

Name _____

The Marvelous Stages of Mitosis: A Cellular Ballet

Open-Ended Response Answer Key

1. Mitosis and meiosis both involve cell division, but mitosis creates identical daughter cells for growth and repair, while meiosis produces genetically diverse gametes for sexual reproduction.
2. If a cell skipped metaphase, the chromosomes might not align correctly at the cell's equator during anaphase, resulting in uneven distribution of genetic material to daughter cells.
3. Mitosis plays a crucial role in the healing and recovery of injured tissues, such as the regeneration of skin cells after a cut or the replacement of damaged cells in the liver.
4. Advances in our understanding of mitosis can lead to improved treatments for diseases, better techniques for tissue regeneration, and insights into how cancer cells divide uncontrollably. These advancements can benefit medicine, regenerative biology, and cancer research.

