

MBIO 623

Antibacterial Agents and Plasmids

Course outlines

□ **Course description**

- Advanced study of antibiotics from biological and chemical perspectives
- Focus on molecular mechanisms of antibiotic resistance
- Special emphasis on resistance plasmids

□ **Course Main Objective**

- Provide comprehensive knowledge of clinical aspects of antibiotics
- Understand the development and spread of antibiotic resistance

Course Learning Outcomes

Knowledge:

- Understand principles and applications of advanced antibiotic activity assays
- Explain antibiotic classes and mechanisms of action

Skills:

- Design studies addressing antibiotic modification or degradation
- Apply advanced techniques in antibiotic classification

Values:

- Propose strategies to prevent antibiotic side effects
- Promote collaboration with research institutes and experts

Course Contents

1. The origins and definition of antibiotics
2. Antibiotics classification and types
3. Antibiotics and mechanisms of action
4. Measuring the activity of antibiotics
5. Genetic basis of antimicrobial resistance, Plasmid
6. Mechanistic Basis Of Antimicrobial Resistance.
7. Antibiotic Modification or Degradation
8. Target Modification/Bypass/Protection Mechanisms
9. Antimicrobial peptides
10. Applications of Antibiotics(Antitumor antibiotics ,Food preservative antibiotics ,Antibiotics as veterinary medicine ,Antibiotics for control of plant disease ,Antibiotics as tools in molecular biology

Assessment Methods

- ✓ Oral presentations
- ✓ Group project reports
- ✓ Midterm and final exams
- ✓ Practical section
- ✓ Final Exam

References

- Hauser, A. (2018). Antibiotic Basics for Clinicians.
- Recent peer-reviewed articles