

```

BRAIN
    TYPE                Two_cell_MODEL_model
    JOB                 Two_cell_MODEL_model
    FSV                 1e3
    DURATION            1
    SEED                 -21
    DISTANCE            NO

##### COLUMN TYPE#####
    COLUMN_TYPE        TWO_CELL_MODEL_COLUMN

##### STIM INJECT#####
    STIMULUS_INJECT    TWO_CELL_MODEL_STIM

#####

##### REPORTS #####
    REPORT             VOLTAGE_CELL_1
    REPORT             VOLTAGE_CELL_2

END_BRAIN

##### Define Column Shells #####
COLUMN_SHELL
    TYPE                TWO_CELL_MODEL_SHELL
    WIDTH               300
    HEIGHT              800
    LOCATION            0          800
END_COLUMN_SHELL

##### Fill Columns #####
COLUMN
    TYPE                TWO_CELL_MODEL_COLUMN
    COLUMN_SHELL        TWO_CELL_MODEL_SHELL
    LAYER_TYPE          layer_TWO_CELL_MODEL
END_COLUMN

##### Define Layer Shells #####
LAYER_SHELL
    TYPE                layer_TWO_CELL_MODEL_shell
    LOWER               0
    UPPER               49
END_LAYER_SHELL

##### Fill Layers #####
LAYER
    TYPE                layer_TWO_CELL_MODEL
    LAYER_SHELL         layer_TWO_CELL_MODEL_shell
    CELL_TYPE           TWO_CELL_MODEL_1    1
    CELL_TYPE           TWO_CELL_MODEL_2    1

#####
# ---- connections
#####
    CONNECT
        TWO_CELL_MODEL_1    somaE
        TWO_CELL_MODEL_2    somaE
        synEE_TWO_CELL_MODEL 1    0

#    CONNECT
#        TWO_CELL_MODEL_1    somaE
#        TWO_CELL_MODEL_2    somaI

```

```
#
# CONNECT      synEI_TWO_CELL_MODEL  1  0
#              TWO_CELL_MODEL_1      somaI
#              TWO_CELL_MODEL_2      somaE
#              synIE_TWO_CELL_MODEL  1  0
# CONNECT
#              TWO_CELL_MODEL_1      somaI
#              TWO_CELL_MODEL_2      somaI
#              synII_TWO_CELL_MODEL  1  0
END_LAYER
```

```
#####
##### Define Cells #####
CELL
```

```
    TYPE      TWO_CELL_MODEL_1
    COMPARTMENT soma_TWO_CELL_MODEL somaE  0  0  0
END_CELL
```

```
CELL
    TYPE      TWO_CELL_MODEL_2
    COMPARTMENT soma_TWO_CELL_MODEL somaE  0  0  0
END_CELL
```

```
#####
## Define Compartments
#####
```

```
COMPARTMENT
    TYPE      soma_TWO_CELL_MODEL
    SPIKESHAPE spikeshape_1k_default
    TAU_MEMBRANE 0.020 0.0
    R_MEMBRANE 200 0
    THRESHOLD -40 0
    VMREST -60 0
    LEAK_REVERSAL 0.0 0.0
    LEAK_CONDUCTANCE 0.0 0.0
END_COMPARTMENT
```

```
##### Define Spikeshape#####
```

```
SPIKESHAPE
    TYPE      spikeshape_1k_default
    VOLTAGES -38 30 -43 -60
END_SPIKESHAPE
```

```
##### TWO_CELL_MODEL_MODEL REPORTS #####
```

```
REPORT
    TYPE      VOLTAGE_CELL_1
    CELLS      TWO_CELL_MODEL_COLUMN layer_TWO_CELL_MODEL TWO_CELL_MODEL_1
somaE
    PROB      1
    REPORT_ON VOLTAGE
    FILENAME   TWO_CELL_MODEL_1_VOLTAGE_E.txt
    ASCII
    FREQUENCY  1
    TIME_START 0
    TIME_END   100
END_REPORT
```

```
REPORT
```

```

        TYPE          VOLTAGE_CELL_2
CELLS          TWO_CELL_MODEL_COLUMN layer_TWO_CELL_MODEL TWO_CELL_MODEL_2
somaE
    PROB          1
    REPORT_ON      VOLTAGE
    FILENAME       TWO_CELL_MODEL_2_VOLTAGE_E.txt
    ASCII
    FREQUENCY      1
    TIME_START     0
    TIME_END       100
END_REPORT

```

```
##### STIMULUS INJECTS #####
```

```

STIMULUS_INJECT
    TYPE          TWO_CELL_MODEL_STIM
    STIM_TYPE      realstim_TWO_CELL_MODEL
    INJECT         TWO_CELL_MODEL_COLUMN          layer_TWO_CELL_MODEL
TWO_CELL_MODEL_1      somaE      1
END_STIMULUS_INJECT

```

```
#####define STIMULUS #####
```

```

STIMULUS
    TYPE          realstim_TWO_CELL_MODEL
    MODE          CURRENT
    PATTERN        PULSE
    TIME_INCREMENT 0.1
    FREQ_COLS      100
    CELLS_PER_FREQ 1
    DYN_RANGE      0      75
    TIMING         EXACT
    SAMESEED       NO
    AMP_START      4
    WIDTH          .010
    TIME_START     0.500
    TIME_END       0.600
    #FREQ_START    99999
END_STIMULUS

```

```
#####SYNAPSES TWO_CELL_MODEL_MODEL#####
```

```

SYNAPSE
    TYPE          synEE_TWO_CELL_MODEL
    SFD_LABEL      NO_SFD
    LEARN_LABEL    NO_STDP
    SYN_PSG        PSGexcit
    MAX_CONDUCT    0.4
    DELAY          0.005  0.010
    SYN_REVERSAL   0      0
    ABSOLUTE_USE   0.25   0.1
END_SYNAPSE

```

```
##### NO SFD #####
```

```

SYN_FACIL_DEPRESS
    TYPE          NO_SFD
    SFD           NONE
    FACIL_TAU     0.0      0.0
    DEPR_TAU      0.0      0.0
END_SYN_FACIL_DEPRESS

```

Long-term synaptic Dynamics

```
SYN_LEARNING
  TYPE          NO_STDP
  LEARNING      NONE
  LEARNING_SHAPE EXPONENT
  NEG_HEB_WINDOW 0.1      0.0
  POS_HEB_WINDOW 0.05     0.0
  POS_HEB_PEAK_DELTA_USE 0.02 0.0
  NEG_HEB_PEAK_DELTA_USE 0.01 0.0
  POS_HEB_PEAK_TIME 0.005 0.0
  NEG_HEB_PEAK_TIME 0.005 0.0
END_SYN_LEARNING
```

synaptic CONDUCTANCE WAVEFORMS

```
SYN_PSG
  TYPE          PSGexcit
  PSG_FILE      ./input/EPSP_Vogels_FSV1k_TAU05.inc
END_SYN_PSG
```