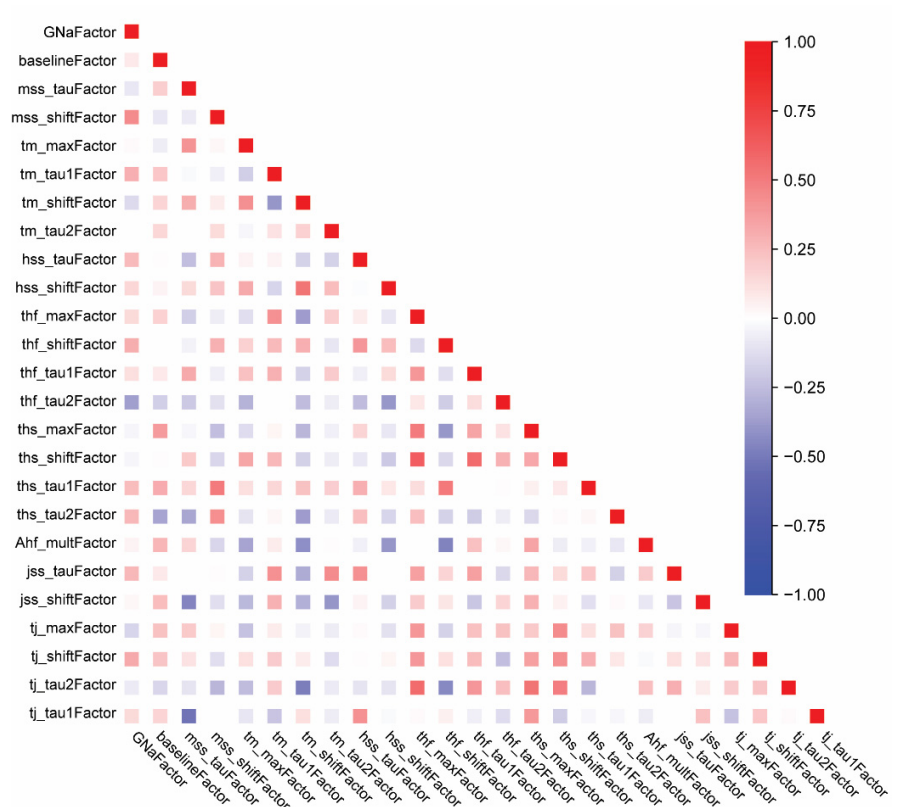


**Supplementary Figure 1. Normalized IV Curves and Current Traces.** Individual fits and overall fits for normalized IV curves and current traces. **A.** Individual fit for normalized IV curve. 5 experiments come from Sakakibara *et al.*, 2 of which are controls, and three of which are at varying external sodium concentrations: 2, 5, 20mM. 1 experiment comes from Schneider *et al.* which is a control. **B.** Overall fit for the same data. **C.** Individual fit for current traces. There are 7 experiments in this plot, 2 from Cai *et al.*, 4 from Feng *et al.*, and 1 from Schneider *et al.*. Each experiment involved measuring activation and inactivation at multiple stimulation voltages, and so there are many current traces for each experiment. The 2 experiments from Cai *et al.* are from Adult and Pediatric cells; the 4 experiments from Feng *et al.* were kept for 0, 1, 3 and 5 days before experimentation; and the 1 experiment from Schneider *et al.* was a control. **D.** Overall fit for the same data. [1–4]



**Supplementary Figure 2. Correlation Matrix.** The correlations between the biophysical model parameters. Correlations were estimated based on the individual fits, in the same fashion as the overall variance, with one correlation between each pair of model parameters.

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