Sheet 12&13&14

Q1) one of the following is TRUE in regards to silent point mutations

A. they occur in noncoding regions

B. they involve change in chromatin structure

C. they cannot be detected

D. they involve changes in the DNA sequence but not the protein's amino acid sequence

E. they are considered epigenetic mutations

Q2) How long is the peptide that is generated from this eukaryotic mRNA knowing that the first U is the 5'-end of the mRNA (UGUGUGUCACUUAUAAUGGCGCAUAUGAGG)

A.4

B.3

C.5

D.10

E.2

Q3) one of the following is NOT true regards to deamination reaction

A. deaminated cytosine is inserted by DNA polymerase

B. they are considered spontaneous mutations

C. when deaminated, adenine becomes hypoxanthine

D. examples include deamination of methylcytosine in DNA

E. mutations persist following DNA replication if not repaired

Q4) Which of the following would not DIRECTLY affect protein translation?

A. Dysfunctional miRNA

B. A mutation in the genes responsible for the synthesis of rRNA

C. Ubiquitinationofproteins

Q5) A gene normally expresses a 130-amino acid-long protein. A point mutation occurred in the coding DNA of this protein that results in the production of an abnormal protein with 112 amino acids. The mutation is:

A. Missense mutation

B. Nonsense mutation

C. Silent mutation

D. Conversion of a stop codon into Methionine codon

E. Insertion of three nucleotides in the promoter region

Q6) miRNA plays a role in transcriptional and post transcriptional regulation by which of the following?

A. Gene silencing through translational repression and target degradation

B.Cleavage of telomeres

C.Gene amplification

D.RNA editing

Q7) Which of the following could be an effect of miRNA regulation?

A. Decreasing half-life of mRNA

B.Halting of translation mid-way through the process

C. The breakdown of ribosomes

D.Affects the 5’ UTR of mRNA

Q8) Strand breaks mainly results from:

A. Alkylation

B. Depurination

C. Replicating repeated sequences

D. Ionizing radiation

E. Deamination

Q9) To which of the following structures in a typical molecule of tRNA is an amino acid attached?

A.Anticodon loop

B.Variable loop

C.CCA tail

D.D loop

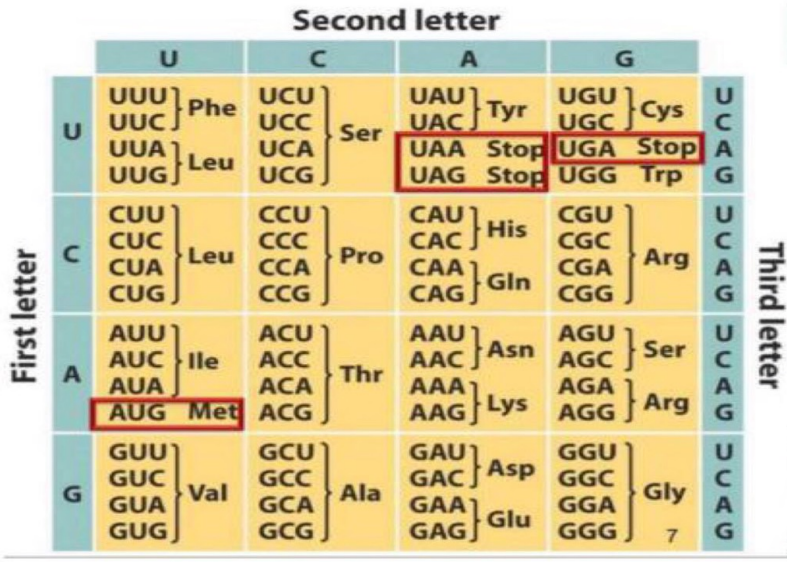
Q10) According to the table, which amino acid would result from the anticodon ACG?

A. Thr

B. Arg

C. Cys

D. b+c



Q11) A chemical that causes deamination of cytosine results in its conversion to:

a. Uracil

b. Methyl-thymine

c. Thymine

d. 5-bromouracil

e. Methyl-uracil

Q12)one of the following is NOT true in regards to human ribosomes?

A. the large ribosomal subunits are the sites of forming peptide bonds

B. they can bind up to two transfer RNA (tRNA) molecules at a time

C. ribosomal RNA (rRNA) molecules catalyze peptide bond formation

D. small ribosomal subunits are responsible for identifying the translation start codon

E. RNA polymerase I is responsible for synthesis of all rRNA molecules

Q13) Ionized 5-bromouracil results in:

A. Depurination

B. Intercalation into DNA

C. Pairing with guanine

D. Single-strand breaks

E. Thymine dimers

Q14) This is NOT a mechanism we discussed by which non-coding RNA molecules can ultimately regulate proteins:

A. Phosphorylation of translation initiation factor

B. Binding to the 3'-end of mRNA causing its degradation

C. Binding to mRNA blocking translation

D. Coating and condensation of DNA

E. Recruitment of transcriptional regulatory proteins to the promoter region

Q15) the main function of proteasomes is:

A. RNA degradation

B production of ubiquitin

C RNA processing

D . regulation of translation

E. protein degradation

Q16) the main function of eukaryotic translation initiation factor 4 (eIF4) proteins is:

A. stabilizing the complexing of small and large ribosomal subunit

B. linking the mRNA cap to the poly-A tail

C. guiding ribosomes to the translation start codon

D. recruiting transfer RNA molecules to the mRNA

E. chemically modify mRNA to initiate translation

Q17) the following mRNA (ACGAUGAUGAUCGUUGAA) is translated starting at the first codon. How many amino acids exist in the produced peptide?

A. 6

B. 1

C. 2

D. 0

E. 5

Q18) the anti-codon of the methionine-carrying tRNA is:

A.UGA

B. CAU

C. UAC

D. GUA

E . AUG

Q19) regeneration of active eukaryotic initiation factor (eIF2) is blocked by?

A. empty tRNA molecules

B. phosphorylation

C. binding to eIF2B

D. release factors

E. binding to GDP

Q20) one of the following is NOT true in regards to microRNA molecules?

A. they are synthesized by RNA polymerase II

B. they can bind to 5'- and 3'- untranslated regions

C. only one strand is needed for action

D. they result in reduction of protein levels

E. they are synthesized as single-RNA molecules

Q21) one of the following is NOT true regards to any particular operon?

A. it exists in bacteria but not in human cells

B. it is regulated by multiple promoters

C. it contains several shine-dalgarno sequences

D. it contains only one transcription start site

E. it produces proteins of different functional activities

Q22) How long is the peptide that is generated from this eukaryotic mRNA knowing that the first U is the 5'-end of the mRNA (UGUGUGUCACUUAUAAUGGCGCAUAUGAGG)

A. 4

B. 3

C. 10

D 5

E. 2

Q23) Below are two sequences of a segment of DNA.

CCG GTC TAG Normal sequence CCG GTC GTAG Mutated sequence

Which type of mutation has occurred?

A.Substitution mutation

B.Deletion mutation

C. Nonsense mutation

D. Insertion mutation

Q24) In eukaryotes, all of the following steps happen during translation elongation stage EXCEPT:

A. Hydrolysis of GTP into GDP to provide energy

B Translocation of tRNA from A site to P site

C. Binding of aminoacyl-tRNA to the A site

D.Exit of aminoacyl-tRNA from E site

E. Formation of a peptide bond

Q25)What is the anticodon that is complementary to the codon UAC (directions from 5'- to -3')?

a. GUA

b. GAU

c. GTA

d. UTG

e. UAG

Q26) Which of the following is NOT correct about tRNA?

A. tRNA contains a three-nucleotide sequence known as an anticodon

B. The match between tRNA anticodon and the mRNA codon ensures the fidelity of translation

C. Some tRNAs can bind to more than one codon due to wobble base pairing in the second base of the codon

D. Charging tRNAs with amino acids is mediated by aminoacyl-tRNA synthetases .

E. tRNA is a short single-stranded RNA (ssRNA).

Q27) DNA glycosylases cleaves the……and Uvr complex cuts…..

A. phosphodiester, phosphodiester

B. phosphodiester, hydrogen bonds

C. glycosidic, phosphodiester

D. glycosidic, glycosidic

Q28) The UV light cause cell death in which of the following diseases:

A. Xeroderma pigmentosum (XP)

B. Cockayne's syndrome

C. Fragile X syndrome

D. A+B

Q29) Nucleotide Excision Repair in bacteria the enzyme that recruited to the lesion and create cuts is……..

A. DNA polymerase1.

B. UvrABC protein complex

C. Transcription factor 2 H(TFIIH)

D. (RPA)

Q30) Pyrimidine dimers are reversed by enzymes known as:

A. Ligase

B. DNA polymerase1

C. photolyase

D. none of the above

Q31) Strand breaks mainly results from:

A. Alkylation

B. Depurination

C. Replicating repeated sequences

D.Ionizing radiation

E. Deamination

Q32) Defective CSB protein causes Cockayne's syndrome. This protein is linked to this molecular process

A. movement of transposons

B. transcription

C. translation

D. DNA replication

E. DNA recombination

Q33) Photolyases are known to:

A. Correct base mismatches in DNA

B. Join DNA ends

C. Exist in human cells

D. Remove pyrimidine dimers

E. Remove intercalating agents.

Q34) oxygen radical is reduced by the enzyme ,————this produces .which is still harmful for the cell ————

A. Superoxide-dismutase, hydrogen peroxide(H_2O_2)

B. polymerases, H_2O_2

C. Superoxide-dismutase, H_2O

D. Superoxide-dismutase, CO_2.

Q35) regard to incorporation of base analogs which of the following is correct:

A. 5-bromouracil (5-BU) analog of adenine

B. 6-methylguanine pairs with thymine

C. creation of AP sites

D. Ionized form of 5-BU pairs with guanine.

Q36) The wrong statement about Deamination is:

A. The deamination of cytosine yields uracil.

B. The deamination of adenine yields hypoxanthine.

C.The deamination of thymine yields methylated cytosine

D.its induced mutation

E.C+D

Q37) When there is a base mispairing in bacterial DNA, this is how bacteria can distinguish the wrong base:

A They activate special DNA polymerase.

B. They recognize the replicating DNA.

C. They recognize the damaged base.

D. They change either base randomly.

E. They recognize which DNA is unmethylated.

Q38) The presence of O6-methylguanine is corrected by:

A. Mismatch repair system

B. Nucleotide excision repair system

C. BRCA1

D. A special enzyme

E. Transcription factor II H

Q39) DNA glycosylases have the following effect on DNA:

A. They remove pyrimidine dimers

B. They form phosphodiester bonds

C. They create AP sites

D. They add bases to DNA

E. They join broken DNA strands

Q40) Depurination is a spontaneous mutation that occurs only in purines,

A.true

B.false

Q41) nucleotide excision repair in bacteria does NOT require the following molecular components

A. primase

B. an endonuclease

C. a DNA ligase

D. a helicase

E.a DNA polymerase

Q42) Which of the following is correctly matched?

A. translocation mutation we have transfer of genetic material within the same chromosome.

B. all mutagens are carcinogens.

C. Macromutation involves small regions of the DNA.

D. none of the above is correct

Q43) Mutations can happen in which of the following?

I. in DNA replication II. in meiotic recombination

III. As a consequence of the damaging effects of physical or chemical agents on the DNA

A. II only

B. I only

C. III only

D. I, II, and III

Q44) the problem associated with translesion repair system is that

A. it creates mutations

B. it is slow

C. it causes DNA nicks

D.it leads to cell death

E. it has low transcriptional efficiency

Q45) Which of the following occurs in eukaryotes but not prokaryotes?

A. miRNA regulation

B. Synthesis and translation of an mRNA strand at the same time

C. Removal of sigma subunit

D.identification of the shine Dalgarno sequence.

Q46) At which points can gene expression be regulated?

A.During transcription

B. Post transcription

C. During translation

D.Post translation

E.All of the above

Q47) Which of the following is not a consensus sequence in DNA?

A. Shine dalgarno sequence

B. BRE element (TFIIB recognition element)

C. Downstream promoter element

D. TATA box

Q48) One of the following is part of the basal transcriptional complex:

A. Co-activator

B.RNA polymerase

C.Co-repressor

D.Transactivator

E.NONE of the above

Q49) Which of the following sentences does best describe the core promoter?

A.Region of an mRNA between the 5'-end and the translation start site.

B. A cluster of prokaryotic genes that are transcribed together.

C.Region of DNA in front (downstream) of a structural gene mainly composed of proximal elements.

D.Region of DNA usually in front (upstream) of a gene that binds RNA polymerase and initiates gene expression.

E. Consensus sequences that bind activator proteins and enhance the transcription.

Q50) Which of the following types of DNA polymerase does not take part in DNA repair?

A. DNA polymerase I

B. DNA polymerase II

C. DNA polymerase III

D. DNA polymerase IV

Q51) Which of the following types of DNA polymerase has 3'→5' exonuclease activity?

A. DNA polymerase I .

B. DNA polymerase II

C. DNA polymerase III

D. DNA polymerase IV

Q52) Which of the following is NOT correct about transcription?

A. In eukaryotes, the mRNA carries only one gene (Monocistronic).

B. In prokaryotes, several genes may be carried on the same mRNA (Polycistronic)

C. The consequences of an error in the RNA synthesis is less significant than that in the DNA replication.

D. In prokaryotes, the termination signal usually consists of a GC-rich sequence followed by T residues.

E. In eukaryotes. the termination signal determined by a consensus sequence followed by a downstream GU-rich sequence.

Q53) Pick the correct pair with respect to primers used in DNA replication.

A. RNA primer- for prokaryotes only

B. DNA primer-for eukaryotes only

C. DNA primer- for both prokaryotes and eukaryotes

D. RNA primer- for both prokaryotes and eukaryotes

Q54) An RNA produced from a fragment of DNA has the sequence of AAUUGGCU. The Sequence of the non-template strand In the DNA that gave rise to this sequence is which one of the following?

A. AGCCAATT

B. AAUUGGCU

C. AATTGGCT

D. TTAACCGA

E. UUAACCGA

Question	Answer
1	D
2	C
3	A
4	C
5	B
6	A
7	A
8	D
9	C
10	B
11	A
12	E
13	C
14	A
15	E
16	B
17	A
18	B
19	B
20	B
21	B
23	D
24	D
25	A
26	C
27	C
28	A
29	B
30	C
31	D
32	B
33	D
34	A

35	D
36	E
37	E
38	D
39	C
40	B
41	A
42	D
43	D
44	A
45	A
46	E
47	A
48	B
49	D
50	C
51	C
52	D
53	D
54	C

☺.