

Calcium Signaling in the Sperm Head

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Calcium dynamics are a vital component of signaling processes in a wide variety of cell types. In sperm, calcium is required to regulate motility as well as successful fertilization once the sperm reaches the egg, in a reaction known as the acrosome reaction (AR). In this talk, we will propose a model for the acrosome reaction, motivated by previous models for other cell types. The AR is reminiscent of neurotransmitter vesicle release, which is also a calcium-mediated event, but is an end-stage exocytotic event instead of a periodic release. Our results will explore aspects of this pathway and suggests that the AR has multiple redundant pathways that may help ensure successful fertilization of the egg.