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The coupling of calcium signalling and mechanics: experiments and models

Abstract

Calcium signalling is one of the most important mechanisms of information propagation in the body. In embryogenesis the interplay between calcium signalling and mechanical forces is critical to normal embryonic development, but poorly understood. Several types of embryonic cells exhibit calcium-induced contractions and several experiments indicate that calcium oscillations and contractions are linked via a two-way feedback mechanism; disruption of these calcium oscillations leads to embryo abnormalities. I will discuss some of these experiments and present appropriate mathematical models.