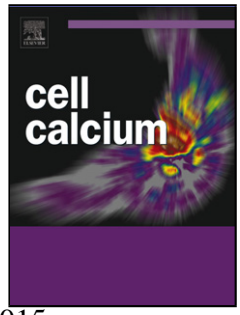

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Short title: Calcium Signaling in Trypanosomes

Calcium Signaling in Trypanosomatid Parasites

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Abbreviations: FCaBP, flagellar calcium binding protein; VTC, vacuolar transporter chaperone.

ABSTRACT

Calcium ion (Ca^{2+}) is an important second messenger in trypanosomatids and essential for their survival although prolonged high intracellular Ca^{2+} levels lead to cell death. As other eukaryotic cells, trypanosomes use two sources of Ca^{2+} for generating signals: Ca^{2+} release from intracellular stores and Ca^{2+} entry across the plasma membrane. Ca^{2+} release from intracellular stores is controlled by the inositol 1,4,5-trisphosphate receptor (IP_3R) that is located in acidocalcisomes, acidic organelles that are the primary Ca^{2+} reservoir in these cells. A plasma membrane Ca^{2+}-ATPase controls the cytosolic Ca^{2+} levels and a number of pumps and exchangers are responsible for Ca^{2+} uptake and release from intracellular compartments. The trypanosomatid genomes contain a wide variety of signaling and regulatory proteins that bind Ca^{2+} as well as many Ca^{2+}-binding