

Journal Name:	<a href="#">Asian Journal of Pure and Applied Mathematics</a>
Manuscript Number:	<b>Ms_AJPAM_1760</b>
Title of the Manuscript:	<b>NUMERICAL SOLUTIONS OF FRACTIONAL CHEMOTAXIS SYSTEM USING STOCHASTIC FRACTIONAL CHEMOTAXIS MODELS</b>
Type of the Article	

**PART 1:** Review Comments

<b><u>Compulsory</u></b> REVISION comments	<b>Reviewer's comment</b>	<b>Author's Feedback</b> <i>(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
<b>Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.</b>		
<b>Is the title of the article suitable? (If not please suggest an alternative title)</b>		
<b>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.</b>		
<b>Are subsections and structure of the manuscript appropriate?</b>		
<b>Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.</b>		
<b>Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.</b> =		

Minor REVISION comments		
Is the language/English quality of the article suitable for scholarly communications?		
Optional/General comments	<ol style="list-style-type: none"><li>1. The abstract introduces the study well, but it could benefit from clearer definitions of key terms, like "anomalous diffusion" and "subdiffusion," for readers unfamiliar with the concepts.</li><li>2. The introduction provides a good background but could be improved by briefly stating the study's objectives and significance upfront to guide the reader.</li><li>3. The literature review touches on foundational models, yet it could be expanded to include more recent studies on stochastic fractional models in chemotaxis.</li><li>4. More detailed explanations of the mathematical concepts, such as fractional derivatives and the Grunwald-Letnikov approximation, would make the theoretical framework more accessible to a broader audience.</li><li>5. The paper could enhance readability by clearly numbering and formatting all equations, making it easier for readers to reference specific equations in their discussions.</li><li>6. Parameters like <math>\alpha</math>, <math>\chi</math>, and <math>\sigma</math> are central to the study but would benefit from a more thorough explanation of their biological relevance.</li><li>7. While the paper incorporates stochastic elements, an explanation of why specific stochastic processes (e.g., Wiener processes) are chosen would strengthen the methodology.</li><li>8. The finite difference method and Grunwald-Letnikov approximation are suitable choices, but the discussion could be expanded to address any potential limitations of these approaches.</li><li>9. The choices of parameter values for simulations are not fully justified. Discussing the criteria for these choices could help the reader understand the results better.</li><li>10. The paper presents results visually in Figure 1, but adding quantitative analysis to accompany the visuals could provide a deeper insight into the findings.</li><li>11. The paper compares the model with integer-order models; however, it would be helpful to show specific numerical examples or case studies illustrating these differences.</li><li>12. Although the paper mentions applications in cancer research and immunology, it could improve by providing more detailed examples or case studies in these fields.</li><li>13. The discussion would benefit from acknowledging the limitations of the proposed model, such as computational complexity or potential challenges in real-world implementation.</li><li>14. The paper mentions variable-order derivatives as a future direction but could expand on other potential avenues for further research, such as exploring other types of noise like Levy noise.</li><li>15. While the references cover seminal works, recent developments in stochastic fractional calculus and chemotaxis modeling might be missing. Including these could enhance the study's relevance.</li><li>16. Some sentences could benefit from language refinement to improve clarity, as technical papers benefit from concise and precise language.</li><li>17. The method for implementing the numerical solution, especially the Monte Carlo approach, is not fully explained. Including pseudo-code or a more detailed algorithm would be beneficial.</li><li>18. The paper would strengthen its conclusions by validating the model against empirical data or experimental studies, if available.</li><li>19. While results are described, more in-depth interpretation and discussion of their implications for biological systems would add value.</li><li>20. Consider adding more figures or tables, especially to show quantitative differences between integer-order and fractional-order models.</li><li>21. The role of memory effects in cell migration is mentioned but could be explained more explicitly, especially how these effects are quantitatively modeled in the</li></ol>	<ol style="list-style-type: none"><li>1. Anomalous diffusion is well defined in the abstract</li><li>2. The objectives of the study and its significant are stated in the study</li><li>3. The expansion of the literature review have been done and effected as instructed.</li><li>4. More detailed explanations on the mathematical concepts of fractional derivates and Grunwald-letnikov approximation are well defined now in the work</li><li>5. All the equations are well labelled</li><li>6. All the parameters are well defined</li><li>7. Explanation for the use of wiener processes is explained</li><li>8. The finite difference method and Grunwald-Letnikov approximation are suitable choices, have been well discussed.</li><li>9. Other corrections have been effected This is a paper work and not a project work</li></ol>

	equations.	
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**PART 2:**

	<b>Reviewer's comment</b>	<b>Author's comment</b> <i>(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
<b>Are there ethical issues in this manuscript?</b>	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	