

Assessment Questions

Multiple Choice Question 1:

Bisulfite treatment of DNA induces which conversion that is useful for detecting DNA methylation?

- A. All methylated cytosines converted to uracil
- B. All cytosines are converted to uracil
- C. All non-methylated cytosines are converted to uracil
- D. All CpG guanines are converted to uracil
- E. All non-CpG guanines are converted to uracil

Multiple Choice Question 2:

Which of the following epigenomic marks is enriched in individuals with PTSD and what effect does it have on transcription?

- A. CpG methylation; Increases Transcription
- B. H3K27ac; Increases Transcription
- C. H3K27me3; Decreases Transcription
- D. CpG methylation; Decreases Transcription
- E. H4K20me1; limited effect on transcription

Short Answer Question

An newly-discovered gene called *Mirason* was found to be enriched for DNA methylation in individuals with PTSD. *Mirason* was also found to be part of a pathway that regulated stress.

What downstream effect would *Mirason* being methylated have on the pathway?

Answer Key

Multiple Choice Question 1:

C) All non-methylated cytosines are converted to uracil

Multiple Choice Question 2:

D) CpG methylation; Decreases Transcription

Short Answer Question

An example of a correct answer would be that the decreased transcription would limit the ability of the pathway to function properly. Even more specific examples such as preventing the formation of a complex or the lack of transcription of other genes related to the pathway would be acceptable. Anything that shows they understand that this gene is being transcribed less and as such the pathway would suffer.