University of Jijel

Faculty of Natural Sciences and Life

Department of Cellular and Molecular Biology

Master 2 in Molecular and Cellular Biology

Survey for Chapter IX: Combating infectious diseases using genetic tools

Introduction to Infectious Diseases and Genetic Tools

- ✓ What role do genetic tools play in combating infectious diseases?

Key Genetic Tools in Infectious Disease Research

- ✓ How does CRISPR work to edit genes in pathogens?
- ✓ How is recombinant DNA/CRSPR used to create vaccines and therapeutic proteins?
- ✓ What is the significance of NGS in identifying and tracking pathogens?

Gene Editing for Pathogen Control

- ✓ How can CRISPR be used to reduce the virulence of pathogens?
- ✓ Provide examples of how CRISPR has been applied to combat diseases such as *HIV* or *Zika*.
- ✓ How are DNA and RNA-based vaccines different from traditional vaccines?
- ✓ How can CRISPR enhance immune responses in vaccine development?

Combatting Antimicrobial Resistance (AMR)

- ✓ How can genetic tools be used to identify mechanisms of antimicrobial resistance?
- ✓ In what ways can gene editing be applied to restore antibiotic efficacy in resistant pathogens?