Key for Homework 13

1. In the context of zebra finch songs, what is a tutor? A tutor is an older bird who teaches a song to a younger bird.

2. What is the HVC? The HVC is a region of bird brains that is responsible for learning and producing songs. It affects motor output mainly through its projections to the RA region.

3. Does Figure 1 show action potentials or post-synaptic potentials (PSPs)? How can you tell? These are action potentials. Notice that they are all of the same magnitude, and are referred to as “spikes” (a synonym for “action potentials”). Also, the term “firing” usually refers specifically to action potentials.

4. In Figures 1B/1C and 1H/1I, what is the difference between firing rate (Hz) and spiking precision? Firing rate is simply the number of action potentials per second. Spiking precision is a measurement of how closely in time the action potentials from different trials are aligned.

5. In Figure 1, why was gabazine used? To block the effects of GABA, thus relieving premotor neurons of any inhibition from GABA-ergic neurons.

6. In your own words, what is the overall message of Figure 1? Juveniles’ HVC premotor neurons fire at predictable times during tutors’ songs, but this firing gets inhibited by GABA-producing neurons by the time adulthood is reached.