

6 Define the # of repeats and interstim intervals of baseline and induction

7 Use to check/choose EPSP and AP placement

4 Set cell #'s according to experiment notes

b The number of points in one bin, adjust to assess stability, to make figures

a Adjusts the point numbers to include in analysis. Hit both Auto.

8 Set parameters for the stimulus during baseline. Note for displaced relative origin, the value must be -700ms due to seal test

5 Set the ephys trace number experiments started at

For EPSP amplitude analysis. Set baseline start time and width, can modify to find when baseline starts.

12 Latency of EPSP peak relative to Stimulus start

2 Set to experiment date, notes will be generated using Exp. data

Note that is was a -90 ms post-before-pre during induction. Again, be aware of -700 due to seal test.

9 Set parameters of the stimulus during induction. Again, be aware of -700 due to seal test.

15 Draws all figures quickly for sharing data

Set raw ephys file path

3

1 Define these experimental parameters to be put in Notes and Exported data

13 Use to exclude unstable points. Identify points through jt() -> Edit waves in top graph. Data points= point #s Suffices= trace #s

14 Export data in the end to use for MP_CompileExperiments v28. Save all pairs of the same condition in one folder.

11 Hit Analyze

The screenshot shows the 'MultiPatch Data Analysis' software interface. The window title is 'Y:\Users\W...:ephys_WD_2019_08_01 Folder:'. The interface is divided into several panels:

- MultiPatch Data Analysis** (top left): Includes 'Sample frequency [Hz]: 10000', 'Seal test' (checked), 'Dur. [ms]: 250', 'Pad1 [ms]: 50', 'Pad2 [ms]: 400', 'Iclamp: -0.025', 'Vclamp: -0.005', 'Stimulus during baseline' (Number of pulses: 5, Pulse amplitude [nA]: 1.3, Pulse duration [ms]: 5, Pulse frequency [Hz]: 30, Displaced relative origin [ms]: -2525), 'Presynaptic' (Baseline: Cell_12_, Start at: 23, Threshold: 10), 'Postsynaptic' (Baseline: Cell_13_, Start at: 23, TraceStart: -30, TraceLen: 420, Baseline: -10, Width: 5, Latency: 10, Width: 2, EPSP-AP start: 0, EPSP-AP end: 200, # of bins: 12, EPSP-AP analysis), 'Histograms' (nBins pre: 8, nBins post: 8), 'Measure the membrane potential' (From start of trace to [ms]: 30), 'Sample traces' (PrePad [ms]: 3, NSpikes: 30, NEPSs: 10), 'Rescale' (Pre: 1, Post: 1).
- Parameters for the "LTP-style" errorbar plot:** Points per bin: 7, SD (otherwise SEM).
- Basenames:** Find cell, Find pattern, Pre cell #: 12, Post cell #: 13.
- Draw traces:** Step: 1, Number: 32, # of traces: 1, Pre trace, Post trace, Snippets, Trace #, Averages, Point #.
- Protocol parameters:** Step: 1, Baseline 1: 30, ISI [s]: 20, Induction: 15, ISI [s]: 10, Baseline 2: 135, ISI [s]: 20.
- Notes for the layouts:** Zap: 0, Date: Thu, Aug 1, 2019, Auto, Notes 1: Mouse V1, P12, Slice #3, 2 mM Cs, Auto, Notes 2: Layer 5, E->E, 33°C, 4-hour-old slice, Notes 3: PreSyn cell #12, PostSyn cell #13.
- Parameters for analyzing the induction:** Number of pulses per wave: 5, Pulse dur [ms]: 5, amp [nA]: 0.9, Pulse frequency [Hz]: 50, Relative displacement [ms]: 90, Displaced relative origin [ms]: 100, Sealtest? (checked), Spike? (checked), EPSP? (unchecked), Name: Cell_12_Cell_13_Ind_, Garbled spiking - don't load waves.
- Parameters for the DSE-type analysis:** b1: 8, Ind: 1, b2: 13, ISI [s]: 5, Bin size: 1, Number of pattern repeats: 10, Analyze, Front, Back, Kill.
- SuffixWave:** Use?, Settings.
- The first mean:** Stability, Auto, Start: 1, End: 30.
- The second mean:** Auto, Start: 30, End: 36, Pick.
- Spike half width:** Change settings.
- NMDA:AMPA ratio:** De-trend: 0, NMDA start [ms]: 15, & width: 20, Bin size: 30, Kill graphs, Yes, Continuous analysis, Analyze, Back, Front.
- Extra baseline:** Extra bsln: 7, ISI [s]: 10, Displaced relative origin [ms]: 801, Delay before baseline 1 [s]: 100, Skip waves between (PRE): 0, Skip waves between (POST): 0, Extract EPSP slope, Pick position, Start: 0, End: 0.
- Commands & runtime parameters:** Total nWaves: 180, Suffix: .ibw, Export data, Last, Reanalyze, Minimize panel, Stats, Send panel to back, Close layouts, Make layouts, Draw layouts, sel.Close, all, Close all before, Create plots after, Load n' kill waves, Load the waves, Path: Y:\Users\Wouter Droogers\Raw, Set, HD, Bi & Poo Protocol, Load notebook, Post vClamp, IPSP, Make snippets, no EPSPs>: 0, no EPSPs<: 0, Load and stitch.
- Vm before spike:** Width [ms]: 0.002, Graphs 2 Front, Graphs 2 Back, HELP!.
- Spike-triggered snippets:** Before [ms]: 10, After [ms]: 220, Pre suffix: _Spike, Post suffix: _EPSPC, Snippets inside exp folder (checked), RSE analysis, Recovery pulse, Layout, Recovery pos [ms]: 500, Use fitted exponentials (checked), Use window to find peak, Skip peak [ms]: 2, Skip valley [ms]: 1, Start fit at: 0, Peak V_m width [ms]: 1, Skip bef spike [ms]: 5, Analyze, Kill RSE graphs, To back, To front, Adjust 2nd mean.
- RRP Analysis:** Start fit: 5, End fit: inf, Front, Back, Kill, Analyze.
- Regular IV:** Go to it.
- Response IV:** RUN, i_hold start [ms]: 2000, wid [ms]: 200, R_series [MOhm]: 0, Front, Back, Kill, Redo.
- FFT Analysis:** Yes, Front, Back, Kill, Make, FFT panel to front.
- Failures:** Analyze.
- Comments:** Front, Kill, Date.
- Wave unit modes:** mV, pA.
- Exp. data:** Ca [mM]: 2, t [°C]: 33, Age: 12, Slice#: 3, T-A-S: 4, User: Documents, Computer: Windows.
- Ignore data points:** Choose points, Ignore suffices, Choose suffices.
- CV/Mean Analysis:** Start: 2, End: inf, Subtract Var(Noise)? (checked), Use median of noise? (unchecked), Analyze.