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

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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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3.3. Sodium chloride cotransporter

Sodium chloride cotransporter	Ref
$$J^{M,N(net)}_{Na,NCC} = [E]_t \left(\frac{(g^M_{ENaCl} Na'^M Cl^M)(g^N_E) - (g^N_{ENaCl} Na'^N Cl^N)(g^M_E)}{R_M R_{NN} + R_N R_{MM}} \right) \quad (134a)$$	[34, 54]
$$J^{M,N(net)}_{Cl,NCC} = [E]_t \left(\frac{(g^M_{ENaCl} Na'^M Cl^M)(g^N_E) - (g^N_{ENaCl} Na'^N Cl^N)(g^M_E)}{R_M R_{NN} + R_N R_{MM}} \right) \quad (134b)$$	
Where $[E]_t = [E]_M + [ECl]_M + [ENa]_M + [ENaCl]_M + [ENaCl]_N + [ENa]_N + [ECl]_N + [E]_N$ $Na^M = \frac{[Na]_M}{K^M_{Na}}\ Na'^M = \frac{[Na]_M}{K^M_{ClNa}}\ Cl^M = \frac{[Cl]_M}{K^M_{Cl}} \mid Na^N = \frac{[Na]_N}{K^N_{Na}}\ Na'^N = \frac{[Na]_N}{K^N_{ClNa}}\ Cl^N = \frac{[Cl]_N}{K^N_{Cl}}$ $R_M = (1 + Na^M + Cl^M + Na'^M Cl^M) \mid R_N = (1 + Na^N + Cl^N + Na'^N Cl^N)$ $R_{MM} = g^M_E + g^M_{ENaCl} Na'^M Cl^M \mid R_{NN} = g^N_E + g^N_{ENaCl} Na'^N Cl^N$	

Table 21: The corresponding equations describing the flux transported via sodium chloride symporters across the cell membrane