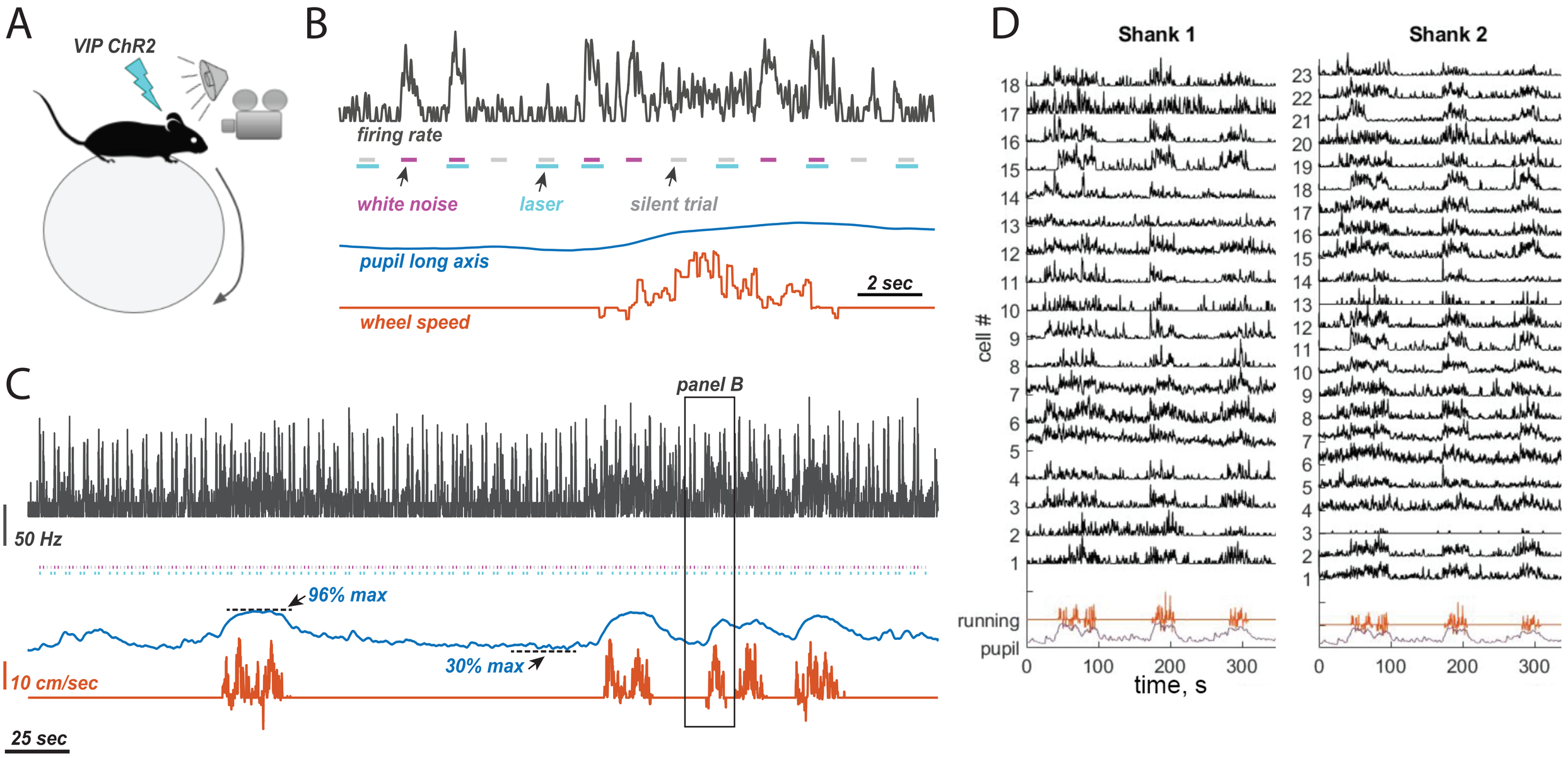

Figure 1. Experimental design and measurements.
A. Experimental setting. Awake mice were allowed to run on a ball. Sounds were presented randomly interleaved with laser illumination. Pupil size was measured on the contralateral side from neural recording site (left auditory cortex and right pupil).
B. Stimulus presentation. Laser pulses were presented with and without 80 dB WN bursts, randomly interleaved, with a one second inter-stimulus interval. When presented, the laser pulse began 50 ms before the start of the sound and ended 150 ms after sound offset.
C. Example traces of neuronal firing rate (25 ms time bins, Gaussian convolution smoothing with sigma = 50 ms), pupil size, and running speed. Animals frequently oscillated between low and high arousal states.
D. Example traces from 41 simultaneously recorded neurons using a two-shank linear silicon probe, showing typical modulation by running.