Table 2: Primer Design. ***SCN4A*** **DIII-PD spans regions 21, 22 and 23 whereas DIV-PD is coded within exon 26. Sequencing primers are provided then mutatenic primers.**

Primer Name (Domain-exon/mutation-direction)	Primer Sequence	Purpose
DIII-ex21-f	5–agc aaa tga acc cac ata ttg gca ct–3	Sequencing
DIII-ex21-r	5–ggt caa agg gca agc tga gaa gga–3	Sequencing
DIII-ex22,23-f	5–ccc aaa tcc cac tca tgg ct–3	Sequencing
DIII-ex22,23-r	5–gct gga aag gca aag gaa gc–3	Sequencing
DIV-ex26-f	5–gca cct ttt tgt atc ctt tct gc–3	Sequencing
DIV-ex26-r	5–tgc ttc agg gca tcc att tct cca–3	Sequencing
DIII-(D1277E, A1281P)-f	5–gca gtc cac agc tgg ata cat gat ctc cat cca acc ctt–3	Mutagenesis
DIII-(D1277E, A1281P)-r	5–aag ggt tgg atg gag atc atg tat cca gct gtg gac tcc–3	Mutagenesis
DIV-(D1568N)-f	5–ttc aga agc ccg ttc cag ccg gct gac–3	Mutagenesis
DIV-(D1568N)-r	5–gtc agc cgg ctg gaa cgg gct tct gaa–3	Mutagenesis

Note: Mutagenic primers above refer to positions in the *Thamnophis* channel. The corresponding positions in the *Rattus* channel which was mutated are: D1241E, A1245P, D1532N

Note: The mutagenesis pertaining to $Na_V1.4^{LVNV}$ (I1556L, I1561V, D1568N, G1569V in Thamnophis corresponding to I1520L, I1525V, D1532N, G1533V in Rattus) was carried out by Mutagenex Inc.