

Genetics Midterm Exam-2011

Note: some of the question are answered, keep in mind that those answers are not absolutely correct, so it's better to verify and make sure about them..

the experiment of the drosophila legs (legs emerging from its head):

- 1-cell proliferation
- 2-cell differentiation
- 3-cell transformation
- 4-apoptosis

in the experiment of hershey & chase , they took advantage from one of the following """" this is not the way the question was """"

- 1- bacterial cells can get incontact to each others
- 2- differential radioactive labeling of both of DNA & Proteins
- 3- something about bacteriophages ...

after meiosis I, the primary spermatocytes have:

- 1- 23 chromosome & 46 chromatid
- 2- 46 chromosome & 92 chromatid
- 3- 23 chromosome &

one of these methods is used for the detection of DNA sequence and the bases appear in one lane:

- 1-radioactive labeled dideoxynucleotid
- 2- florescent labeled dideoxynucleotid
- 3- both 1 and 2 can be used
- 4- -radioactive labeled deoxynucleotid
- 5- florescent labeled deoxynucleotid

a diagram showing fragments of DNA ,, RFLP was used ,, which of the following might be a carrier state of the disease :

the answer is 2 bands one intermediate length and the other small length

A question about Repetitive DNA sequences, which one is true :

- A) LINE contain ALu sequence.
- B) VNTR are minisatellite
- c) STR are dispersed

A question showing a figure for a replication bubble , and asks to determine the lagging strand

The enzyme that is responsible for unwinding in prokaryotes :

- A) RNA polymerase
- b) general transcription factor

a figure that shows a termination sequence "hair pin " , and asking where we can find it :
occurs when the detachment happens between the DNA template & the RNA polymerase

About The proofreading mechanism , which one is correct :

- A) 3'-5' exonuclease
- B) 5'-3' endonuclease
- C) 3'-5' exonuclease

which of the following is NOT true about sigma subunit in the RNA polymerase :

- 1- not required for the basic catalytic activity of the enzyme
- 2- dissociate after a while of starting transcription
- 3- degraded immediately after dissociating
- 4- binds to specific sequences on the promoter

one of the following is true about telomerase:

- 1- inactivation of telomerase contributes for the extended lifespan of cancer cells.
- 2- telomerase extends the 5' end of the parental DNA template
- 3- it uses DNA template
- 4- it extends the daughter DNA strand to become longer than the parental DNA

how the microRNA function in inhibiting translation??

- 1- inhibit binding of RNA polymerase
- 2- degrade mRNA.
- 3- addition of stop codon

which of the following can't be detected directly by the PCR :

- 1- detection of bacterial or viral sequences(or infection)
- 2- cloning of specific DNA sequence
- 3- DNA sequencing
- 4- can detect the length

DNA microarray is used for the detection of all except :
the level of translation

a question about TF II H all are true except :

- 1- It is a helicase
- 2- It is a general transcription factor
- 3- It is specific to RNA polymerase II
- 4- It is a part of the transcription initiation complex

A question about lac operon regulation?!

A long question about how can u detect a mutation in an intron by using CG probe :

- A) comparative genomic hybridization
- B) western blotting
- C) northern blotting
- D) southern blotting

question about Chromatin Acetylation:

- 1_ Histone specific.
- 2_ enzymatic / non enzymatic reversible
- 3_ common in actively transcribed genes.
- 4_ protein-Coding region

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how to make imperfect hybridization?

1- **lowering salt concentration**

2- **Increasing the length**

an image of tRNA having the anticodon sequence (3'- GAC -5') (the 3' -5' was concluded from the figure), what is the amino acid carried by it?

the answer >>Asp

-when an antibiotic was used to block translation in a prokaryote, the resulting protein was a dipeptide, what step was inhibited/blocked by this antibiotic?

1- initiation

2- translocation

a tRNA that is destined to bear the AA Cysteine was charged improperly by another AA which is Alanine. upon translation, what event of the following could take place?

the answer was:

the Cysteine anticodon in tRNA will base pair with corresponding codon in mRNA but it will incorporate Alanine instead of Cysteine

a characteristic that indicate a prokaryotes:

the answer was>> the amino acid chain starts with N-formylmethionine

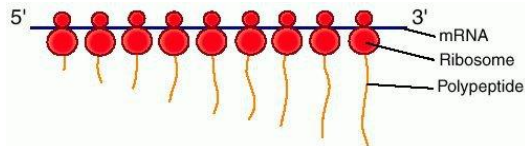
-In the presence of Heme, Protein (globin) synthesis is upregulated/stimulated by:

1- Dephosphorylation of eIF-2

2-increase the rate of hydrolysis of the GTP-elf2 complex

Constitutive expression of the lac operon in the absence of lactose could happen by:

Moving of the operator upstream to the promoter



one of the following is true about the depicted polyribosome structure:

the answer was that a ribosome closest to the 3' end of the mRNA bears a polypeptide chain that is longer from that in a one nearer to the 5' end ((which was not obvious in the one we encounterd in the exam))

a trnscription factor has a testosterone zinc finger domain, a domain that binds the hormone estrogen & an activation domain for progesteron, on of the following happens:

the answer was that testosterone zinc finger domain binds DNA then it was something related to estrogen binding...!

what does this abbreviation mean 11p15.5

answer>>>on region 15.5 of the short arm of chromosome 11

in an experiment similar to that of griffth but with different naming and different observations, give what match the observations (he wants the transforming factor)

answer>>>>

the transforming factor is a secretory protein that can transform live or killed non-pathogenic strains

why>>

protein...as when we used a protease the non-pathogenic strain did not transform.

secretory...as both live and killed pathogenic strains caused the transformation, if it were to be intracellular protein then the live pathogenic would not function

to make cDNA library and produce insulin from E.coli strains obtained, which of the following is not used in the process:

a- RNA polymerase II

b- antibiotic

c...

d...

e...

in gel electrophoresis, which of the following is not true:

a- migration in gel not only depend on size but on charge of DNA fragment as well

b- a specific probe must be used to visualize the bands

c- you can see the bands under the normal light

e....

a question asking about the sequence of the mRNA for the given amino acid polypeptide chain:

>>>5'-AUG....UAG-3'

(only one of the options match those criteria of the mRNA)

about meiosis in males and females, which is true:

a- commences in females at puberty, and at early embryonic life in males.

b- primary oocyte take along time to completely finish MITOSIS.

c- the products are always of equal size in both

d- dictyotene is the fetal stage that is found in one of them but not the other.

e....

a plot of PCR, asking the sequence of the template DNA strand.

method to answer>>>

-read the plot from down upward....this is the new strand from 5' to 3'

-in the question he didn't give a primer sequence...but if given put at the 5' end of the new

strand

- to find the template match with the new strand, but remember to reverse the direction so the template is 5' to 3'

ex) new strand 5'-GCTACGAA-3'....then template is 5'-TTCGTAGC-3'

all of the following indicate the presence of a protein coding region near (or proximal) to it, except:

a- termination signal.

b- enhancer

c- gene on the homolog of the same specie. (sth like this)

d...

e...

which of the following is able to catalyze the formation of the peptide bond in the process of translation:

a- rRNA of the large ribosomal subunit

b- protein of the large ribosomal subunit

c- rRNA of the small ribosomal subunit

d- protein of the small ribosomal subunit

e...