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A Systematic Review on the Use of Fractional Order Partial Differential Equations in Biological and Medical Modeling

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Abstract: *Fractional order partial differential equations (FPDEs) have emerged as powerful mathematical tools in modeling complex phenomena in biological and medical systems. Unlike classical integer-order models, FPDEs capture memory effects, anomalous diffusion, and non-local interactions, which are prevalent in biological tissues, disease propagation, and drug transport mechanisms. This review systematically examines the recent developments, applications, and computational methods associated with FPDEs in biomedical contexts, emphasizing their role in accurately describing real-world biological processes*

Keywords: Fractional Order Partial Differential Equations, Anomalous Diffusion