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| Journal Name: | [Journal of Scientific Research and Reports](https://journaljsrr.com/) |
| Manuscript Number: | **Ms\_**JSRR**\_140056** |
| Title of the Manuscript: | **Computational Structure Analysis, Characterization and Functional Annotation of a Hypothetical Protein from Mycobacterium marinum (WP\_020728386.1): In Silico Approach** |
| Type of the Article | **Original Research Article** |

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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** (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 study addresses a critical gap in the functional annotation of hypothetical proteins in Mycobacterium marinum, a pathogen with notable relevance to both aquaculture and human health. By using a comprehensive in silico approach, the research provides valuable insights into the structural and functional characteristics of a poorly understood protein (WP\_020728386.1), which is related to dioxygenase activity. The work contributes to the broader understanding of pathogenesis in M. marinum, potentially aiding in therapeutic target discovery for both aquatic diseases and zoonotic infections. Moreover, this study exemplifies how computational methods can extract biological meaning from genomic data, emphasizing the importance of bioinformatics in modern microbiological research.** |  |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | **Yes, but could be improved slightly for clarity and impact.**  **Suggested alternative title:**  **"In Silico Structural and Functional Characterization of Hypothetical Protein WP\_020728386.1 from Mycobacterium marinum: A Potential Dioxygenase Involved in Pathogenesis"** |  |
| 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 is generally comprehensive and informative. However, a few improvements are recommended:**  **Clarity and flow: The abstract should open with a clearer motivation. For instance, why is this protein important and why is M. marinum studied?**  **Grammar/Style: Sentences such as "Again, in human, it causes..." and "However, the protein has not yet been fully explicit." are awkward and should be revised for professional tone.**  **Delete redundancy: Phrases like "Again, in human..." and "Due to the existence of..." could be streamlined.**  **Include specific results: Quantitative details such as structural validation metrics (e.g., % residues in favored Ramachandran plot regions, Z-score) would strengthen the abstract.**  **Suggested revision: Condense redundant parts and replace unclear phrases with precise data and impact statements.** |  |
| Is the manuscript scientifically, correct? Please write here. | **Yes, the manuscript is scientifically valid and methodologically sound.**  **The study presents a well-structured workflow using standard and reliable bioinformatics tools (SWISS-MODEL, BLASTp, CDD, PSIPRED, etc.). The modeling and structural validation steps (Ramachandran plot, ProSA Z-score) follow accepted practices in computational biology. Functional annotations are well interpreted, and the discussion on dioxygenases is informative.** |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.** | **References are mostly adequate and recent (2020–2023), though the inclusion of more recent studies (2023–2024) on dioxygenase enzymes, particularly in Mycobacterium spp., would enhance the literature support. Suggested references: https://doi.org/10.1016/j.ijpharm.2025.125923. https://doi.org/10.1016/j.jiec.2025.06.017. https://doi.org/10.1002/cmdc.202300359.** |  |
| Is the language/English quality of the article suitable for scholarly communications? | **Moderate. The manuscript is understandable, but the English needs significant improvement for scholarly communication.**  **A thorough language editing pass by a native English speaker or a professional academic editor is advised to enhance clarity and readability.** |  |
| Optional/General comments | The paper is a solid contribution in the domain of functional annotation of bacterial proteins. The in silico characterization is thorough and appropriately validated.  Figures (such as Ramachandran plots, 3D structure, and active sites) are helpful, but their resolution and figure legends should be improved.  Consider adding a short section or paragraph in the Discussion explicitly comparing the annotated protein with experimentally validated dioxygenases.  A future direction section outlining potential wet-lab validations (e.g., docking studies or mutagenesis) could increase the manuscript’s impact. |  |

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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:**

**Masoomeh Yari Kalashgrani, Shiraz University of Medical Sciences, Iran**