

**Title – CRISPR: The Double-Edged Sword of Genetic Engineering**

**Program of Study – Biomedical Sciences**

**Presentation Type – Choose one of the following:** Three Minute Thesis

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**Abstract:**

This three-minute thesis provides an insightful examination of CRISPR-Cas9 and its tremendous impact on the fields of genetic engineering and biotechnology. Genetic engineering involves modifying an organism's genetic material to alter its traits by adding, deleting, or changing specific genes. CRISPR-Cas systems are revolutionary tools for genetic engineering, utilizing RNA molecules to guide Cas9 enzymes to precise locations in DNA to insert, delete, or replace genes. In this thesis, the history of CRISPR-Cas9 systems is briefly explored, including their origins as a natural bacterial defense mechanism and their mode of operation. There are two primary focal points, namely, the applications and ethical implications. In-depth analysis of the current and future uses of genetic engineering will be provided, as well as its advantages and disadvantages. Additionally, ethical dilemmas surrounding genetic engineering are discussed from a Christian perspective, including the controversial issues of "designer babies" and genetic disease treatment. Specific topics, such as the implications of genetic engineering for human health and society, are examined in greater detail, leaving the decision about the potential benefits and drawbacks of genetic engineering technology up to the audience to ponder. In conclusion, this thesis will provide a thought-provoking discussion on the complex and multifaceted field of genetic engineering, leaving the audience to consider its ramifications for the future.