KMANPUB Health Nexus Vol. 4 No. 1 (2026)

Article history:
Received 23 June 2025
Revised 18 September 2025
Accepted 27 September 2025
Published Online 01 October 2025

The Role of Biotechnology in the Development of Recombinant Drugs

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1. Round 1

1.1 Reviewer 1

Reviewer:

While the opening defines biotechnology effectively, the manuscript immediately dives into technical explanations. The reader would benefit from a stronger contextualization of why recombinant biotechnology became necessary compared to traditional pharmacology.

The sentence “Early breakthroughs in this field, such as the cloning of the human insulin gene…” is informative but lacks citation specificity. Clarify which study or historical milestone is being referenced and add a year for temporal framing.

The rationale for choosing a narrative review design is sound, but it should clarify whether the descriptive analytical approach included any form of critical appraisal or weighting of evidence quality.

The sentence “The initial database search was conducted between January 2020 and June 2025” needs clarification on whether backward and forward citation tracking was applied. This strengthens methodological transparency.

The manuscript states that “peer-reviewed English-language articles” were included but does not specify the number of articles screened or included. Adding a PRISMA-style summary or count enhances rigor.

The claim “two independent reviewers performed the extraction and synthesis processes” implies systematic rigor. However, the study type is narrative. Clarify whether this dual-review process was formal or merely an internal cross-check.

The sentence “Mammalian cell lines… remain the industry standard for producing therapeutic glycoproteins” could be strengthened by mentioning alternative platforms (e.g., plant-based or cell-free systems) to show awareness of emerging manufacturing diversity.

Authors revised the manuscript and uploaded the updated document.

1.2 Reviewer 2

Reviewer:

The claim “The importance of recombinant drugs in global health cannot be overstated” is stylistically strong but unacademic. Replace it with evidence-based phrasing, e.g., “Recombinant drugs play a critical role in global health, representing X% of newly approved therapeutics since 2010.”

This section lists historical milestones sequentially but lacks critical synthesis. Instead of narrating chronologically, discuss how each milestone contributed conceptually to current industrial practices.

The concluding aim statement is clear, but it should be reframed as a research objective rather than a narrative purpose, for example: “This review aims to systematically examine…” instead of “This narrative review aims to describe…”.

The description “cutting and rejoining of DNA molecules using restriction enzymes and ligases” is technically correct but oversimplified for an advanced readership. Expand to include mention of current recombination-independent cloning or seamless assembly methods.

In the statement “Machine learning models trained on experimental data are now capable of predicting expression success rates…”, provide a reference or example (e.g., AlphaFold, DeepMind models) to substantiate this technological claim.

The manuscript notes that “ethical oversight committees… maintain transparency and accountability”, yet no examples of current regulatory frameworks (e.g., NIH RAC, EMA bioethics codes) are given. Include at least one to ground the discussion.

The overview of recombinant proteins, monoclonal antibodies, vaccines, and gene therapies is thorough but overly descriptive. The reviewer recommends inserting a comparative synthesis table summarizing classes, expression systems, and therapeutic domains.

Authors revised the manuscript and uploaded the updated document.

2. Revised

Editor’s decision after revisions: Accepted.

Editor in Chief’s decision: Accepted.

Health Nexus
E-ISSN: 2981-2569