Figure S1. The reliability statistic. Although a variety of reliability statistics exist in the literature (Mainen & Sejnowski, 1995; Victor & Purpura, 1996; Hunter *et al.*, 1998), we chose one described by Schreiber et al (2003) because it uses a single free parameter (σ), decays smoothly from 1 to 0, converges quickly to a stable value after few trials, and naturally accounts for missing spikes, added spikes, and spike jitter. In response to a sinusoidal input (A), spike times were extracted from the traces at the point in which the AP reached a threshold of 10 V/sec (B, C). These spike times were convolved with a gaussian of width σ=3 ms (Schreiber *et al.*, 2003; Schreiber *et al.*, 2004) to produce a Gaussian distribution centered at each spike time (D). These curves were multiplied by one another (dot product) (E). Finally, the reliability was calculated by taking the area of the resulting curve (shaded area of E), then normalizing to give a range between 0 and 1. A value of zero indicates no reliability; a value of 1 indicates identical spike trains. The reliability in this case is 0.49. Reliability across several trials was calculated by averaging all combinations of trial vs. trial pairwise reliabilities. In order to speed computation, we derived an equivalent, but faster method of calculating the statistic. See appendix 1 for mathematical details.