gene at a different locus, this is called:

a. Pleiotropy

b. Epistasis

c. Codominance

d. Incomplete dominance

e. Penetrance

Ans: b

Q4. Cystic fibrosis produces multiple phenotypic effects in different organs.

This is an example of:

a. Locus heterogeneity

b. Allelic heterogeneity

c. Pleiotropy

d. Variable expressivity

e. Epistasis

Ans: c

Q5. Different mutations in the same gene causing different clinical disorders is best termed:

a. Locus heterogeneity

b. Allelic heterogeneity

c. Epistasis

d. Penetrance

e. Polygenic inheritance

Ans: b

Q6. Vitamin D deficiency rickets is most classically inherited as:

a. Autosomal dominant

b. Autosomal recessive

c. X-linked dominant

d. X-linked recessive

e. Mitochondrial

Ans: c

Q7. Duchenne muscular dystrophy is inherited as:

a. Autosomal dominant

b. Autosomal recessive

c. X-linked dominant

d. X-linked recessive

e. Y-linked

Ans: d

Q8. Hemophilia is most classically inherited as:

a. Autosomal dominant

b. Autosomal recessive

c. X-linked dominant

d. X-linked recessive

e. Mitochondrial

Ans: d

Q9. Color blindness is most classically inherited as:

a. Autosomal dominant

b. Autosomal recessive

c. X-linked dominant

d. X-linked recessive

e. Y-linked

Ans: d

Q10. Huntington disease is inherited as:

a. Autosomal dominant

b. Autosomal recessive

c. X-linked dominant

d. X-linked recessive

e. Mitochondrial

Ans: A

Q11 . Marfan syndrome is inherited as:

a. Autosomal dominant

b. Autosomal recessive

c. X-linked dominant

d. X-linked recessive

e. Multifactorial

Ans: A

Q12. Myotonic dystrophy is inherited as:

a. Autosomal dominant

b. Autosomal recessive

c. X-linked dominant

d. X-linked recessive

e. Mitochondrial

Ans: A

Q13. Albinism is most classically inherited as:

a. Autosomal dominant

b. Autosomal recessive

c. X-linked dominant

d. X-linked recessive

e. Codominant

Ans: b

Q14. Cystic fibrosis is inherited as:

a. Autosomal dominant

b. Autosomal recessive

c. X-linked dominant

d. X-linked recesive

Ans: b

Q15. is affected. His wife has no family history of the disease, and she is pregnant. What is the probability that their child is affected?

a. 0

b. 1/4

c. 1/2

d. 3/4

e. 1

Ans: b

Q16. Which of the following is the most probable cause of achondroplasia?

a. Both parents are affected

b. One parent is affected and one is unaffected

c. None of the parents is affected

d. Maternal mitochondrial inheritance

e. X-linked recessive inheritance

Ans: c

Q17. X-inactivation occurs during:

a. Meiosis I of female embryo

b. Mitosis of male embryo

c. Meiosis II of female embryo

d. Mitosis of female embryo

e. Meiosis of the female's mother

Ans: d

Q18. Suppose an X-linked recessive disease is present in a mother who is affected, while the father is unaffected. What is the probability that they will have an affected female child?

a. 0

b. 1/4

c. 1/2

d. 3/4

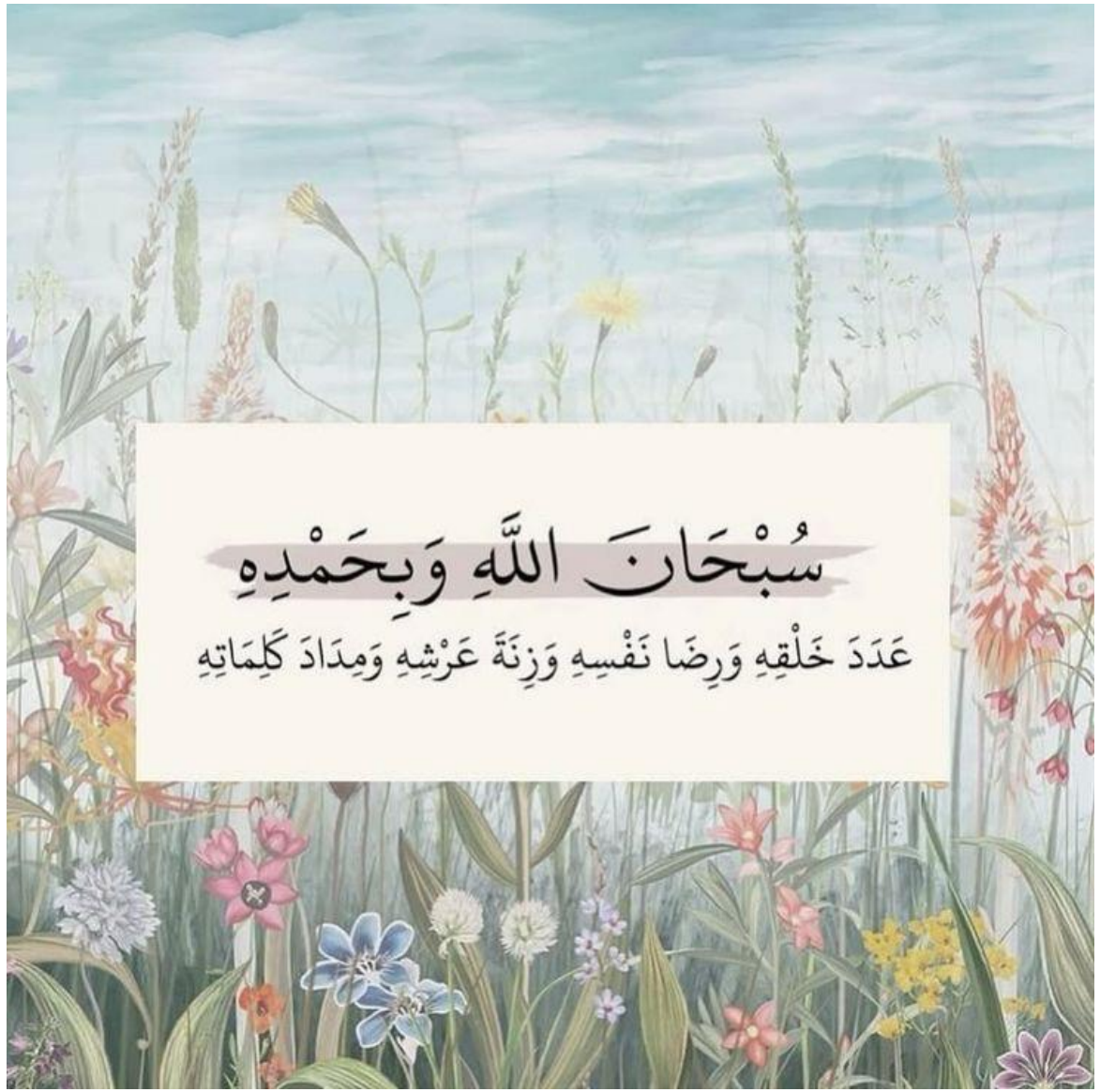
e. 1

Ans: a

Lecture 9 : Genetics - lecture 9 – Fill out form

All Qs in the link

Good luck !!


سُبْحَانَ اللَّهِ وَبِحَمْدِهِ
عَدَدَ خَلْقِهِ وَرِضَا نَفْسِهِ وَزِنَةَ عَرْشِهِ وَمِدَادَ كَلِمَاتِهِ