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REVIEWER'S REPORT

Manuscript No.: IJAR-59715

Title: Artificial Intelligence in Modern Microbiology: Advances in Diagnostics, Resistance Prediction and Antimicrobial Discovery.

Recommendation:

Accept as it is .....
Accept after minor revision.....
✓ Accept after major revision .....
Do not accept (*Reasons below*) .....

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality		✓		
Clarity		✓		
Significance	✓			

Reviewer Name: Dr S. K. Nath

Detailed Reviewer's Report

Strength of the study:

• Covers a timely and important topic in modern microbiology.
• Discusses AI applications in microbial diagnosis and resistance prediction.
• Includes examples from microscopy, MALDI-TOF and genomic analysis.
• Reviews AI-assisted antimicrobial and peptide discovery.
• Discusses emerging applications in microbiome research and genome design.
• Compares evidence from laboratory, animal and clinical studies.
• Clearly identifies limitations affecting clinical implementation.

Weakness of the study:

• The review does not follow a systematic literature search.
• Database names and search terms are not provided.
• Study selection criteria are not clearly explained.
• Formal quality assessment of included studies is absent.
• Some important AI applications receive limited discussion.
• The review relies mainly on selected published examples.
• Recent developments require more comprehensive coverage.
• Grammar, spacing and reference formatting need correction.

Reviewers Comments:

The manuscript provides a useful overview of artificial intelligence applications in modern microbiology, particularly microbial diagnosis, antimicrobial resistance prediction and antimicrobial discovery. Its strength is the comparison of evidence from laboratory studies, animal experiments and clinical investigations. The authors appropriately acknowledge that most applications are not yet ready for routine clinical use. However, the manuscript follows a narrative approach without a systematic search strategy, database details or clear study selection criteria. This limits the completeness and reproducibility of the review. The authors should explain how the literature was selected and provide a more balanced assessment of the quality of the included studies. Some recent developments and practical challenges also deserve further discussion. Ethical approval is generally not required for a review of published literature, but an appropriate declaration should be included. The manuscript is understandable, although grammar, spacing, sentence construction and reference formatting need improvement. Overall, the topic is relevant and the review is informative, but methodological clarification and editorial revision are required.

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Previously Published anywhere/Plagiarism check:
A web search did not identify an exact match for the submitted title. However, closely related reviews on AI in microbiology and antimicrobial resistance were published in 2026, including articles in April and September. The subject and several themes overlap, but this does not establish plagiarism. The authors should clarify the review's unique contribution and complete a formal similarity check before publication.