SLA Student Learning Activity

Mutations

Name: _____ Date: _____

Included below are various imaginary scenarios about accidental mutations. Think about the possible consequences of each situation.

Scenario 1

Manon regularly visits tanning salons. She does not realize that an ultraviolet ray has caused a mutation in one of the cells of her big toe. The modified gene produces green skin with big white polka-dots.

- Is Manon in danger?
- Will she have problems?
- If she gives birth to a baby in a few months, will her child have a green toe? Explain.

Scenario 2

Patrick liked to sunbathe at his cottage. Unfortunately, he was unaware of the fact that the Sun's rays irradiated one of the chromosomes in the germinal cells of his testicles (the cells that produce sperm). This resulted in a mutation that caused his son to have a nose with three nostrils. Also, the water in which he liked to swim contained a mutagenic pesticide that changed the cells in his lungs, causing Patrick to develop asthma. Five years later, Patrick wonders if his children will also be sick.

- Will Patrick's children also be asthmatic?
- What kind of problems do his children risk having? Why? Why won't all his children develop problems?
- Can Patrick prevent having children with three nostrils? How could this mutation be an advantage to his children?

Scenario 3

Rebecca has been pregnant for three months. Her fetus's cells have begun to differentiate and its brain is in full development. Rebecca eats too much meat that contains preservatives. These preservatives circulate in her bloodstream, causing a mutation of nervous cells that provide both with an extraordinary musical talent. Thirty years later, Rebecca's child, Peter, is internationally renowned, is married, and has many children.

- Will Peter's children become musically talented as well? Explain.
- Will his children necessarily have little musical talent? Explain.
- Is there a way to produce offspring who would have Peter's musical mutation?

Scenario 4

Freddy the frog is lazy and always hungry. His diet has many deficiencies, so much so that he is lacking ingredients for the proper mitosis of his germinal cells. Freddy does not realize that one of his sperm cells contains a gene that produces wings, and that he has fertilized an ovule that also contains a bizarre mutation that produces antennas.

- Will the flying frog with antennas also be lazy?
- Will the frog be able to feed more easily than Freddy?
- Will Freddy produce more flying frogs with antennas?

Scenario 5

Yok and Yik come from the same zygote. They are twins who are experiencing the effects of a drug taken by their mother during an emergency operation while she was pregnant. In Yok's body, the drug caused a mutation in her gland cells, which provoked an overproduction of growth hormones. In Yik's body, the same gene is subjected to this mutation, but only in the ovules she already has.

- Are Yik and Yok identical twins?
- At birth, Yok is twice as heavy as Yik. Why?
- Will Yok's children be bigger than Yik's? Explain.