Experiment E

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| **Experiment E1-2** |  |
| **Experiment E1-3** |  |
| **Experiment E1-4** |  |
| Experiment E1-5 | Just getting default values for the new multicompartment model without any attached synapses |

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|  | Experiment E1-2 |
| File name | E1-2 |
| Aim | Assess the basic synapse functionality, and experiment design. |
| Setup | 9 Compartments + Soma    All default values  5 seconds run time  Inhibitory synapse on comp 2 at 1 second  Duration = 2ms  Max NT = 1mM |
| Speed | 1hr real time |
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| Conc: | * Need to start the synapse a bit later (more time to get to steady state) * Possibly start at 2 seconds * More time at the end to assess steady state. * Possibly run for 10 seconds instead of 5. * Could consider fewer compartments for faster runtime * Achieved a -0.6mV drop here with a NT conc of 1mMol * Consider multiplying NT concentration by 4 to increase the effect |
| Plan | * Make the above changes to get closer to the baseline inhibitory synapse |

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|  | Experiment E1-3 |
| File | E1-3 |
| Aim | Assessing the changes to the inhibitory synapse from E1-2 |
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| Conclusion | * Need to delay synapse and start the simulation at values that are closer to the steady state values, especially in the soma. * Increasing the NT concentration made the spike smaller. Only a 0.22mV drop * It might be possible that the interval timing is not capturing the peak of the synapse because the synapse only lasts for 2 ms. * Definitely need to increase the simulation time to get to a steady state.. possibly to 30 seconds. |
| Plan | * Fix starting concentrations * Run next sim for 30seconds, starting the synapse at 5 seconds * Increase the NT concentration to 1e-2mM |

1.9999999999256515 0.000004999883912566691 0.0001 7.853616938780527e-15 0.013992400181361907 0.12285356226659946 0.0051732641296024845 0.15497985672007658 -0.85 5.897826766718284e-14 1.119964553384163e-9 -1.1199055751164957e-9 -6.029650335841554e-13 -6.535532714109287e-10 7.466037167443304e-10 -9.365341036698594e-11 -5.773146165636911e-13 9.307609575042225e-11 -9.365341036698594e-11 -0.07257927614700382 -0.0950995757933127 -0.08380461278389344

1.9999999999256515 0.000010000203751833301 0.0002 6.283441351893101e-14 0.013995241563512785 0.12286753014443351 0.005171468255812758 0.15496634531836323 -0.85 2.1323646482269285e-14 5.599497018686524e-10 -5.599283782221701e-10 -2.6951865408003715e-13 -3.2675631355365525e-10 3.732855854814468e-10 -4.67987905818716e-11 -2.3863443412742096e-13 4.656015614774418e-11 -4.67987905818716e-11 -0.0725827335198662 -0.09510261431633002 -0.0838138924290243

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|  | Experiment E1-4 |
| File | E1-4 |
| Aim | Get default inhibitory synapse parameters and setup |
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| Run time | +-8 hour 15 mins |
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| Conc: | * Increasing the NT concentration made the spike smaller (only 0.001 mM change) in the chloride concentration * Still not starting the experiment at the ideal steady state |
| Plan | * Run the model without any synapses for 10 seconds and assess the values the model converges on * In the next synapse experiment use a significantly lower amount of NT |

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|  | Experiment E1-5 |
| Aim | Trying to find the steady state values for the new multicomp neuron |
| Conc | Still not at steady state |
| Plan | * Start E1-6 with the values from the end of this experiment * New sim running for 3 mins |
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| Comp final values | 9.989999999275001 0.0000050000150923793036 0.0001 7.854029048153988e-15 0.01400039289096511 0.12284598759507755 0.0051744633608811 0.15497892111844958 -0.85 2.07111831839951e-12 1.1196837306248813e-9 -1.1176126123064818e-9 -2.5390076659104563e-12 -6.539254286392364e-10 7.450750748709878e-10 -9.368865389766181e-11 -5.414710412561451e-13 9.314718285640566e-11 -9.368865389766181e-11 -0.07256421315800782 -0.09509792788160798 -0.0837984179136839 |
| Soma final values | 9.989999999275001 0.000010000116113628377 0.0002 6.283331220715464e-14 0.01399893134956874 0.12286356940222269 0.005174250131795296 0.15496274663947893 -0.85 7.203204609917385e-13 5.598623149716514e-10 -5.591419945106597e-10 -1.0613628790026235e-12 -3.2696747746143145e-10 3.7276132967377314e-10 -4.685521509134431e-11 -2.9115090799391397e-13 4.65640641833504e-11 -4.685521509134431e-11 -0.07256751612254075 -0.09510175274568361 -0.08379951928708516 |
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|  | Experiment E1-6 |
| Aim | Trying to get closer to starting steady state values by running for 3 mins with final values of the last simulation |
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