

Reading Responses

Name of Student

Institutional Affiliation

1-1 Reading Responses

Hello, fellow students! I am Niruba, originally from Coventry, UK, and I am pursuing a psychology degree at Bryan. My career goals involve integrating psychological insights into public policy to enhance community well-being.

One scientific breakthrough that fascinates me is the development of CRISPR-Cas9, a gene-editing technology that has revolutionized the field of genetics (Bhattacharjee et al., 2022). The tool allows for precise and relatively easy editing of DNA, and it holds immense potential for treating genetic disorders, improving crops, and much more.

Three key phrases from our reading that resonate with CRISPR-Cas9 are:

1. **Scientific World View:** Science believes that the universe's phenomena follow consistent patterns, which can be understood through systematic study (The Nature of Science, n.d.). CRISPR-Cas9 exemplifies this as it was developed based on the predictable nature of DNA, allowing scientists to alter genetic sequences systematically.
2. **Scientific Knowledge Is Durable:** The concept emphasizes that while scientific knowledge is subject to change, it generally builds upon itself (The Nature of Science, n.d.). CRISPR-Cas9 did not discard previous genetic knowledge; instead, it extended existing frameworks of molecular biology, showcasing the durability and evolutionary nature of scientific understanding.
3. **Science Demands Evidence:** The development and applications of CRISPR-Cas9 heavily rely on empirical evidence (The Nature of Science, n.d.). Its effectiveness and safety continue to be tested through rigorous scientific methods, ensuring that the outcomes are well-supported by data.

A significant limitation of science, highlighted by CRISPR-Cas9, is ethical ambiguity. While science can guide us on what can be done, it often does not address whether it should

be done. The capability to alter DNA raises ethical questions regarding consent, potential long-term impacts on genetic lines, and the boundaries of such technology. The limitation underscores the necessity for ethical frameworks to accompany scientific advances, ensuring that moral considerations match technological capabilities.

Engaging with CRISPR-Cas9 through these scientific lenses emphasizes the breakthrough's impact and illustrates the intrinsic complexities and responsibilities inherent in scientific pursuits.

References

Bhattacharjee, G., Gohil, N., Khambhati, K., Mani, I., Maurya, R., Karapurkar, J. K., Gohil, J., Chu, D.-T., Vu-Thi, H., & Alzahrani, K. J. (2022). Current approaches in CRISPR-Cas9 mediated gene editing for biomedical and therapeutic applications. *Journal of Controlled Release*, 343, 703–723.

Chapter 1: The Nature of Science. (n.d.). Retrieved June 24, 2024, from <http://www.project2061.org/publications/sfaa/online/chap1.htm#enterp>

Follow-up Post

Hello Ria,

Thank you for your insightful post on CRISPR-Cas9! The keywords you have chosen emphasize scientific inquiry's structured yet dynamic nature. An additional keyword that complements your discussion is "Interdisciplinary Collaboration." CRISPR-Cas9's development and application are prime examples of how modern science transcends traditional boundaries. This technology integrates biology, chemistry, and computational sciences, showcasing how collaborative efforts across various scientific disciplines are crucial for groundbreaking advancements. The interdisciplinary nature accelerates innovation and broadens the potential applications of such technologies, from medicine to agriculture. The keyword highlights the collaborative framework essential for the kind of significant breakthroughs that CRISPR represents, emphasizing the collective endeavor inherent in scientific progress.