A mathematical modeling toolbox for ion channels and transporters across cell membranes

Shadi Zaheri[a], Fatemeh Hassanipour[a,*]

[a]*Department of Mechanical Engineering, The University of Texas at Dallas, Richardson, TX, 75080, USA*

The following supplementary material is from " A mathematical modeling toolbox for ion channels and transporters across cell membranes" manuscript. It contains an overview of all equations related to Ion channels, Pumps, Cotransporters, and Symporters, organized in a table form. The detailed transporters along with the descriptions of their equatuons can be found from here.

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*Corresponding author

Email addresses: shadi.zaheri@utdallas.edu (Shadi Zaheri), fatemeh@utdallas.edu (Fatemeh Hassanipour)

1. Ion channels

1.1. Potassium Channels

1.1.1. Inward-Rectifier Potassium K Channels (IRKC, Kir)

Inward-Rectifier Potassium (K) Channels (IRKC, *Kir*)		**Ref**
$\boxed{i_{K,kir}^{M-N} = g_{kir} f_o^{k,kir} (V_m^{M,N} - V_{K,rev}^{M-N})}$	(1)	[1–4]
$g_{kir} = g_{kir}^{max} \left(\frac{[K]_e}{[K]_{ref}} \right)^{n_{kir}}$	(2)	
$f_o^{k,kir} = \frac{1}{1 + exp\left(\frac{V_m^{M-N} - V_{1/2,kir}}{k_{kir}} \right)}$	(3)	
$V_{1/2,kir} = A \log[K]_i + B$	(4)	

Table 1: The corresponding equations describing the ionic current transported via Inward-Rectifier Potassium K Channels (IRKC, *Kir*) across the cell membrane