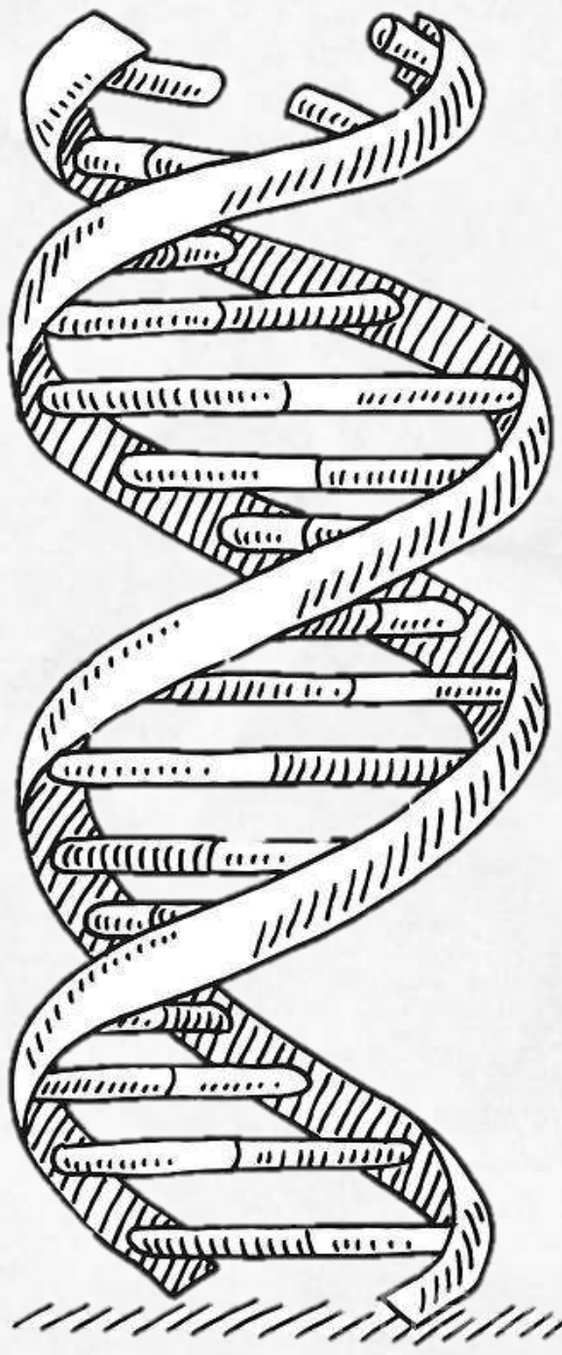
Medical genetics



Past papers – Mid
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Genetics

Lecture 1

1. Which of the following is a nucleotide found in DNA?

A) Deoxyribose + phosphate group + uracil
B) Ribose + phosphate group + thymine
C) Ribose + phosphate group + uracil
D) Deoxyribose + phosphate group + cytosine

ANSWER : D

2. The structure of a polynucleotide chain consists of nucleotides linked to each other by

A) 5-phosphate group of one nucleotide to the 3-hydroxyl group of the next nucleotide in the same strand
B) 5' to 2' phosphodiester bonds
C) 5' bonds for one strand of a double helix and by 3' bonds on the other strand
D) glycosidic bonds
E) triphosphate bonds

ANSWER : A

3. Mitochondria_____

A) are inherited from the father.
B) are inherited from the mother
C) are inherited equally from the mother and father
D) Not inherited at all

ANSWER : B

4. Name the single individual whose work in the mid-1800s contributed to our understanding of the particulate nature Of inheritance as well as the basic genetic transmission patterns. With what organism did this person work?

A) Gregor Mendel; Pisum sativum
B) George Beadle; Neurospora
C) Thomas Hunt Morgan; Drosophila
D) Calvin Bridges; Drosophila
E) Boris Ephrussi; Ephestia

ANSWER : A

Genetics

Lecture 1

5. How many pairs Of chromosomes are found in a typical human somatic cell's karyotype?

A) 44
B) 23
C) 22
D) 46

ANSWER : B

6. Liver cells are called

A) Ribosomes
B) Gametes
C) Germ cells
D) Somatic cells
E) Mitochondria

ANSWER : D

7. _____states that the two alleles for each trait separate during gamete formation, and then unite at random, one from each parent, at fertilization _____states that the alleles Of different genes assort independently of each other.

A) Mendel's law of independent assortment, Mendel's law Of segregation-
B) Mendel's law of segregation, Mendel's law of independent assortment.
C) Mendel's law of allele separation, Mendel's law of allele assortment.
D) Mendel's law of allele assortment, Mendel's law of allele separation.

ANSWER : B

8. Which Of the following is NOT a component Of DNA?

A) pyrimidines such as uracil.
B) Purines such as adenine.
C) Pyrimidines such as guanine.
G) Deoxyribose sugars.
D) A phosphate group.
E) A and C.

ANSWER : E

Genetics

Lecture 1

9. Ribose and deoxyribose are different in the hydroxyl group attached to the carbon position_____ and the nitrogenous bases are always attached to the carbon position _____of the ribose or deoxyribose

A) 1/5
B) 1/2
C) 4/3
D) 5/1
E) 2/1
F) 3/3

ANSWER : E

10. Sex cells are called

A) Gametes
B) Germ cells
C) Somatic cells
D) Mitochondria
E) Ribosomes

ANSWER : A

11. What is correct regarding the messenger RNA?

A) It is a component of the ribosomes
B) It carries amino acids
C) It is made in the cytoplasm
D) It is a coding RNA used to generate a corresponding polypeptide sequence.
E) It is not found in all organisms

ANSWER : D

12. Muscle cells are called

A) Somatic cells
B) Germ cells
C) Mitochondria
D) Gametes
E) Ribosomes

ANSWER : A

Genetics

Lecture 1

13. Post transcriptional processing involves several events.

A) 5 Capping
B) 5 end Methylation
C) 3 Polyadenylation
D) Splicing (removing introns)
E) All of the above
F) All except B

ANSWER : F

14. Process of cutting introns out of immature RNAS and stitching together the exons to form final product is called

A) DNA splicing
B) Alternative splicing
C) RNA transcription
D) RNA translation
E) RNA splicing

ANSWER : E

15. Introns:

A) Are frequently present in prokaryotic genes but are rare in eukaryotic genes.
B) Are spliced out after RNA synthesis.
C) Are transcribed but not translated.
D) Can be found many times within a single gene
E) Do not code for amino acid sequences
F) B & D
G) All of the above except A

ANSWER : G

16. The complementary sequence of 5' AATTCGCTTA 3' is

A) 5'AATTCGCTTA3'.
B) 5'TAAGCGATTT3'.
C) 5'TTAAGCGAAT3'.
D) 5'TAAGCGAGTT3'.
E) 3'TAAGCGAATT5'.
F) None of the above

ANSWER : F

Genetics

Lecture 1

17. Two parents are phenotypically normal, but one of their four biological Children has a typical autosomal recessive trait. The other three children are Phenotypically normal. It is very likely that:

A) the affected child is a girl.
B) the affected child is a boy.
C) the trait was expressed by one of the grandparents of the children.
D) the parents are both heterozygous for the trait.
E) if the affected child eventually marries a phenotypically normal spouse, all of their children will have the trait

ANSWER : D

18. Which description of a Y-linked trait in humans is CORRECT?

A) All the sons of an affected father will be affected with the trait.
B) Half the sons of a mother whose father was affected with the trait will be affected.
C) Half the sons of an affected father will not be affected with the trait and the other half will be infertile.
D) All the daughters of an affected father will be phenotypically normal but half of their own sons will be affected with the trait.
E) The parents of an affected man likely were both phenotypically normal.

ANSWER : A

19. Which statement is INCORRECT concerning an X-linked recessive trait in humans

A) An affected man often has phenotypically normal parents.
B) All the sons of an affected woman will be expected to be affected.
C) An affected woman almost always has an affected mother.
D) An affected man usually has a mother who carries the recessive allele.
E) A phenotypically normal woman whose father was affected is likely to Be heterozygous for the condition.

ANSWER : C

20. Process of cutting introns out of immature RNAS and stitching together the exons to form final product is called

A) DNA splicing
B) Alternative splicing
C) RNA transcription
D) RNA translation
E) RNA splicing

ANSWER : E

Genetics

Lecture 2

21. _____ is also known as "light" chromatin and represents DNA that can actively undergo

A) Heterochromatin ..... transcription
B) Euchromatin ... transcription
C) Euchromatin ... translation
E) Heterochromatin..... translation

ANSWER : B

22. The chromosomal region that is the point of attachment of the mitotic spindle is the:

A) centromere
B) centrosome
C) telomere
D) intron

ANSWER : A

23. _____are proteins used to package DNA

A) Chromatins
B) Histones
C) Nucleosomes
D) Telomerases

ANSWER : B

24. Which of the following is correct regarding the nucleosome and histones

A) This core contains two copies each of histones H2A, HI B, H3, and H4.
B) This core contains one copy each of histones H2A, H2B, H3, and H4.
C) This core histone contains two copies each of histones H3A, H2B, H3, and H4.
D) A nucleosome consists of around 147 base pairs of double-stranded DNA wrapped around core histone proteins

ANSWER : D

Genetics

Lecture 2

25. What is meant by the "beads on a string" model of chromatin?

A)A The beads are the histones, and the string is the transcriptionally active DNA loops.
B)The beads are the nucleosomes, and the string is the linker DNA.
C)The beads are molecules of DNA polymerase that attach to the DNA string.
D)The beads are ribosomes, and the string is the mRNA that has been transcribed.
E)The beads are the heterochromatic regions that are tightly compacted, and the strings are euchromatic regions that are being actively transcribed.

ANSWER : B

26. Somatic cell nuclei and germ cell nuclei differ in their enzyme content. Which of the following enzymes make germ cells "immortal"?

A) Telomerase.
B) Endonuclease.
C) RNA polymerase.
D) Ligase.
E) DNA polymerase.

ANSWER : A

27. Why is an RNA primer essential during DNA synthesis by DNA polymerase Ill?

A) There is no particular reason, that is simply the observation.
B) The enzyme requires a free 3'-P04 group to initiate replication.
C) The enzyme requires a free 5'-P04 group to initiate replication.
D) The enzyme requires a free 3'-OH group to initiate replication.
E) The enzyme requires a free 5'-OH group to initiate replication.

ANSWER : D

28. A chromosome with two arms Of equal lengths is referred to as

A) Metacentric.
B) Submetacentric.
C) Acrocentric.
D) Subacrocentric.
E) Telocentric.

ANSWER : A

Genetics

Lecture 2

29. Which of the following statements about euchromatin is correct?

A) Euchromatin is lightly packed and available for transcription.
B) Euchromatin is tightly packed and available for transcnption.
C) Euchromatin represents of chromosome
D) Euchromatin replicate late S phase
E) Concentrated at the both ends of the chromosome
F) A&C
G) B & D

ANSWER : A

30. Which histone protein is not part Of the nucleosome structure?

A) H1
B) H2A
C) H2B
D) H3
E) H4
G) None of them

ANSWER : A

31. Which of the following statements about DNA packaging into chromosomes is correct:

A) The double helix DNA is wrapped 4 times around the core histones to produce a nucleosome.
B) The HI histone is part of the core histones.
C) The 300-nm chromatin is created by the interaction of 10-nm fiber and the nuclear matrix.
D) The radial loops of the 300-nm chromatin are generated by the attachment of looped domains to the nuclear matrix via DNA sequences called MARs.
E) C and D.
F) All Of the above are correct.

ANSWER : D

32. What is the function of the telomerase RNA in telomere replenishing?

A) Acts as a template.
B) Acts as a primer.
C) Acts as a ribozyme.
D) A and C.
E) B and C.

ANSWER : A

Genetics

Lecture 2

33. Which type of chromosome has no p arms?

A) Metacentric.
B) Submetacentric.
C) Acrocentric.
D) Subacrocentric.
E) Telocentric.

ANSWER : E

34. The difference between the lagging strand and the leading strand is:

A) There's no clear difference between the lagging and the leading strands-
B) The leading strand is synthesized by adding nucleotides to the 3' end Of the growing strand, and the lagging strand is synthesized by adding nucleotides to the S' end.
C) The lagging strand is synthesized continuously, whereas the leading strand is synthesized in short fragments that are ultimately stitched together.
D) The leading strand is synthesized in the same direction as the movement Of the replication fork, the lagging strand is synthesized in the opposite direction.

ANSWER : D

35. _____is repeating structural unit within eukaryotic chromatin which are composed of DNA and histone proteins.

A) Nucleosome.
B) Repetitive DNA.
C) Euchromatin.
D) Heterochromatin.
E) None of the above.

ANSWER : A

36. Structures called recombination nodules (chiasmata) begin to appear along the synaptonemal complex during_____The synaptonemal complexes dissolve during___

A) Pachytene, diplotene.
B) Diplotene, pachytene.
C) Leptotena, pachytene.
D) Pachytene, leptotena.

ANSWER : A

Genetics

Lecture 2

37. Which of the following is the longest phase in the cell cycle?

A) G1 Phase.
B) S Phase.
C) Interphase.
D) G2 Phase

ANSWER : C

38. Prophase I is further subdivided into all of the following periods except:

A) Leptotena
B) Zygotena
C) Pachytena
D) Diplotena
E) Cytokinesis

ANSWER : E

39. If a cell has 16 chromosomes, at the end of meiosis one, what is the expected number of chromosomes in a single cell:

A) 16
B) 32
C) 8
D) 4

ANSWER : C

40. Which type of microtubules helps to "push" the poles of the cell away from each other and increase the length of the cell to make it easier to separate it to 2 cells:

A) Aster microtubules.
B) Polar microtubules.
C) Kinetochore microtubules.
D) All of the above.
E) None of the above.

ANSWER : B

Genetics

Lecture 2

41. Chromosomes are in the highest form Of compaction during which phase?

A) prophase.
B) Prometaphase.
C) Metaphase
D) Anaphase.
E) Telophase-

ANSWER : C

42. Which Of the following pairs is correctly matched:

A) Prometaphase – chromosomes condense and become visible.
B) Anaphase – chromosomes decondense and are enclosed in two nuclei(chromosomes are separated completely)
C) Metaphase – chromosomes align at the cell's equator.
D) Prophase – spindle forms and sister chromatids attach to microtubules from opposite centrosomes.

ANSWER : C

43. Attachment of the mitotic spindle fibers to the kinetochores is a characteristic of which stage of mitosis

A) Prometaphase
B) Prophase
C) Interphase
D) metaphase

ANSWER : A

44. Histones are_____that are usually associated with_____

A) basic proteins; DNA
B) b. basic proteins; RNA
C) acidic proteins; RNA
D) acidic proteins; DNA

ANSWER : A

Genetics

Lecture 2

45. How many copies of the H2 histone would be found in chromatin containing 30 nucleosomes?

A) 50
B) 30
C) 60
D) 120

ANSWER : D

46. According to the central dogma , which of the following represents the flow of genetic information in cells

A) RNA to DNA to protein
B) protein to DNA to RNA
C) DNA to protein to RNA
D) DNA to RNA to protein

ANSWER : D

47. The DNA consists of nucleotides linked to each other by

A) phosphodiester bonds between the 2' carbon of one nucleotide and the 5' carbon of the following nucleotide in 5 to 3' direction
B) phosphodiester bonds between the 5' carbon of one nucleotide and the 3' carbon of the following nucleotide in 5' to 3' direction
C) glycosidic bonds
D) phosphodiester bonds between the 3 carbon of one nucleotide and the 5' carbon of the following nucleotide in 5' to 3' direction

ANSWER : D

48. The DNA between nucleosomes is referred to as

A) Linker DNA
B) Histone DNA
C) Octamer
D) Binder DNA

ANSWER : A

Genetics

Lecture 2

49. A Barr body is a(n):

A) gene on the X chromosome that is responsible for female development.
B) patch of cells that has a phenotype different from surrounding cells because of variable X inactivation.
C) inactivated X chromosome, visible in the nucleus of a cell that is normally from a female mammal.
D) extra X chromosome in a cell that is the result of nondisjunction.
E) extra Y chromosome in a cell that is the result of nondisjunction.

ANSWER : C

50. Which of the following statements about X inactivation in mammalian females is FALSE?

A) Females that are heterozygous for an X-linked gene have patches of cells that express one allele and patches of cells that express the other.
B) Some genes on the inactive X continue to be expressed after the chromosome is inactivated.
C) X inactivation is random as to which X is inactivated and takes place early in embryonic development
D) Inactivation is thought to be initiated by expression of the Xist gene on the X that will remain active.
E) Once an X chromosome first becomes inactivated in a cell, that same X will remain inactivated in somatic cells that are descendants of this cell

ANSWER : D

51. X-chromosome inactivation is an example of facultative heterochromatin

A) True
B) False

ANSWER : A

52. Regarding the pentoses sugar found in nucleic acids: C-5 of the pentose is joined to a nitrogenous base, and C-1 to a phosphate group

A) True
B) False

ANSWER : B

Genetics

Lecture 2

53. Nucleosomes consist of DNA wrapped in proteins known as transcriptions factors

A) True

B) False

ANSWER : B

54. To add nucleotides to the growing strands, DNA polymerases require a primer with a free 5-0H group at the end.

A) True

B) False

ANSWER : B

55. During DNA synthesis, DNA polymerases can only add nucleotides in the 3+5' direction

A) True

B) False

ANSWER : B

56. Euchromatin is tightly packed and available for transcription

A) True

B) False

ANSWER : B

Genetics

Lecture 2

57. Histones are basic proteins that are usually associated with DNA

A) True
B) False

ANSWER : A

58. The radial loops of the 300-nm chromatin are generated by the attachment of looped domains to the nuclear matrix via DNA sequences called MARS

A) True
B) False

ANSWER : A

59. Somatic cells have a haploid number of chromosomes while gametes have a diploid number.

A) True
B) False

ANSWER : B

60. Homologous recombination takes place in the G1 phase the cell cycle

A) True
B) False

ANSWER : B

Genetics

Lecture 2

61. which of the following in NOT a component of DNA?

A) Pyrimidines such as uracil
B) Purines such as adenine
C) Pyrimidines such as guanine
D) Deoxyribose sugar
E) A phosphate group
F) A and C

ANSWER : F

62. where would you most likely find chromatin in the 30 nm diners conformation

A) Heterochromatin
B) Actively transcribed chromatin
C) Silenced chromatin
D) Euchromatin
E) A and B
F) B and D

ANSWER :

63. nucleosides contain a nitrogenous base , a Penrose , and at least one phosphate while nucleotides contain a nitrogenous base , a Pentose but missing the phosphate

A) True
B) False

ANSWER : B

64. during DNA replication , the complementary stand is always built from

A) The end of the middle
B) The 3’ to 5’, nucleotides are added at the 5’ end of the growing sequence
C) The 5’ to 3’ end, nucleotides are added at the 5’ end of the growing sequence
D) The replication fork to the end , nucleotides are added at then 5’ end of the growing sequence
E) Non of the above

ANSWER : E

Genetics

Lecture 3

65. Which of the following statements regarding R-banding is false?

A) Dark regions are euchromatic.
B) Bright regions are heterochromatic.
C) Provides critical details about gene-rich regions that are located near the telomeres.
D) GC-rich regions stain less intensely with Giemsa compared to AT-rich regions.

ANSWER : D

66. You are trying to prepare a DNA karyotype, but this time you forgot to add trypsin to your chromosome preparation. What effect would you expect to see?

A) Dyes would stain the chromosomes better because more proteins are present to take up the dye.
B) Dyes would not stain the chromosomes at all.
C) Chromosomes will be uniformly stained, so it would be very difficult to isolate individual chromosomes.
D) Chromosomes would be degraded quickly because the trypsin is necessary to promote DNA stability by adding more scaffold proteins to the chromatin.
E) The chromosomes would be more difficult to pair up because the trypsin acts as a dye, creating a banding pattern that distinguishes between chromosomes.

ANSWER : C

67. Which of the following is false about G-dark and a-light areas?

A) The dark areas tend to be heterochromatic.
B) The light areas tend to be euchromatic.
C) The dark areas are AT-rich.
D) The light areas are GC-rich.
D) G-dark areas are rich in active genes while G-light areas lack active genes-

ANSWER : E

68. You have identified a chromosome that has both p and q arms, but notice that the p arms are composed Of bjghly repetitive DNA. What type Of chromosome is this?

A) Metacentric
B) Submetacentric
C) Acrocentric
D) Subacrocentric
E) Telocentric

ANSWER : C

Genetics

Lecture 3

69. You have a T-lymphocyte which you sent to a lab tech and asked him to perform a a-banding on it. What is the correct sequence Of steps that should be followed by the lab tech?

A) Blood collection > phytohemagglutenin > colchicine or colcemid > hypotonic saline > fixative and staining.
B) Blood collection > colchicine or colcemid > phytohemagglutenin > hypotonic saline > fixative and staining.
C) Blood collection > fixative and staining > colchicine or colcernid > phytohemagglutenin > hypotonic saline.
D) Blood collection > hypotonic saline > phytohemagglutenin > colchicine or colcemid > fixative and staining.

ANSWER : A

70. Which of the following is true regarding G-banding techniques

ANSWER : a. The dark bands are A-T-rich, early-replicating heterochromatin late-replicating, euchromatic regions

71. The phytohemagglutinin (PHA)

A) To inhibit cell division
B) To stimulate and inhibit cell division
C) To align chromosome at the equa
D) To stimulate mitosis
E) To stimulate meiosis

ANSWER : D

72. karyotype is a spread of chromosomes arranged according to

A) Size
B) Centromere position
C) Banding patten
D) All of the above

ANSWER : A

Genetics

Lecture 3

73. Which of the following is NOT a usage for chromosome banding and karyotyping?

A) To tell whether patient has black or brown hair
B) To identify the abnormally shaped chromosome
C) To identify most of chromosomal structural abnormality
D) To tell whether patient has an extra Chromosome 18

ANSWER : A

74. Which of the following is correct regarding colcemid:

A) It binds to the protein tubulin, obstructing formation of the spindle fibers or destroying those already present. Exposure time to colcemid varies by specimen type.
B) It binds to the protein tubulin, obstructing formation of the spindle fibers but not destroying those already present. Exposure time to colcemid is the same for all specimen type.
C) It binds to the protein tubulin, obstructing formation of the spindle fibers or destroying those already present. Exposure time to colcemid is the same for all spec

ANSWER : A

75. When chromosomes are heated and stained with Giemsa stain, the resulting bands are called:

A) G bands
B) Q bands
C) R bands
D) C bands

ANSWER : C

76. The purpose of a staining technique of chromosomes such as Giemsa is to:

A) allow mitotic process +0 be followed and monitored for variations.
B) allow the numbering of chromosomes and identification of variations.
C) identify new somatic cells formed through mitosis and cytokinesis.
D) distinguish the point mutation in chromosomes

ANSWER : B

Genetics

Lecture 3

77. In order to perform karyotype analysis, chromosomes are obtained from actively dividing cells and treated with chemicals to keep them at the _____ stage of mitosis.

A) Prophase
B) Interphase
C) Anaphase
D) Telophase
E) metaphase

ANSWER : E

78. How is colchicine, the chemical used in preparing karyotypes, useful for Studying chromosomal mutations?

A) Colchicine prevents cells from entering anaphase, stalling them in Metaphase with condensed chromosomes.
B) Colchicine induces chromosome condensation during interphase, which allows the visualization of interphase chromosomes.
C) Colchicine causes chromosomal breakage, leading to inversions and translocations that can be observed with a microscope.

ANSWER : A

Genetics

Lecture 4

79. Which karyotype would be most frequently seen in live-born infants (as opposed to spontaneous abortion)?

A) 69,XXX
B) 46,YY
C) 47,xx, +21
D) 47,XX, +1
E) 47,XX, +18

ANSWER : C

80. Robertsonian translocation is a rare form of chromosomal rearrangement that

A) Occurs between acrocentric chromosome pairs
B) The long arms fuse to form a single, large chromosome with a single centromere
C) is also called whole-arm translocations or centric-fusion translocations
D) It occurs in the acrocentric chromosomes
E) The total chromosome number is reduced to 45
F) All of the above except "e"
G) All of the above

ANSWER : G

81. In Klinefelter syndrome, the maximum number of Barr bodies per cell

A) 1
B) 0
C) 2
D) 3
E) 4

ANSWER : A

82. For FISH technique

A) You need to know the region to be tested
B) You need to use a specific probe for the region of interest
C) You need a fluorescent microscope
D) You need a light microscope
E) All of the above are correct except "d"

ANSWER : E

Genetics

Lecture 4

83. A chromosomal analysis is obtained on a young woman with mild signs of Turner syndrome and reveals a 46,XX/45,X karyotype.

Nondisjunction is most likely to have occurred in:

A) paternal meiosis II
B) maternal meiosis I
C) mitosis after fertilization
D) paternal meiosis I
E) maternal meiosis II

ANSWER : C

84. Although the most frequent forms of Down syndrome are caused by nondisjunction of chromosome 21, Down syndrome occasionally runs in families. The cause of this form of familial Down syndrome is _____ .

A) an inversion involving chromosome 21
B) a chromosomal aberration involving chromosome 1
C) too many X chromosomes.
D) a translocation between chromosome 21 and a member of the D Chromosome group.
E) a maternal age effect.

ANSWER : D

85. The condition that exists when an organism gains or loses one or more chromosomes but not a complete haploid set is known as _____ .

A) polyploidy
B) euploidy
C) aneuploidy
D) triploidy
E) Trisomy

ANSWER : C

86. In humans, XXY individuals are males with Klinefelter syndrome. Which of the following events may not give rise to a Klinefelter male?

A) nondisjunction at meiosis I in the mother
B) nondisjunction at meiosis II in the mother
C) nondisjunction at meiosis I in the father
D) nondisjunction at meiosis II in the father
E) All of the choices could give rise to a Klinefelter male.

ANSWER : D

Genetics

Lecture 4

87. Which of the following helps explain why increased maternal age is correlated with an increased risk of Down syndrome?

A) mutations accumulate in the germ line in a time-dependent manner
B) meiosis in oocytes is incomplete before fertilization
C) frequency of crossovers increases with gamete age
D) barriers to double fertilization decrease in older ova
E) kinetochore fusion is more common in older women

ANSWER : B

88. Down syndrome can result from

A) three copies of chromosome 21.
B) a translocation of a part of chromosome 21.
C) a reciprocal translocation between any two autosomes.
D) both A and B

ANSWER : D

89. The most common human aneuploidy is trisomy 21, Down syndrome. All of the effects listed below may be seen in this syndrome except:

A) death always by age 25.
B) mental retardation.
C) skeletal abnormalities.
D) heart defects.
E) increased susceptibility to infection.

ANSWER : A

90. Which of the following sex chromosome aneuploidies is not usually seen in live births?

A) XO
B) XXY
C) YO
D) XXX
E) None of the choices are correct.

ANSWER : C

Genetics

Lecture 4

91. Triploid organisms usually result from
A) the union of haploid and diploid gametes.
B) unequal disjunction during embryogenesis.
C) propagation of fused cell lines.
D) fusion of three gametes simultaneously.
E) Two of the choices

ANSWER : E

92. What is the expected outcome for a human embryo with the XXXY chromosome constitution?
A) It would likely develop into a female who will not respond to the hormone testosterone.
B) It would likely develop into a sterile male with reduced testes.
C) It will always abort early in development before birth.
D) It would likely develop into a tall female who may be slightly cognitively impaired.
E) It would likely develop into a fertile man with a completely normal male phenotype.

ANSWER : B

93. The parents of a child with a karyotype of 47,XY, +21 ask nurse what this means. Which is an accurate response by nurse?
A) This karyotype is for a normal male.
B) This karyotype is for a normal female.
C) This karyotype is for a male with Down syndrome.
D) This karyotype is for a female with Turner's syndrome.

ANSWER : C

94. What is the most common cause of Down syndrome?
A) Paternal nondisjunction
B) Maternal translocations
C) Maternal nondisjunction
D) Paternal +translocation

ANSWER : C

Genetics

Lecture 4

95. Klinefelter and Turner syndromes have how many chromosomes, respectively?

A) 47,46
B) 46,46
C) 45,47
D) 47,45
E) 46,45

ANSWER : D

96. How many Barr bodies would one expect to see in cells of Turner syndrome females and Klinefelter syndrome males, respectively?

A) zero and two
B) one and one
C) zero and one
D) one and zero
E) zero and zero

ANSWER : C

97. Somatic mutations occur in cells of the body that form gametes

A) True
B) False

ANSWER : B

98. FISH can be performed only on metaphase cells

A) True
B) False

ANSWER : B

Genetics

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99. Which statement below is correct regarding paracentric inversion

A) It is an inversion involves the centromere, with one break in each chromosome arm
B) It is an abnormal chromosome with two identical arms
C) It is an aberration which involves the movement of a segment of intrachromosomal material from one chromosomal location into another
D) It is an inversion which is isolated to one chromosome arm and does not involve the centromere.

ANSWER : D

100. In reciprocal translocations two non-homologous chromosomes exchange genetic material usually generate so called

A) Balanced translocations
B) Unbalanced translocations
C) Non-homologous translocations
D) Non-reciprocal translocations

ANSWER : A

101. Cri-du-chat (cry like a cat) syndrome in humans caused by

A) terminal deletion in chromosome 15
B) Terminal deletion in chromosome 5
C) Interstitial deletion in chromosome 5
D) Duplication in chromosome 15
E) Inversion in chromosome 5

ANSWER : B

102. In a Robertsonian translocation fusion occurs at the:

A) Centromeres
B) Telomeres
C) Ends of the long arms
D) Histones

ANSWER : A

Genetics

Lecture 5

103. Nondisjunction can occur at either the first or second division of meiosis. XYY individuals would most likely arise from nondisjunction at the _____ meiotic division in the _____ .

A) first; mother
B) second; mother
C) first; father
D) second; father
E) more than one of the choices could give rise to XYY individuals

ANSWER : D

104. Which of the following karyotypes is not compatible with survival to birth?

A) 45, XX,-21
B) 45,Y
C) 47,XY,+13
D) 47,XX,+18

ANSWER : B

105. The +three chromosomal abnormalities that cause down syndrome are:

A) trisomy 21 ; translocation ; mosaicism
B) trisomy 23 ; translocation ; mosaicism
C) trisomy 21 ; translocation ; Fragile X
D) trisomy 23 ; translocation ; Fragile X
E) trisomy 23 ; mosaicism ; Fragile X

ANSWER : A

106. Which of the following represents a karyotype of a male with a balanced Robertsonian +translocation of chromosome 13 and 14:

A) 46, XY, der (13;14) (p21:q13)
B) 46, XY, t (13;14) (q23:q22)
C) 45, XY, der (13;14) (p21:q13)
D) 45, XY, der (13;14) (q10:q10)
E) 46, XY, der (13;14) (q10:q10)

ANSWER : D

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107. Which of the following human genetic conditions is missing a chromosome?

A) Klinefelter syndrome
B) XXXX syndrome
C) Down's syndrome
D) Turner syndrome

ANSWER : D

108. Individuals have been identified who have two different karyotypes, such as (45,X and 46,XY) or (45,X and 46,XX). Such individuals are called:

A) Heteromorphic
B) Homogametic
C) Trisomic
D) Mosaics
E) Heterogametes

ANSWER : D

109. Which of the following karyotypes would lead to male characteristics in humans?

A) XO
B) XYY
C) XXY
D) Both A and B
E) Both B and C

ANSWER : E

110. When nondisjunction occurs early in embryogenesis rather than gametogenesis, what would you expect in the resulting karyotype?

A) Monosomy
B) Trisomy
C) Mosaicism
D) uniparental disomy
E) random X-inactivation

ANSWER : C

Genetics

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111. In case of Robertsonian translocation causing Down syndrome. How many chromosomes would you expect to see in the karyotype of a somatic cell in an affected individual?

A) 21
B) 23
C) 45
D) 47
E) 46

ANSWER : E

اللهم سلم غزة وأهلها من كل سوء وشر,اللهم انصرهم وثبت أقدامهم وكن لهم ناصرًا ومعينًا

لا تنسوني من صالح دعائكم

Malek Abu Rahma

The End

Good Luck シ