|  |  |  |
| --- | --- | --- |
| **Species** | **Initial concentration (μM – except where stated)** | **References** |
| AMPAR  | 125 molecules | [1] |
| GRIP | 1.1 | [1] |
| PKC | 0.66 | [1] |
| PICK1 | 0.66 | Calibration† |
| SFK | 0.66 | Calibration† |
| PP2A | 1.1 | [1] |
| PTPMEG | 1.1 | Calibration† |

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Value** | **References/notes** |
| k.ampar-grip.on | 5.5μM-1 s-1 | [2] |
| k.ampar-grip.off | 0.3 s-1 | [3] |
| k.ampar-grip.off\* | 70 s-1 | [1] |
| k.ampar-pick.on [high Ca2+] | 0.7 [2.8] μM-1 s-1 | [4, 5], calibration† |
| k.ampar-pick.off | 5.0 s-1 | [5], calibration† |
| kcat.ptpmeg | 5.5 s-1 | Calibration† |
| kcat.pkc | 4.7 s-1 | [1] |
| kcat.pp2a | 0.6 s-1 | [1] |
| kcat.sfk | 10 s-1 | [6] |
| km.ptpmeg | 7.8 μM | Calibration† |
| km.pkc | 126 μM | [7] |
| km.pp2a | 7.8 μM | [8] |
| km.sfk | 3.5 μM | [6] |
| k.grip-pick.on | 10 μM-1 s-1 | Calibration† |
| k.grip-pick.off | 5 s-1 | Calibration† |
| k.pick-pkc.on | 6.0 μM-1 s-1 | [5] |
| k.pick-pkc.off | 1.0 s-1 | [5] |
| k.ampar-nsf.on | 1 μM-1 s-1 | Calibration† |
| k.ampar-nsf.off | 5 s-1 | Calibration† |
| k.diff.psd-x | 0.02 s-1 | [3, 9] |
| k.diff.x-psd | 0.02 s-1 | [3, 9] |
| k.diff.x-ez | 0.02 s-1 | [3, 9] |
| k.diff.ez-x | 0.002 s-1 | [9], calibration† |
| k.endo | 0.03 s-1 | See Methods |
| k.exo | 0.045 s-1 | See Methods |
| pkc.act | 100 s-1 | PKC switch on |

**Table S1.** Cerebellar LTD model initial conditions and parameters

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Submembrane volume = endosomal volume = 7.5x10-18 L [10]

†Parameter estimated as experimentally-determined kinetics unavailable. Starting from sensible value estimates, we calibrated the unknown parameters by replicating LTD expression as observed experimentally. We then validated the model and its parameters by replicating a range of additional experimental results as detailed in Results and Methods of the main text.

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