Nomenclature of physiological features.

Part A

(Experimental conditions should be specified)

Passive/subthreshold parameters:

Resting membrane potential (Vm)
Membrane time constant (fast, slow)
Input resistance
Subtheshold membrane potential oscillation (specify frequency)
Resonance
Rheobase
Chronaxie
Rectification

Action potential measurements:

Amplitude (absolute – from start of fast rising phase), threshold, half-width
AHP (amplitude from spike threshold, decay time constant, latency from spike peak to AHP peak, shape)
ADP (latency from spike peak to ADP peak)
Changes in action potential waveform during train
Dendritic backpropagation

Depolarizing plateaus.

Firing pattern (specify amplitude and duration of depolarizing current):

Oscillatory and resonant behavior
Onset response to somatic depolarizing current step

- Continuous
- Burst
- Delayed
- Single spike followed by pause in firing
- Other

Steady state response to depolarizing current step

- Amplitude accommodation
- Spike frequency adaptation (with 1 or more time constants)
- Maximal frequency at steady state (saturating frequency)
- Minimal maintained or continuous frequency at steady state
- Slope of I-f curve
- AHP accommodation
- Slow AHP after current step
- ISI distribution (irregular spiking; stuttering)
- Repetitive bursts/doublets
- Silent
- Other

During hyperpolarizing step:

Rectification (state size of pulse and membrane potential from which it is applied)

- Onset
- Steady state
- Sag

Rebound

- Hump
- Spike
- Stereotypical burst

Spiking features recorded extracellularly:

Phase relationship to oscillation
Functional response specificity
Cross correlation based identification
Other dynamics

Part B

(Methods used must be specified. If/how the presynaptic cell(s) was/were identified must be specified)

Postsynaptic responses: (helpful to specifiy EPSP/EPSC/IPSP/IPSC)

Spontaneous (these should be given as distributions since they come from many different sources)

- Rise time, amplitude, decay, reversal potential, receptors, frequency, charge

Evoked – method must be specified, including membrane potential from which they are measured

- Rise time (specify eg. 10-90% or 20-80%), amplitude distribution, decay (or width at half amplitude), reversal potential, receptors, charge

Ratio of of response amplitude/charge attributable to different receptor subtypes
Spatial and temporal summation – specify interspike interval
Gap junctions (describe the coupled cell)

- Coupling coefficient, rectification

Paired intracellular/Whole-cell recordings (identity presynaptic neuron)
Short-term plasticity

- Kinetics of synaptic facilitation, depression and post-tetanic potentiation
- Binomial parameters p, q and n (and method and conditions of measurement/assessment)

Long-term plasticity (of initial and steady state response)

- Kinetics, polarity, charge and amplitude
- Conditions required for induction and maintenance
- Mechanism(s) identified

Note: The "Short term plasticity" section should include only those data obtained with paired recordings in which the occurrence and timing of the presynaptic action potential(s) can be unambiguously identified. Whether or not tests for pre- or postsynaptic location were performed (and their outcome) should be specified.