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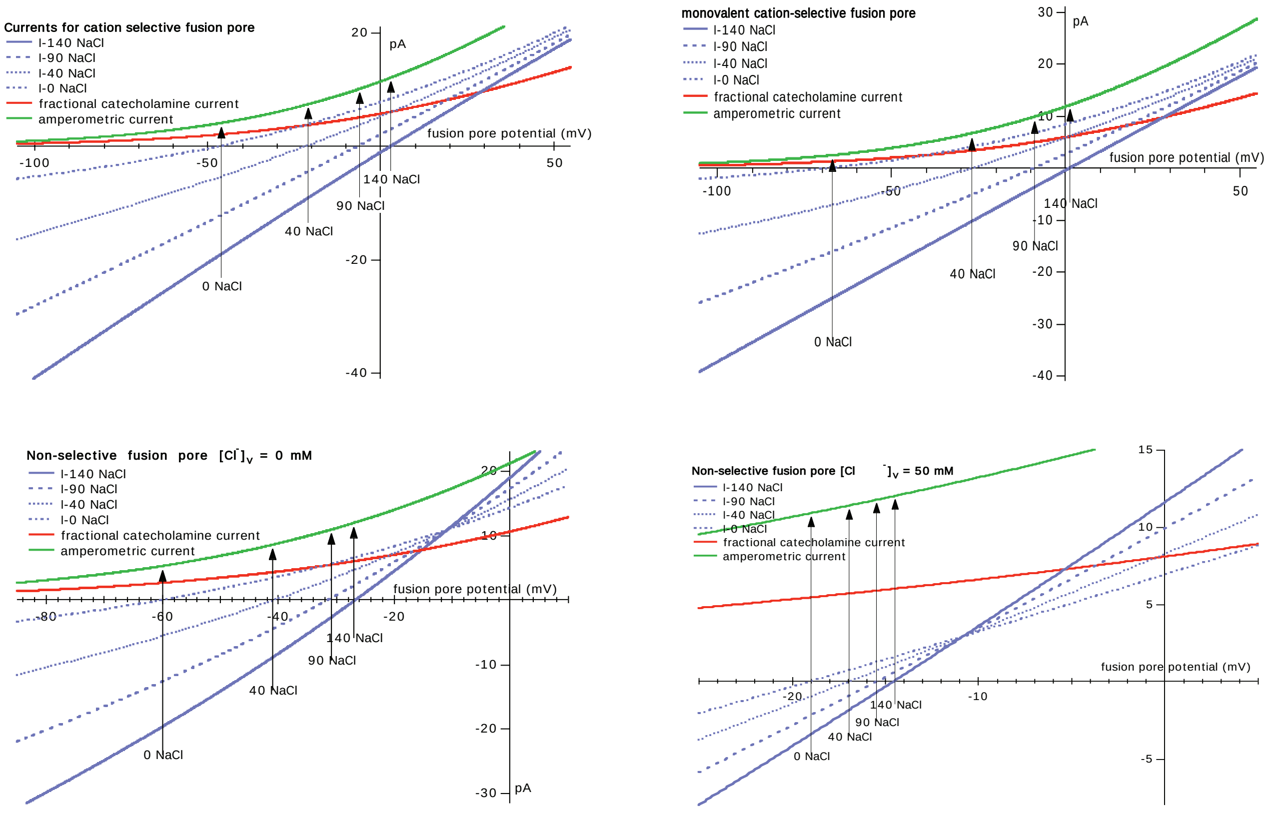

Supplemental Figure 1. Net current-voltage relations (blue) for fusion pore models 1-4 calculated according to Nernst-Planck electrodiffusion equation (see Methods, equation 3) for the different NaCl concentrations as indicated. The diffusion coefficients for the different ions are given in supplementary table 1. Due to the small capacitance of the vesicle (typically 3 fF) and the average initial fusion pore conductance of ~300 pS, the zero current potential will be established across the fusion pore with a time constant of ~10 µs. Catecholamine flux through the narrow fusion pore on the millisecond time scale thus occurs at this reversal potential. Fractional catecholamine currents are indicated in red. The amperometric currents (green) are twice the fractional catecholamine currents assuming a transfer of 2 electrons per oxidized molecule[9]. The vertical arrow lines indicate the respective reversal potentials and corresponding amperometric currents. For each fusion pore model the intravesicular free catecholamine concentration was set to match the average experimental amperometric foot current in 140 mM NaCl solution (~12 pA). This was the only adjustable parameter.

Ion	Diffusion Coefficient D (10^{-5} cm^2 s^{-1})
Na^+	1.33
K^+	1.96
CA^+	0.6
Ca^{2+}	0.79
Mg^{2+}	0.71
Cl^-	2.03

Table 1, Diffusion coefficients of ions used in the electrodiffusion calculations (from references S1, S2). CA stands for catecholamine.

Supplemental References:

S1. Hille, B. *Ion Channels of Excitable Membranes*, Edn. 3rd. (Sinauer Associates, Inc., Sunderland,MA; 2001).

S2. Gerhardt, G.A. & Adams, R.N. Determination of diffusion coefficients by flow injection analysis. *Anal. Chem.* **54**, 2618-2620 (1982).