

Core Skills Analysis

Biology/Genetics

- Understood the concept of trisomy as a type of chromosomal abnormality involving an extra chromosome.
- Learned how trisomy affects genetic makeup and can lead to developmental and health challenges.
- Recognized examples of common trisomy conditions, such as Trisomy 21 (Down syndrome).
- Gained insight into the biological mechanisms behind nondisjunction during cell division.

Tips

To deepen understanding of trisomy, consider exploring how chromosomes are visualized through karyotyping by examining real or simulated chromosome spreads. Engage in simple, hands-on models of cell division to see how nondisjunction can occur, perhaps using colored beads or paper cutouts to mimic chromosomes. Discussions about genetics can be enriched by connecting trisomy to topics of genetic counseling and ethical considerations, helping build empathy and critical thinking. Incorporate videos or interactive animations to visualize chromosomal abnormalities dynamically, making abstract concepts more accessible and memorable.

Book Recommendations

- [Genetics: A Beginner's Guide](#) by Adam Rutherford: An accessible introduction to genetics concepts, including chromosomal abnormalities and their impacts.
- [Down Syndrome: A Resource Guide for Parents and Professionals](#) by Yvonne J. Rozendal: Explains Trisomy 21 in detail, providing supportive insights for understanding this condition.
- [Cells and Heredity \(Science in Action Series\)](#) by Michael J. Pledger: A clear explanation of cell biology concepts, including chromosomes and genetic disorders suitable for middle to high school readers.

Learning Standards

- CCSS.ELA-LITERACY.RST.9-10.3: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks related to genetics.
- NGSS HS-LS3-1: Heredity: Inheritance and Variation of Traits – Ask questions to clarify relationships about the role of DNA and chromosomes in heredity and traits, including abnormalities like trisomy.
- NGSS HS-LS1-1: Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out essential functions, connecting to how chromosome number abnormalities can affect bodily functions.

Try This Next

- Create a karyotype worksheet where Elijah can practice matching chromosome pairs and identifying trisomies.
- Design a simple experiment or model illustrating nondisjunction in meiosis using craft materials.