Sheet 10&11

Q1) you performed in situ hybridization (ISH) and immunohistochemistry (IHC) for a steroid nuclear receptor such as the androgen receptor in the presence or absence of a steroid hormone. Where would expect STRONG cellular staining of RNA and proteins to be at?

A.+ hormone ; ISH: cytoplasmic; IHC: nuclear

B. no hormone; ISH: cytoplasmic; IHC: nuclear

C. no hormone ; ISH: nuclear ;IHC: nuclear

D. + hormone ; ISH: nuclear; IHC: cytoplasmic

E. with or without hormones; ISH: cytoplasmic; IHC: nuclear

Q2) the MAIN purpose of measuring the expression of a housekeeping gene in northern blotting is to

A. confirm the cellular localization of RNA molecules

B. confirm the sizes of tested RNA molecules

C. ensure that probes are specific

D. ensure applying equal amounts of total RNA samples in a gel

E. confirm that cells have active transcriptional activities

Q3) Deacetylation of histones has which of the following effects?

A. Uncoiling of histone structure, preventing it from being accessed by transcriptional machinery.

B. Uncoiling of histone structure, allowing it to be accessed by transcriptional machinery.

C. Coiling of histone structure, preventing it from being accessed by transcriptional machinery.

D. Coiling of histone structure, allowing it to be accessed by transcriptional Machinery.

Q4) The reason behind analyzing the expression of a housekeeping gene in Northern blotting is:

A. To ensure equal loading of total RNA of a sample

B. To measure the stability of mRNA in a sample

C. To determine the splicing of mRNA molecules

D. To ensure the expression of all genes is a sample

E. To estimate the length (size) of mRNA molecules

Q5) In situ hybridization done on a tissue section reveals staining in one region, and immunohistochemistry reveals staining in anotherThis indicates:

A. A pre-mRNA exists in one region of the tissue, but it is modified somewhere else

B. A protein exists in one region of the tissue, but it is modified somewhere else

C. A gene is expressed in one region, but its protein product is localized somewhere else

D. A gene is expressed, but the protein is degraded

E. Both mRNA and protein are modified

Q6) The reason behind analyzing the expression of a housekeeping gene in Northern blotting is:

A. To ensure the expression of all genes is a sample

B. To measure the stability of mRNA in a sample

C. To ensure equal loading of total RNA of a sample

D. To estimate the length (size) of mRNA molecules

E. To determine the splicing of mRNA molecules

Q7) the Xist gene on the X chromosome produces

A. a cytosine methyltransferase

B. a long non-coding RNA

C. a microRNA

D. a gene repressor protein

E. a histone modifying

Q8) I said that some promoters are “leaky” because

a. the phenomenon is also called basal expression

b. interaction are based on reversible, non- covalent forces

c. they are mutated

d. repressors are not produced all the time

e. repressors are repressed themselves

Q9) removal of iron response elements from the ferritin mRNA results in

A. production of different protein isoforms

B. increased binding of the iron regulatory protein to the mRNA

C. decreased stability of mRNA

D. increased half-life of the mRNA

E. increased translation regardless of iron levels

Q10) One of the following is NOT a regulation by epigenetics:

A. Methylation of histones

B. A point mutation of the promoter regions

C. Methylation of cytosines within promoter regions

D. Binding of noncoding RNAs to promoters regions

E. Conversion of heterochromatin to euchromatin

Q11) one of the following is NOT true regards to histone acetylation?

A. the interaction between DNA and histones become weaker

B. the extended “tail” of histones is the part that is acetylated

C.histone acetylation activates transcription

D. the amino acid lysine is the main target of the enzyme, histone acetyltransfrase

E. transcription factor II H (TFIIH) is responsible for histone acetylation

Q12)In the presence of glucose, one the following is NOT NECESSARILY true in regards to the lac operon

A. The enzyme adenylyl cyclase is not active

B. CAP is not bound to upstream of the promoter region

C. The lac repressor is always bound to the operator

D. cAMP levels are low

E. CAP cannot stimulate the RNA polymerase

Q13) how do transcriptional repressors with DNA-binding domains only function?

A. they chemically modify the bases within promoters

B. they modify the chromatin structure of promoters

C. they compete with activators in binding to promoters

D. they change the DNA sequence of promoters

E. they prevent enhancers-promoter interaction

Q14) what is the effect of a repressed mutation within the permease gene of the lac operon?

A. the lac operon is regulated normally

B. there will be high levels of cAMP in cells

C. the lac repressor will be mostly bound to the operator

D. the lac I gene will not be expressed

E. the lac operon will be turned on most of the time

Q15) hormone response elements are examples of

A. insulators

B. CpG island

C. promoter-proximal elements

D.core promoters

E. enhancers

Q16) One of the following is NOT a regulation by epigenetics:

A. Methylation of cytosines within promoter regions

B. Conversion of heterochromatin to euchromatin

C. A point mutation of the promoter regions

D.Binding of noncoding RNAs to promoters regions

E. Methylation of histones

Q17) One of the following in NOT a cis-acting element:

A. Iron response element binding protein

B.GC-rich box (-35 sequence)

C. Enhancer

D. Shine-Dalgarno sequence

E. Iron-response element

Q18) The following mutation would cause constitutive expression of the Lac operon:

A. Constant binding of the RNA polymerase to the promoter

B. Deletion of the promoter

C. Deletion of the Lac I gene

D. Inability of allolactose to bind to the lac repressor

E. Constant binding of catabolic-activating protein (CAP) upstream of the promoter

Q19) What is the action of cyclic AMP (cAMP) on the lac operon?

a. It binds to and stabilize the polycistronic mRNA

b. It binds to and activates beta-galactosidase

c. It binds catabolic activating protein (CAP) stimulating its binding upstream of the promoter

d. It binds the RNA polymerase stabilizing its binding to the promoter

e. It binds the repressor preventing its binding to the promoter.

Question	Answer
1	A
2	D
3	C
4	A
5	C
6	C
7	B
8	B
9	E
10	B
11	E
12	C
13	C
14	C
15	C
16	C
17	A
19	C
20	C

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