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| Book Name: | [**Medical Science: Recent Advances and Applications**](https://bookstore.bookpi.org/product/medical-science-recent-advances-and-applications-vol-1/) |
| Manuscript Number: | **Ms\_BPR\_6010** |
| Title of the Manuscript: | **ADVANCEMENT IN CRISPR GENE EDITING WITH ARTIFICIAL INTELLIGENCE: THE FUTURE OF PRECISION MEDICINE** |
| Type of the Article | **Book Chapter** |

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| PART 1: Comments | | |
|  | Reviewer’s comment **Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | Author’s Feedback *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | This manuscript covers an exciting and fast-growing area where CRISPR gene-editing technology meets artificial intelligence. The combination of these two powerful tools has the potential to significantly improve precision medicine, making treatments more accurate and less time-consuming. It also opens up new possibilities for tackling complex diseases like cancer and genetic disorders. By summarizing current advancements and challenges, this paper helps researchers understand where the field is heading and how AI can support CRISPR-based innovations. |  |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | The current title is broadly appropriate; however, for clarity and alignment with scientific conventions, a more concise revision might be: “Integrating Artificial Intelligence with CRISPR: Advancements in Precision Medicine” |  |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. | The abstract covers the main themes of the paper, but several areas require revision for clarity and grammatical accuracy. For instance, the sentence *“However, major problems such as off-target effect of the genome, optimization of guide RNA design, and unintended prediction of mutation of genes are present”* can be rewritten for clarity as: *“However, CRISPR faces major problems like off-target genome effects, challenges in optimizing guide RNA design, and difficulty predicting unintended gene mutations.”*  Furthermore, the phrase *“complete learning of different models has been done”* is scientifically misleading and should be reworded as *“machine learning models have been trained...”* to align with proper AI terminology.  Additionally, the sentence *“By developing a method to improve the predictability of gene changes, minimizing off-target, minimizing error, and develop accurate target selection. These all type of limitation can be overcome with the help of AI technology”* is structurally incorrect. A comma should replace the period after “selection” to properly connect the thought and complete the sentence logically.  The phrase *“AI use previously kept database to help on discovering feasible gene-editing targets”* also contains a grammatical error, “on” should be corrected to “in.”  Finally, the statement *“By improving guide RNA sequences and minimizing off-target interactions, complete learning of different models has been done”* is vague and misleading. A more scientifically accurate alternative would be: *“Machine learning models have been trained on large genomic datasets to improve guide RNA design and reduce off-target effects in CRISPR applications.”*  Overall, the abstract would benefit from concise and scientifically precise language to better reflect the manuscript’s core message. |  |
| **Is the manuscript scientifically, correct? Please write here.** | The manuscript presents a scientifically relevant exploration of how artificial intelligence can enhance CRISPR-based gene editing, addressing tools such as DeepCRISPR, BE-Hive, and various optimization models. However, there are issues with technical accuracy and clarity that require revision. For example, in Section 6.5 (Performance Comparison), the manuscript mentions “CRISPOR” as a tool for guide RNA design and performance evaluation. It requires proper context like putting in bracket the full meaning of CRISPOR which is (CRISPR Optimal RNA) the first time it appears on the manuscript. To avoid confusion, the authors should clearly define CRISPOR and reference, which presents the tool’s methodology and validation. Including this explanation would strengthen the manuscript's scientific reliability and help readers unfamiliar with the platform.  Additionally, some claims, particularly in Sections 8 and 9 discussing delivery systems, gene therapy, and epigenome editing, should be supported with more detailed analysis and recent references. While the manuscript correctly identifies the relevance of these topics, it lacks sufficient depth in explaining mechanisms, outcomes, or limitations supported by peer-reviewed studies. |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.**  **-** | The references included in the manuscript are largely relevant and many are recent, spanning from 2015 to 2024, which demonstrates the authors’ effort to engage with current research.  However, there are some weaknesses. For example, in Section 5.1, the manuscript cites CRISPRdb and GeCKO for data sources but does not provide recent publications or clarify the scope or limitations of these databases. A newer and more detailed citation for CRISPR datasets or AI training data would strengthen this section.  Additionally, in Section 9 (Gene Therapy and Disease Applications), some references are appropriate, but the discussion is brief and would benefit from supporting evidence from more disease-specific studies, especially those involving clinical trial data for sickle cell disease, CAR-T therapies, or epigenetic editing. Including references like Frangoul et al. (2021) is a good start, but broader inclusion of other peer-reviewed work would reinforce the scientific claims.  Lastly, while the manuscript includes CRISPOR in Section 6.5, it should cite Haeussler et al. (2016, *Genome Biology*) directly when discussing its predictive capabilities. Without this, the reader may not fully appreciate the tool’s validation and role in the field.  The references are mostly sufficient and timely, targeted additions and clearer citation context would enhance the manuscript’s credibility. |  |
| Is the language/English quality of the article suitable for scholarly communications? | At present, the manuscript’s English quality is not sufficient for scholarly communication. Numerous grammatical errors, awkward sentence constructions, and inconsistent verb tenses affect the clarity and readability of the text. For example, in the **Introduction**, phrases such as *“it is a gene-editing method that help the scientist...”* display subject-verb disagreement, and *“As CRISPR is a powerful tool but it also comes up with some limitations”* is both structurally flawed and awkwardly phrased. Similarly, technical descriptions are often introduced with vague or incorrect wording—for instance, *“This process is must require...”* in **Section 2.1** should be restructured for proper academic tone and accuracy.  Moreover, many paragraphs begin with weak or ambiguous pronouns like “It” or “This,” instead of clear subjects, which disrupts scientific clarity. Transitions between sentences and sections also lack cohesion; the manuscript would benefit from more consistent use of linking words such as “Therefore,” “However,” and “Furthermore” to improve logical flow.  In some areas, such as **Section 5**, the inconsistent use of passive voice, imprecise technical language, and informal phrasing (e.g., *“get the results,” “used to achieve editing effectively”*) further detract from the academic tone. Additionally, lists and explanatory sections (like those under “CRISPR Mechanism”) would benefit from clearer formatting and smoother integration into narrative form rather than appearing as disjointed bullet points. |  |
| Optional/General comments | No additional comments. |  |

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| **PART 2:** | | |
|  | **Reviewer’s comment** | **Author’s Feedback** (It is mandatory that authors should write his/her feedback here) |
| **Are there ethical issues in this manuscript?** | *(If yes, Kindly please write down the ethical issues here in details)* |  |

**Reviewer details:**

**Faith Omosigho, Delta State University, Nigeria**