*SUPPLEMENTARY FILE 1*

*Table A. Model data before and after channel “inhibition”*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **DIV0** | | **DIV4-7** | | |
|  | Baseline | NaV1.8 | Baseline | NaV1.7 | NaV1.3 |
| **Rheobase (pA)** | 17 | 22 | 12 | 16 | 21 |
| **Spike height (mV)** | 72.8 | 46.9 | 57.1 | 21.4 | 52 |
| **RMP (mV)** | -69.0 | -69.7 | -70.0 | -69.8 | -70.4 |

***Table B. Reagents***

|  |  |  |
| --- | --- | --- |
| Reagent | Description | Source |
| TTX | Tetrodotoxin citrate | Alomone |
| PF-24 | PF-01247324 | Sigma |
| PF-71 | PF-05089771 | Alomone |
| ICA | ICA-121431 | Tocris |
| Papain | Papain lyophilized power | Worthington |
| Collagenase | Collagenase type II | Worthington |
| Dispase II | Dispase type II | Sigma |

***Table C. EC50 values***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Drug (concentration used) | **EC50 values** | | | **References** |
| **NaV1.3** | **NaV1.7** | **NaV1.8** |
| TTX (100 nM) | **4 nM** | **2 nM** | 46±10 μM | (21, 96) |
| ICA-121431 (1 μM) | **20 nM** | >10 μM | >10 μM | (53) |
| PF05089771 (30 nM) | 11 μM | **11 nM** | >10 μM | (40) |
| PF-01247324 (1 μM) | >30 μM | >30 μM | **331 nM** | (50) |
| A-803467 (1 μM) | 2.5 μM | 6.7 μM | **8 nM** | (97) |

Bolded entries indicate the NaV subtype that is selectively blocked

***Table D. Primers***

|  |  |  |  |
| --- | --- | --- | --- |
|  | HPRT | NaV1.7 | NaV1.8 |
| NCBI Reference Sequence | *NM\_013556.2* | *NM\_001290674.1* | *NM\_001205321.1* |
| Length | 144 | 114 | 148 |
| Forward | TCCTCCTCAGACCGCTTT | TGATGGTCATGGTGATTGGG | AGCCATCAAAGTGTCCGTC |
| Reverse | TTTTCCAAATCCTCGGCATAATG | TGTTTGCGTCGGTGTCTTC | CTTTATCAGAGCCTCGAAGGTG |

*Table E. Model equations*

|  |  |  |
| --- | --- | --- |
| **Channel Model** | **Equations** | |
| NaV1.7 (86) |  | |
|  |  |
|  |  |
|  |  |
| NaV1.3\* |  | |
|  |  |
|  |  |
|  |  |
| NaV1.8 (87) |  | |
|  |  |
|  |  |
|  |  |
| KM (88) |  | |
|  | |
|  |  |
| Kdr (88) |  | |
|  |  |
|  |  |
|  |  |
| AHP\*\* |  |  |

\* Modified from NaV1.7: a hyperpolarizing shift of 12mV in V1/2 of activation gate, m

\*\* Modified from (49)

Note that the NaV1.7 and NaV1.8 equations above do not include the liquid junction potential correction of 4.2 mV (86) and 5.3 mV (87), respectively, that were applied in the neuron model.

*Table F. Conductance densities at baseline for DIV 0 and 4-7 models*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Conductance densities at baseline (mS/cm2)** | | | | | | |
|  |  |  |  |  |  |  |  |
| **DIV 0** | 0 | 3 | 30 | 3 | 0.05 | 3.5 | 0.025 |
| **DIV 7** | 0.35 | 35 | 0.2 | 3.5 | 0.5 | 2.5 | 0.035 |