

**Table S2. List of parameters used in 3D model.**

$J_{Ch}$	3 pA per active zone: 133 pA $\mu\text{m}^{-2}$	$\text{Ca}^{2+}$ influx due to channels
$J_{Leak}$	74 $\mu\text{M} \mu\text{m}^{-2} \text{s}^{-1}$	$\text{Ca}^{2+}$ influx due to leak
$P_{max}$	14817 $\mu\text{M} \mu\text{m}^{-2} \text{s}^{-1}$	Peak rate of $\text{Ca}^{2+}$ extrusion
$K_p$	10 $\mu\text{M}$	Dissociation constant of extrusion mechanism
$[\text{Ca}^{2+}]_{rest}$	0.05 $\mu\text{M}$	Concentration of internal $\text{Ca}^{2+}$ at rest
$D_{\text{Ca}^{2+}}$	220 $\mu\text{m}^2 \text{s}^{-1}$	Diffusion coefficient of $\text{Ca}^{2+}$
$[\text{B}_{diff}]$	1.2 mM	Total concentration of diffusible buffer
$K_d (diff)$	2.2 $\mu\text{M}$	Dissociation constant of diffusible buffer
$K^+ (diff)$	20 $\mu\text{M}^{-1} \text{s}^{-1}$	Forward rate of $\text{Ca}^{2+}$ binding of diffusible buffer
$D_{B(diff)}$	20 $\mu\text{m}^2 \text{s}^{-1}$	Diffusion coefficient of diffusible buffer
$[\text{B}_{fixed}]$	0.15 mM	Total concentration of fixed buffer
$K_d (fixed)$	2.2 $\mu\text{M}$	Dissociation constant for $\text{Ca}^{2+}$ of fixed buffer
$K^+ (fixed)$	2 $\mu\text{M}^{-1} \text{s}^{-1}$	Forward rate of $\text{Ca}^{2+}$ binding of fixed buffer