

## Genetics Final Exam!!

1- BRCA-1 and BRCA-2 are involved in  
>>> recombinational repair

2- which of the following genes is translocated to be under the control of immunoglobulin gene  
>>>Myc

3- RecA is involved in sos & Recombinational repair

4- which of the following is true about X chromosome inactivation  
>>> can result in mosaicism

5- a person was afraid of Huntington's disease, so he was advised to do:

- a- predictive test
- b- carrier test
- c- predisposition test \*\*\*
- d-...
- e-...

6- an X linked disease, if the mother was affected and the father wasn't...which of the following is true  
>>> 100 % of males being affected

7-what is an allele  
>>> different forms of a gene

8-in situ hybridization is used to  
>>> deferential gene expression in the tissue

9- a gene give a 40kd polypeptide when expressed in neurons, and 45kd polypeptide in glial cells, which of the following can't be a cause of this variation in expression

- a- alternative splicing
- b- selenocystine in the glial isoform
- c- RNA editing
- d- the glial cells gene is heavily glucosylated.
- e- miRNA \*\*\*

10- a question about a hypothetical operon....where X binding increase transcription, and Y binding decrease it, which of the following doesn't describe the mechanism of action:  
>>> X bind to Y forming a stable heterodimer that bind to the promoter

11- a mutation in the 3' end UTR of mRNA of the transferrin receptor IRE that prevent the binding of the IRE-BP. when iron levels are low what will happen:  
>>> increase degradation of mRNA

12-which of the following is a characteristic of poly-A polymerase:  
>>> don't require a template

13- which of the following is not true about histon deactelase:

- a- contained within TGIH \*\*\*
- b- modify the lysine residues

14- which of the following is not coded by DNA:

>>> poly A tail

15- absence in the segma subunit of RNA polymerase in E.coli will cause:

>>> decrease transcription of the DNA

16- a PCR gel of VNTR's of X individual shown in a gel, the mother is known, find the father

>>> you can answer the question by matching the bands in the gel of X with the mother, then in the options look for the best that fits with the remaining bands of X

17-in a PCR, the number of copes of the DNA fragment wanted was 500 nanomol at cycle 12....find the expected number at cycle number 14

>>> 2 micromol

18- a chemical that causes deamination of cytosine result in:

- a- transition mutation
- b- transversion mutation
- c- spontaneous mutation
- d-...
- e-...

19- about mitochondrial chromosome all true except:

- a- single molecule ofr each mitochondria
- b- no histone
- c- no DNA repair system
- d- the inheritance is similar to incomplete penetrance \*\*\*
- e-....

20- if the normal codon is CAC, and the mutated codon is CTC for a patient of cystic fibrosis...which of the following can be used to detect the mutation:

- a- ASO allele specific oligonucleotide \*\*\*

21- you can study all of the following about miRNA except:

- a- translation \*\*\*
- b- promotor
- c- transcription
- d- mutation
- e- function

22- a mutation in the lac repressor decrease it's affinity to lactose, when lactose is introduced which of the following is most likely to happen:

>>> decrease transcription of the lac operon

23- which of the following don't need energy:

- a- helicase
- b- topoisomerase II
- c- human DNA polymerase  $\sigma$
- d- bacteria DNA polymerase II
- e- exonuclease activity \*\*\*

24- in southern blotting which of the following can't be detected:

- a- location of a gene in a chromosome \*\*\*
- b- pattern of inheritance in the progeny

25- the wrong about UGT1A :

>>> The C-terminal region determines substrate specificity

26- a mother came with a baby of black diapers, which of the following is most likely the accumulated compound

>>> homogentisic acid

27- in a study of schizophrenia...MZ twins concordance was ..., while for DZ twins is .....which of the following is wrong:

- a- heritability is .7
- b- the disease is completely caused by the environment \*\*\*
- c- .....siblings
- d- .....offsprings

28- Sharkas when came to Jordan:

>>> gene flow

29- an X-linked disease, if the frequency of affected males is  $1/3500$ . find the frequency of carrier females in the population:

- a-  $1/7500$
- b-  $1/1700$
- c-  $1/1750$  \*\*\*
- d-  $1/3500$
- e-  $1/10^6$

30- which of the following best describes transposons:

>>> dispersed (NOT SURE ABOUT THE ANSWER)

31- germline mosaicism

>>> the individual is normal with the risk of having infected children.

32- which of the following should NOT be advised to do prenatal testing:

- a- family history of breast cancer \*\*\*
- b- family history of down syndrome
- c- positive screening test
- d- translocation carrier parents.

33- which of the following functions can't be done by an RNA :

- a- regulation of translation
- b- initiation of transcription \*\*\*
- c- X chromosome inactivation
- d-formation of peptide bond
- e- RNA splicing

34- cell cycle progression from G1 to S phase blocked by :

>>> P21 production

35- Ras oncogen all true except :

>>> it's autosomal recessive

36- All of the following diseases are x-linked except:

>>> Cystic fibrosis

37- enzyme X is located at (14q5) and enzyme Y is located at (9p5)...a mutation in any of them result in the same disease. this is an example of:

>>> locus heterogeneity

38- which of the following repair pathways often associated with high rate of mutations:

>>> SOS system

39- Burkitt lymphoma :

>>> Myc

40- Xeroderma pigmentosum:

>>> is caused by nucleotide excision repair

41- an Ames test, showing a compound X.....control 15 cells, control+X 50 cells, control +X+liver enzyme 20 cells. which of the following best explains the mentioned informations:

>>> the compound X is mutagenic, and liver enzymes makes it harmless

42-Ring chromosomes :

>>> a break occurs on end of each arm of a chromosome leaving two 'sticky' ends (Not Blunt ends)

43- an example of aneuploidy:

a) 48 xx ,21+ \*\*\*

44- prokaryotic mark

>>> modified methionine

45- monocistronic:

>>> one polypeptide by one pre-mRNA

46- DNA polymerase I:

>>> 5'-to-3' exonuclease activity

47- Unicellular eukaryotes that has fast growth and easy to manipulate  
>>> Yeast.

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