

MUTATIONS AND DNA TECHNOLOGY

REVIEW ACTIVITY

QUESTION 1

- What are the two main categories of mutations?

ANSWER 1

- Gene Mutations
- Chromosomal Mutations

QUESTION 2

- List the two types of Gene Mutations
- List the four types of Chromosomal Mutations.

ANSWER 2

- Gene Mutations
 - Point Mutation
 - Frameshift Mutations
- Chromosomal Mutations
 - Deletion
 - Duplication
 - Inversion
 - Translocation

QUESTION 3

- What kind of mutation is shown below?

Example:

Normal: ACTGTTAGCTA

Mutated: ACTGTAAGCTA

ANSWER 3

- Point Mutation

Example:

Normal: ACTGTTIAGCTA

Mutated: ACTGTAAAGCTA

QUESTION 4

- What kind of mutation is shown below?

THE CAT ATE THE RAT
THC ATA TET HER AT

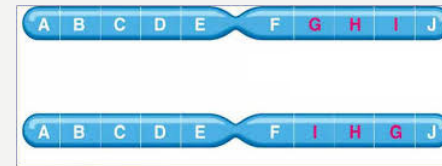
ANSWER 4

- Deletion- Frameshift

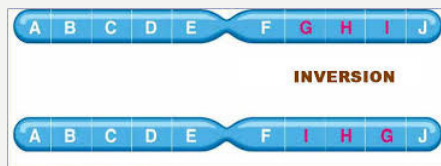
THE CAT ATE THE RAT
THC ATA TET HER AT

QUESTION 5

- What type of mutation is shown in the image below?

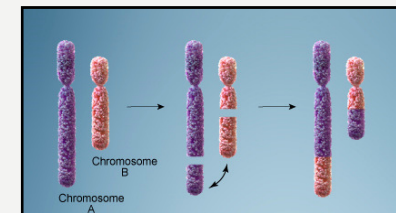


ANSWER 5



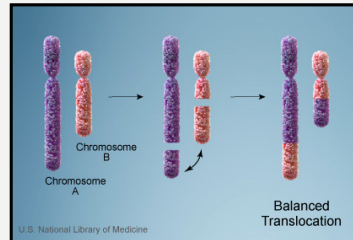
QUESTION 6

- What type of mutation is shown in the image below?



ANSWER 6

- Translocation



QUESTION 7

- Agents in the environment that can change DNA are called _____.

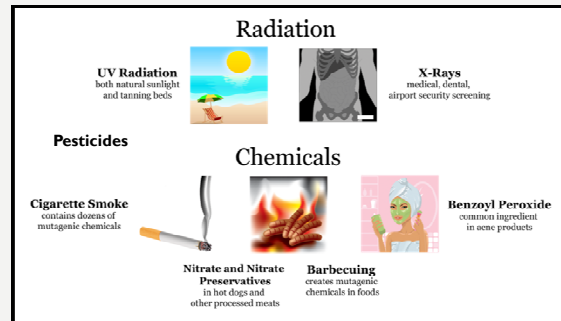
ANSWER 7

- Mutagens

QUESTION 8

- Provide 3 examples of mutagens.

ANSWER 8



QUESTION 9

- What are the three possible effects mutations can have on an organism?

ANSWER 9

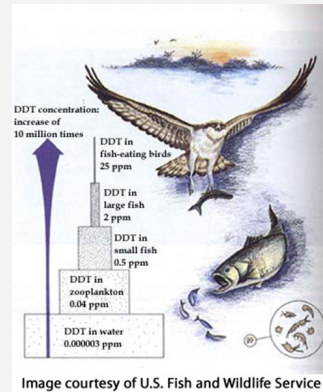
- Harmful, no effect, or beneficial

QUESTION 10

- What is the name of the pesticide that was proven to have caused the decline of the bald eagle population during the 1970s?

ANSWER 10

- DDT

**QUESTION 11**

- Name the ecologist that showed DDT was the culprit in the decline of bald eagle populations and were causing many negative effects in the environment.

ANSWER 11

- Rachel Carson

**QUESTION 12**

- What is genetic engineering?

ANSWER 12

- Genetic Engineers can alter the DNA code of living organisms.

QUESTION 13

- Identify two uses for biotechnology?

ANSWER 13

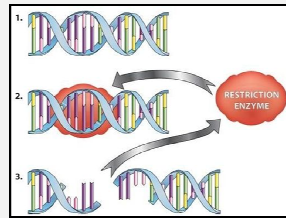
- Cure diseases
- Treat genetic disorders
- Improve food crops
- Improve the lives of humans.
- Pharmaceutical products (ex. A bacteria is used to produce human insulin)
- Vaccines - safer and more effective
- Pest resistance
- Increase agricultural yields (Crop plants are bigger, prettier, pest resistant, etc)

QUESTION 14

- What do scientists use in genetic engineering to do the cutting of genes?

ANSWER 14

- Restriction Enzymes

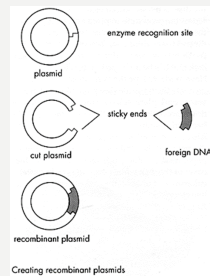


QUESTION 15

- The ability to combine the DNA of one organism with the DNA of another organism is called _____.

ANSWER 15

- Recombinant DNA



QUESTION 16

- People have been using _____ for 1000's of years with farm crops and domesticated animals. Used to pick desirable traits.

ANSWER 16

- Selective Breeding



QUESTION 17

- What does GMOs stand for?

ANSWER 17

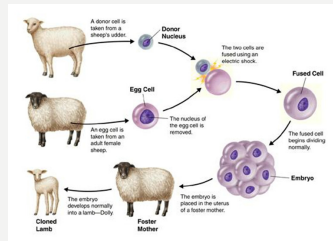
Genetically Modified Organism (GMOs)

QUESTION 18

Describes the processes used to create an exact genetic replica of another cell, tissue or organism. This is called _____.

ANSWER 18

• Cloning

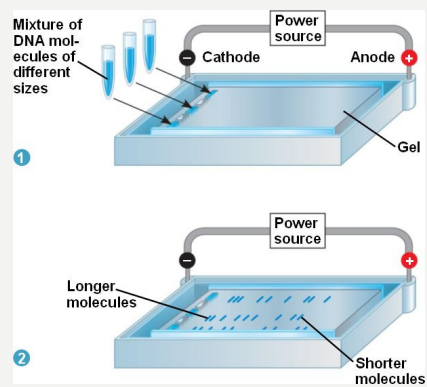


QUESTION 19

What technique used to separate DNA fragments according to their size and charge to help identify a criminal?

ANSWER 19

• Gel Electrophoresis



QUESTION 20

Scientists mapped and found the location of every gene on every chromosome. What was this called?



ANSWER 20

- Human Genome Project

