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VU BS Biology Zone (Admin ; Talha Waraich)

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gift for VU BS Biology Zone ,

I am thankful to Tasha Khan (Talha Waraich)

Bio_301 - Genetics

1) the Sub Types of Genetics?

Ans: There are four sub disciplines of genetics which are as follows, although some of the Geneticist classify Genetics in many sub disciplines

Transmission (Classical) Genetics

Population Genetics

Quantitative Genetics

Molecular Genetics

2) Gregor Mendel used garden pea as experimental plant for formulating the ?without option

Ans: laws of heredity

3) Gregor Mendel used garden pea as experimental plant for formulating the laws of heredity, write the following were the properties of garden pea ?

Ans: Seed in a variety of shapes and colors.

Self, cross pollinate.

Takes up little space.

Short generation time

Produces many offspring

4)which is the Population genetics is the study tsof in a group of population.?

a) gene b) heredity c) trait d) genome

5) Quantitative genetics is the study of group hereditary for traits determined by many genes simultaneously such as ?

a) skin color, b) height, c)eye color d) all of these

6) Molecular genetics this branch of genetics deals with the molecular structure and function of genes

a) gene b) heredity c) trait d) genotype

7) What is Trait?

Ans; variant for a character (i.e. brown, black, white etc).

8)Define Genotype and Phenotype?

: Genetic make-up of an organism is called Genotype while physical appearance of an organism is called Phenotype

9)Define Dominant and Recessive?

when one characteristic expresses itself over the other i.e. round over wrinkled was dominant in Gregor Mendel experiments while the trait that does not show through in the first generation is called as recessive trait i.e. wrinkled.

10) when one characteristic expresses itself over the other i.e. round over wrinkled was dominant in Gregor Mendel experiments IS Called ?

a) qualitative trait b)Recessive trait c) Dominant trait d) quantitative trait

11) wgen the trait that does not show through in the first generation is called as i.e. wrinkled.?

a) qualitative trait b)Recessive trait c) Dominant trait d) quantitative trait

12) when we a cross of parents, that are pure for contrasting traits, only one form of the trait will appear in the next generation. In the monohybrid cross, one version will be disappeared is called ?

a) law ndependent assortment b) law of dominance c) Law of Segregation

13)write the Modern Genetics Concepts ?

Ans: Chromosomes and Gene (s)

Mendelian Genetics and Non-Mendelian Genetics

Genotypes and Phenotypes

Mutations and Polymorphism

14) What is chromosome?

Ans;

Genetic material in cells is organized into chromosomes. Prokaryotes generally have one circular chromosome. Eukaryotes - linear chromosomes in their nuclei.

15) what is gene ?

Ans; A heredity unit on chromosomes

16)when Indicate "a change" while in other disciplines it is used to indicate "a diseasecausing change" ?

a) Mendelian genetics b) Non-Mendelian genetics c) gene d) mutation

17)in which Genetic make-up of an organism ?

a) heredity b) Genotype c) phenotype d) gene

18) which physical appearance of a organism create is called ?

a) heredity b) Genotype c) phenotype d) gene

19) in which process Transmission of traits from parents to offspring is called ?

a) trait b) gene c) papulation d) Heredity

20) According to blending hypothesis, genetic material of the parents mixes during ?

a) egg b) ovum c) fertilization d) sperm

21)which is the process Differences can be seen in individuals of the same species, such as height, weight, color etc is called ?

a) variation b) Discontinuous Variation c) Continuous variation d)heredity variation

22) Language, obesity, athletic skills etc what type of variation?

a) Inherited Variations b) Acquired Variation c) Variation by genetic d) variation by

environment

23) Blood groups, finger prints and sex etc. what type of of varation ?

a) Inherited Variations b) Acquired Variation c) Variation by genetic d) variation by

environment

24) in which process we describes the situation in which there are many intermediates between the extremes. Shade of hair color between black and blond. ?

a) variation b) Discontinuous Variation c) Continuous variation d)heredity variation

25) which process we are entirely genetically controlled. And They cannot be altered by external conditions. Blood group, color blind, dwarfism are genetically controlled are called ?

A) Discontinuous Variation b) Acquired Variation c) Variation by genetic d) Continuous variation

26) which process in which tall plants produced only tall offspring & purple flowered plants produced only purple is ?

a) Pure Cross b) Pure-breeding plants c) hybrid cross d)all of these

27) in which Pattern of inheritance that deviate from Mendelian pattern of inheritance is called ?

a) Mendelian inheritance b) Non-Mendelian inheritance c) both of these d) none of these

28) Each trait is controlled by gene?

a) DOUBLE gene b) triple gene c) double pair of gene d) single gene

29) Each gene has alleles ?

a) 3 b) 2 c) 5 d) 1

30) Cross of true-breeding strains resemble only of the parents?

a) one b) two c) three d) four

31)in which) Two members of a gene pair segregate (separate) from each other during the formation of gametes is called ?

a) law of dominance b) Law of segregation c) Law of independent assortment

d) none of these

32) in which Some alleles for a gene are not completely dominant is called ?

a) complete dominance b) Incomplete dominance c) both of these

33) A situation, in when both alleles appear in the phenotype is called ?

a) Co-dominance b)) complete dominance c) incomplete dominance d) none of these

34) Most traits are not controlled by a single gene locus, but by the combined interaction of many gene loci is called ?

a) qualitative trait b) quantitative trait c) Polygenic traits

35) Skin color pigmentation in humans is controlled by at least separately inherited genes?

a) 2 b) 3 c) 4 d) 6

36) Alleles at one gene locus can hide or prevent expression of alleles at second gene locus is called ?

a) polygenic trait b) variation c) Pleiotrop d) Epistasis

37) The ability of a gene to affect an organism in many ways is called ?

a) polygenic trait b) variation c) Pleiotrop d) Epistasis

38) Pleiotropy refers to an allele which has more than one effect on the ?

a) genotype b) trait c) allel d) phenotype

39)example of Sickle cell anemia and Cystic fibrosis is ?

a) polygenic trait b) variation c) Epistasis c) Pleiotro

40)in Huntington disease the Phenotype 1: progressive dementia at age of years ?

a) 40-50 b) 50 -60 c) 50 -70 d) 50- 80

41) n Huntington disease the Phenotype 2: death in about after onset of disease. ?

a) 6 years b) 5 years c) 7 years d) 10 years

42) Chromosomes are the , filamentous bodies present in the nucleus.?

a) circular shaped b) viral shaped c) sequare shaped d) rod-

shaped

43) Chromosomes were described by Strausberger in ?

a)1875 b) 1877 c) 1870 d) 1879

44) Chromosome was first used by in 1888.

a) Strausberger I b) Waldeye

45) What are the meaning of Chromosomes? Without option

Ans; (Chromo = color; Soma = body).

45) Chromatin fibers undergo folding, coiling and supercoiling during so that the chromosomes become progressively thicker and smaller and become visible.

a) metaphase b) anaphase c) prophase

46)Chromosomes are rod shaped filamentous bodies present in the prokaryotic/eukaryotic cells.

a) prokaryotic b) eukaryotic cells c) both of these d) none of these

47) Most organisms have chromosomes numbers between ?

a) 12 to 60 b) 12 to 50. C) 12 to 70 d) 12 to 80

48) Fungi have chromosomes?

a) 3-8 b) 3-9 c) 3-5 d) 3-3

49) Diploid chromosome number in human is;

a) 48 b) 46 c) 40 d) 42

50) how many Chromosomesin Mosquito.

a) 8 b) 2 c) 4 d) 6

51) how many Chromosomes in Horsetail.

a) 200 b) 216 c) 220 d) 215

52.) The size of the chromosomes varies between 0.5 µ to 32 µ in length

a) 0.5 µ to 32 µ b) 0.5 µ to 30 µ c) 0.6 µ to 32 µ d) 0.6 µ to 30 µ

53) Haploids are able to express both recessive and dominant alleles/mutations

because there are

a) many alleles for each gene b) two alleles for each gene

(c) only one allele for each gene in the individual (d) only one allele in a gene.

54) A family of five daughters only is expecting sixth issue. The chance of its beings a son is
(a) zero

(b) 25%

(c) 50%

(d) 100%

55) Mutations used in agriculture are commonly
(a) induced

(b) spontaneous

(c) lethal

(d) recessive and lethal.

56) DNA replication is
(a) conservative and discontinuous

(b) semiconservative and semidiscontinuous

(c) semiconservative and discontinuous

(d) conservative.

57) An octamer of 4 histones complexed with DNA forms
(a) endosome

(b) nucleosome

(c) mesosome

(d) centromere

58) Bateson used the terms coupling and repulsion for linkage and crossing over. Name the correct parental of coupling type along with its cross over or repulsion

a) coupling AABB, aabb; Repulsion AABB, aabb

(b) coupling AAbb, aaBB; Repulsion AaBb, aabb

(c) coupling aaBB, aabb; Repulsion A ABB, aabb

(d) coupling AABB, aabb : Repulsion AAbb, aaBB.

59) The process of transfer of genetic information from DNA to RNA/formation of RNA from DNA
(a) transversion

(b) transcription

(c) translation

(d) translocation.

60) **A** DNA with unequal nitrogen bases would most probably be
(a) single stranded

(b) double stranded

(c) triple stranded

(d) four stranded.

61) Sex is determined in human beings
(a) by ovum

(b) at time of fertilization

(c) 40 days after fertilization

(d) seventh to eight week when genitals differentiate in foetus

62) Each chromosome at the anaphase stage of a bone marrow cell in our body has
(a) two chromatids

(b) several chromatids

(c) no chromatids

(d) only one chromatid

63) Place on chromosome where spindle fibers are attached during cell division is called

A. chromatids
B. centromere
C. centrioles
D. mitochondria

64) Chromosome doubling in every generation reproducing sexually is prevented by

A. meiosis
B. reduction division
C. both A and B
D. mitosis

65) An estimate measurement of a chromosome in close circle of Escherichia Coli is

A. 1400 µm
B. 1200 µm
C. 1100 µm
D. 1000 µm

66) There are 48 chromosomes in a cell of a

A. chimpanzee
B. human being
C. drosophila

D. monkey

67) What are the major chemical components of the chromosome?
A] DNA and RNA
B] DNA and Protiens
C] Protein and Histone
D] Protein and Nucleic acid

68) What is called genome?
A] The haploid set of chromosomes
B] The dipploid set of chromosomes
C] The fusion of two haploid gametes
D] The somatic cells

69) how many autosomes in human beings?
A] 23 pair
B] 22 pair
C] 1 pair
D] 44 pair

70) . Chromosome's diameter vary from:
A] 0.1 to 50 µm
B] 0.2 to 2 µm
C] 1 to 500 µm
D] 2 to 20 µm

71) The DNA threads which appear inside the nucleus at the time of cell division
a) Spindle fibers
b) Centrioles
c) Asters
d) Chromosomes

72) hromatin is composed of
a) DNA
b) DNA and proteins
c) DNA, RNA and proteins
d) None

73) Which of the following histones bind to linker DNA?
a) H1
b) H2A
c) H2B

d) H3

74) The sister chromatids separate at
a) Prophase
b) Metaphase
c) Telophase
d) Anaphase

75) Chromosomes are arranged along cell equator to form

A. metaphase plate
B. anaphase plate
C. telophase plate
D. prophase plate

76) Number of chromosomes in parent cell are

A. equal
B. not equal
C. 38 chromosomes
D. 48 chromosomes

77) Chromosomes are divided in anaphase to form

A. daughter chromosomes
B. sister chromosomes
C. daughter chromatids
D. sister chromatids

78) Kinetochores is preset in each chromosome at

A. somatic cells
B. vacuoles
C. centromere
D. gametophytes

79)

Chromosomes are composed of

A. 40% protein and 60% DNA B. 50% protein and 50% DNA

C. 70% protein and 30% DNA D. 60% protein and 40% DNA

80) Region of repetitive nucleotide sequences at each end of chromatid is

A. centromere
B. telomere
C. isomers
D. Monomer

81) If centromere is located at terminal end of chromosome than its called

A. metacentric
B. submetacentric
C. acrocentric
D. telocentric

82) f length of chromosome arms are unequal than chromosome is said to be

A. metacentric
B. submetacentric
C. acrocentric
D. telocentric

83) For vertebrates, sequence of nucleotides in telomeres is

A. GGGTAA
B. AAAGTT
C. TTTAGG
D. TTAGGG

84) Tightly packed form of DNA is called

A. supercoiling
B. compressed state
C. Euchromatin
D. Heterochromatin

85) Type of chromatin that participates in active transcription of DNA to mRNA products is

A. heterochromatin
B. Euchromatin
C. Centromere
D. Acrocentric chromosomes

Answer

86) Heterochromatin is usually localized to periphery of the

A. cell membrane
B. cytoplasm
C. nucleus
D. cell wall

87) Euchromatin is the

A. lightly packed form of chromatin
B. tightly packed form of chromatin
C. concentrated form of chromatin
D. elongated form of chromatin

Answer

88) Percentage of human genome to be euchromatic is

A. 0.72
B. 0.52
C. 0.92
D. 0.5

89) When molecule relieves helical stress by twisting around itself than phenomena is called

A. coiling
B. supercoiling
C. elongation
D. compression

90) ____are the fluorescent bands observed after quinacrine mustard staining with UV light.

A) Q bands

B) R Bandin

C) C Banding

91) The nucleosome is composed of a core of eight histone proteins and DNA wrapped around them.

A) 145bp

B) 140 bp

C) 142bp

D) 147 bp

92)WRITE THE NAME OF Nucleosomes- Five histones?

ANS; Five abundant histones are H1, H2A, H2B, H3 and H4.

The core histones share a common structural fold, called histone-fold domain

99

93)IN which the karyotype of a species may be represented diagrammatically, showing all the morphological features of the chromosome; such a diagram is known as Idiotype.

a) idiotype

b) karyotype

c) Kinetochore

d)none of these

94)define CEN DNA . write the name of sub domain of Kinetochore?

Ans: The DNA sequence within these regions is called CEN DNA ..120 base pairs long and consists of sub-domains, CDE-I, CDE-II and CDE-III.

95) n prokaryotes single copy DNA is present

A. 40% per genome
B. 30% per genome
C. 20% per genome
D. 10% per genome

Answer

96) In most eukaryotic organisms telomerase is active only in

A. germ cells
B. embryonic stem cells
C. certain white blood cells
D. all of above

Answer

97). Percentage of human genome to be euchromatic is

A. 0.72
B. 0.52
C. 0.92
D. 0.5

98) The number of gene may be as high as in some larger bacteriophage genome. ?

a) 150

b)160

c)170

d) 180

98) XY set of chromosomes are termed as

A. Allosomes
B. autosomes
C. anosomes

D. hetrosomes

Answer

99) In humans, males have set of chromosome

A. XX
B. XY
C. YX
D. YY

100) Considering Deoxyribonucleic Acid (DNA) structure, backbone outside double helix is made up of

A. sugar and nitrogen
B. nitrogen and carbon
C. phosphate and sugar
D. phosphate and nitrogen

Answer

101) Considering Deoxyribonucleic Acid (DNA) structure, inside basis of double helix is made up of

A. nitrogen
B. oxygen
C. phosphorus
D. magnesium

Answer

102) Deoxyribonucleic Acid (DNA) structure was proposed in

A. 1949
B. 1963
C. 1958
D. 1953

Answer

103) Scientists who proposed Deoxyribonucleic Acid (DNA) structures are

A. Francis Crick and James Watson
B. James Crick and Francis Watson
C. Marie Curie and Niels Bohr
D. Nikola Tesla and Marie Curie

Answer

104) Sequence of amino acids (R-CH(NH_2)-COOH) of Deoxyribonucleic Acid (DNA) is controlled by sequence of

A. dominant proteins
B. nucleosomes
C. nucleotides
D. chromatin

105) Two strands of DNA is a double helix structure are coiled with each other

A. parallel
B. ant parallel
C. opposite
D. connected

106) Giant chromosomes are made dark staining regions called _____

A) bands”

B)Beads

C)Dark band

d) “interband

107) In Drosophila about _____bands can be recognized.

a) 6000 bands

b)700bands

c) 5000 bands

d)1000bands

108) in Giant chromosome Found in of some Diptera.

a) salivary glands

b) parathyroids.

c)adrenal glands.

d)all of these

109) Lampbrush chromosome First observed by ?

a) Flemming in 1883

b) Flemming in 1882

c)Flemming in 1885

d) Flemming in 1888

110) Lampbrush chromosome ae found in ?

a)vertebrates

b)invertebrates

c)all of these

111) Which one of the following best defines binary fission?

a) The process by which one cell splits into two cells

b) The process by which one cell splits into many cells

c) The process by which two cells split into many cells

d) The process by which many pairs of cells reproduce

112) The binary fission process includes the following steps: 1)The cell grows larger, 2)The cell undergoes cytokinesis and 3)Two daughter cells are produced. What step is

missing?

a) Antibiotic resistance is transferred.

b) DNA is copied.

c) The cell undergoes conjugation.

d) All of the answers are correct.

113) What is asexual reproduction?

a) A type of conjugation when an identical cell is made

b) A way to create genetic diversity

c) When an identical cell is made

d) When non-identical cells are made

114)

DNA is synthesized and chromosome number is doubled in

A. G1 phase

B. S phase

C. G2 phase

D. G0 phase

115)

In case of neurons, post mitotic cell escapes cell cycle and remain in _____ phase whthout proliferating further

A. G0 phase

B. G1 phase

C. G2 phase

D. S phase

116)

Mitosis occurs in

A. Diploid cells only

B. Haploid cells only

C. Both diploid and haploid cells

D. Monoploid cells

117)

Microtubules are composed of

A. Action protein

B. Actin and myosin proteins

C. Sphingomyelin and tubulin

D. Tubulin protein and traces of RNA

118)

From each pair of centrioles _____ sets of microtubules originate

A. 2

B. 3

C. 4

D. 5

119)

Mitotic apparatus in animals is formed by

A. Aster and spindle

B. Polar and kinetochore microtubules

C. Spindle and RNA

D. Spindle only

120)

A special area of centromere with specific base arrangement and specific proteins where spindle fibers are attached is called

A. Chromatin

B. Aster

C. Kinetochore

D. Primary constriction

121)

Each kinetochore gets _____ fibers in mitosis

A. 5

B. 4

C. 3

D. 2

122)

Period between two consecutive divisions is called

A. Interphase

B. Resting phase

C. Mitotic phase

D. Cell cycle

123)

Most critical phase of mitosis is

A. Prophase

B. Anaphase

C. Metaphase

D. Telophase

124)

Reverse of prophase is

A. Interphase **B.** Metaphase

C. Anaphase **D.** Telophase

125)

In plants mitotic apparatus consists of

A. Centriole **B.** Centriole and asters

C. Centrioles, asters and spindles **D.** Spindles only

126)

Meiosis occurs at the time of

A. Gamete formation in animals **B.** Spore formattion in plants

C. Growth in animals **D.** Both a and b

127)

Interphase of meiosis lacks

A. G0 phase **B.** G1 phase

C. G2 phase **D.** S phase

128)

Homologous chromosomes are

A. Similar and identical **B.** Identical but not similar

C. Not similar and not identical

D. Similar but not identical

129). The longest phase of meiosis I is

A. Metaphase

B. Anaphase

C. Prophase

D. Telophase

130. Tetrad or bivalent is

A. Paired homologous chromosome but not fused complex structure

B. 2 unpaired homologous chromosome

C. Paired and fused complex structure

D. None of these

131). Pairing of homologous chromosomes is completed in

A. Leptotene

B. Zygotene

C. Pachytene

D. Diplotene

132). Each bivalent has

A. 3 chromatids

B. 4 chromatids

C. 5 chromatids

D. 2 chromatids

132). Crossing over occurs between

A. Sister chromatids

B. Non sister chromatids

C. Independent chromatids **D.** Each and every chromatid

133). Inability of chromosomes to segregate during anaphase and telophase of meiosis is called

A. Crossing over **B.** Chromosomal disjunction

C. Chromosomal nondisjunction **D.** None of these

134). Which statement is incorrect?

A. Down's syndrome involves autosome **B.** In Turner's syndrome 2n-1

C. In Klinefelter's syndrome XYY **D.** In Down's syndrome sperms are commonly involved

135) Apoptosis

A. Cell death due to tissue damage **B.** Causes inflammation

C. Internal programme of events by which cell commits suicide **D.** Damages neighboring cells

135). A cell of human being has 46 chromosomes; it divides to form some daughter cells, each having 23 pairs of chromosomes. The division would be

A. Mitosis **B.** Meiosis

C. Amitosis **D.** Budding

136) Meiosis was discovered by

A. Oscar Hertwig
B. Walther Flemming
C. Charles Darwin
D. Robert H. Brown

137) rocess of cell division that results in two genetically identical daughter cells developing from a single parent cell is

A. cell division
B. mitosis
C. meiosis
D. binary division

138) Chromosome number in meiosis is

A. doubled
B. reduced by half
C. reduced by 2
D. increased by 3

139) Abnormal separation of chromosomes is classified as

A. diploid budding
B. haploid budding
C. non-disjunction
D. disjunction

140) Pair of homologous chromosomes is classified as

A. tetravalent
B. trivalent
C. bivalent
D. covalent

141) In anaphase I of meiosis, chromosomes contains one pair of

A. daughter nucleosomes
B. sister nucleosomes
C. daughter chromatids
D. sister chromatids

142) Period of rest in which daughter cells enters after meiosis I is

A. karyokinesis
B. cytokinesis
C. interkinesis
D. vacuokinesis

143)Define Spermatogenesis and oogenesis ?

Ans;Meiosis in males is called spermatogenesis and produces sperms.

Meiosis in females is called oogenesis and produces ova.

144)name the stages of Prophase I of meiosis ?

Ans;Prophase I occupies more than 90% of the time required for meiosis. Five sub stages of prophase I

Sub stages of prophase I

Leptotene

Zygotene

Pachytene

Diplotene

Diakinesis

145)write the Experiment of T. H. Morgan ?

ANS; Eye color trait is linked with sex of drosophila

Morgan with an experiment proved that eye color trait is linked with sex of the drosophila.

Experiment

Male flies were with white eyes (mutant).

Female flies were with red eyes (wild type).

Progeny f1 was with red eyes

All the flies produced during F1 generation were with red eyes.

Progeny f2 showed 3:1 ratio

F2 generation showed 3:1 (three red eye: one white eye).

White-eyed trait appeared only in males.

All females and half males with red eye.

White eyed trait appeared only in males

White-eyed trait appeared only in male fruit flies (Drosophila melanogaster).

Morgan's Discovery: Transmission of X chromosome correlates with inheritance of eye color trait First solid evidence indicating that a gene is associated with a specific chromosome

146) Define Linkage map

Ans; A linkage map is a genetic map of a species that shows the position of its known genes or genetic markers relative to each other in terms of recombination frequency.

147)write the name of Markers used in linkage map;

Ans; Microsatellites

Restriction fragment length polymorphisms (RFLPs).

147)what are the the SRY gene - Y chromosome ?

Ans; Researchers have found the SRY gene (sex determining region of the Y chromosome

In individuals with the SRY gene, the generic embryonic gonads are modified into

testes. Other genes on Y chromosome

In addition, other genes on the Y chromosome are necessary for the production of functional sperms.

In individuals lacking the SRY gene, the generic embryonic gonads develop into ovaries.

148) Human Sex linked Disorders ?

Ans; Color blindness

Duchenne muscular dystrophy

Hemophilia

149)Define Genetic mapping in humans?

Ans; Genetic mapping

Genetic mapping - also called linkage mapping provides clues about which chromosome contains the gene and precisely where it lies on that chromosome.

150) Types of Genetic markers?

Ans; Several different types of genetic markers, the type most used on genetic maps is known as a microsatellite and SNPs.

151)Define Mono-allelic, di-allelic and poly-allelic

Ans;30% genes in humans are di-allelic - they exist in two forms.

70% are mono-allelic; they exist only in one form.

Few are poly-allelic.

152)Define allele?

Ans; An **allele** is one of the possible forms of a gene. Most genes have two **alleles**, a dominant **allele** and a recessive **allele**. If an organism is heterozygous for that trait, or possesses one of each **allele**, then the dominant trait is expressed. ... **Alleles** were first **defined** by Gregor Mendel in the law of segregation.

153)

Define **Mitosis** And **Meiosis?**

Ans ; **Mitosis** And **Meiosis**. Cells give rise to new cells through a process called cell division. ... In this case, each cell divides twice through a process called **meiosis**, resulting in four daughter cells that contain only half the number of chromosomes when compared to the parent, and are not necessarily identical.

154)define Kinetochore ?

Ans;Within the centromere region, …locations where spindle fibers attach which consist of DNA as well as protein. The actual location where the attachment occurs is called the kinetochore and is composed of both DNA and protein.

155)Define chromatin ?

Ans;The complexes between eukaryotic DNA and proteins are called chromatin.

156)Deine Euchromatin and Heterochromatin?

Ans; **Chromatin** is made up of DNA, protein, and RNA. There are two forms of chromatins in the interphase nucleus: **euchromatin and heterochromatin**. Cytologically, **heterochromatin** stains more intensely than **euchromatin**. ...**Heterochromatin** is the tightly packed form of **chromatin** often found at the periphery of the nucleus.

157)write the Types of Chromosome?

s: There are two types of eukaryotic chromosomes:

Autosomes Sex chromosomes Autosomes: Paired chromosomes with the same length, shape, centromere location, and genes.

Any chromosomes other than sex chromosomes are called as autosomes.

Sex Chromosomes: Members of a pair of chromosomes that differ between males and females.

158)define Pleiotropy ?

Ans;The ability of a gene to affect an organism in many ways is called pleiotropy

159)Deine Epistasis ?

Ans; Alleles at one gene locus can hide or prevent expression of alleles at second gene locus.

Example

A dominant allele B for black, recessive allele b brown coat, a second gene (e) locus controls eumelanin deposited in fur.

Dogs homozygous recessive at this locus (ee) will have yellow fur no matter which alleles are at first locus.

160)define Polygenic traits ?

Ans; Most traits are not controlled by a single gene locus, but by the combined interaction of many gene loci. These traits are called polygenic traits.

Example: Humans Height

161)define Co-dominance ?

Ans;A situation, when both alleles appear in the phenotype.

Neither allele is dominant.

Both alleles are expressed in a heterozygous individuals.

Parallel behavior of both allele.

Example 1 : Blood group

162) Types of variation:?

Two types of Variation

Ans;Discontinuous Variation

Continuous Variation

Discontinuous Variation

Discontinuous variations are entirely genetically controlled.

They cannot be altered by external conditions. Blood group, color blind, dwarfism are genetically controlled.

Continuous variation

Continuous variation describes the situation in which there are many intermediates between the extremes. Shade of hair color between black and blond.

163Define mutation?

Ans; mutation: Indicate "a change" while in other disciplines it is used to indicate "a diseasecausing change". Mutations may be harmful, beneficial, may have no effect.

164)Write the note on prophase ;metaphase .Anaphase telophase;

Prophase of mitosis: Prophase is characterized by four events: Chromosomes condensed - more visible. Nuclear membrane disappears. Centrioles are separated and take positions on the opposite poles of the cell. Spindle fibers form and radiate toward the center of the cell.

Chromosomes condense at the start of mitosis.

DNA wraps around histones that condense it.

Prophase- chromosomes are condensed- Different levels of condensation/folding Chromosomes condense at the start of mitosis. DNA wraps around histones that condense it.

Prophase Summary Prophase is the first stage of mitotic cell division.

Metaphase During metaphase, two events occurs; Chromosomes line up across the middle of the cell. Spindle fibers connect the centromere of each sister chromatid to the poles of the cell, where centrioles are present. Metaphase – chromosomes are aligned in the middle Metaphase-Summary During metaphase, two events occurs; Chromosomes lined up in the middle line. Spindle fibers connect to centromere.

Anaphase of mitosis During anaphase, three events occurs; Centromere split – as a result sister chromatids are separated. Sister chromatids become individual chromosomes. Separated chromatids move to opposite poles of the cell.

Anaphase Securin is a protein which inhibits a protease known as separase. Destruction of securin results in split of centromeres and the new daughter chromosomes are pulled toward the poles.

Cell in an oval shape Chromosomes are drawn to each side of the cell.

Non-kinetochore spindle fibers push against each other,that stretch the cell into an oval shape

Summary Centromere split and chromosomes are separated. Chromosomes arrived at poles. Cell stretches into an oval shape.

Telophase

consists of four events: Chromosomes start to uncoil. Nuclear envelope forms around the chromosomes at each pole of the cell.

Telophase Spindle fibers break down and dissolve, Daughter nucleus is formed in each of the daughter cell. Telophase Nuclear membranes are formed around each set of chromatids. Nucleoli also reappear. Chromosomes unwind back into chromatin material.

Telophase – effects of prophase are reversed During telophase, the effects of prophase and prometaphase are reversed.

Telophase Summary Spindle fibers break down and nuclear members develops around each daughter nucleus.