

1. Cyclops fish are a dynamic example of the way in which an environmental chemical can affect development. In 1907, researcher C.R. Stockard created cyclopean fish embryos by placing fertilized eggs in 100ml of sea water mixed with approximately 6g of magnesium chloride (a chemical).

Normally, these types of embryos feature two eyes; however, in this experiment, half of the eggs placed in the magnesium chloride mixture gave rise to one eyed embryos.

Which of the following factors explain why the fish began to express the gene of only having one eye?

2. Himalayan rabbits carry the C gene, which is required for the development of pigments in the fur, skin, and eyes. The C gene is deactivated (turned off) above 35 Degrees C, and it is activated between 15-25 degrees C. This regulation of gene expression produces rabbits with a distinctive coat coloring.

Which if the following factors explain why the rabbits began to express a different coat color?

3. In 1917, biologist Thomas Hunt Morgan conducted studies in which he placed certain caterpillars under red, green, or blue light during development, while other caterpillars were kept in the dark. When the caterpillar developed into butterflies, their wings showed dramatic differences. Exposure to red light resulted in colored wings, while exposure to green light resulted in very dark colored wings. Blue light and darkness led to paler/ light colored wings.

Which of the following factors explain why the butterflies began to express different wing colors?