**Data and code used for making Fig. 4**

**Folder: Fig4c-g**

Analysis

* Fig04\_Example\_TimeCourseRaw\_frames\_nsybD.m: Code for plotting example frames in Fig. 4c.
* TS\_Img.mat: Time stamps of calcium imaging.
* TS\_OptStimImg.mat: Timings of optogenetic stimulation during calcium imaging.
* Fig04\_AveSongComb.m: Code for plotting the population averaged ΔF/F for the difference between pulse and sine song around song-type in Fig. 4d,f.
* Fig04\_SongTypeRespDiffHist.m: Code for plotting the histogram of the mean difference in ΔF/F between pulse and sine song during song-type transitions for the voxels which changed ΔF/F depending on song type in Fig. 4e,g.
* Fig04\_SongTypeRespDiffHist\_shuffle.m: Same as Fig04\_SongTypeRespDiffHist.m but for trial shuffled data.

Data/Summary\_GENOTYPE

* EthogramComb.mat: File containing the time course of pulse/sine songs. Row: fly ID; Column: time bins at the resolution of microphone recording (1 kHz).
* EthogramCombImg.mat: Same as EthogramComb.mat but the time resolution of calcium imaging.
* F2d\_\*: Calcium imaging data (F for each voxel) for each experiment.
* SongExplorer: A folder containing audio data and song segmentation results for each recording.
* ResponseIndex.mat: Response index, which characterizes if a voxel showed a response to optogenetic stimulation, for each recording.
* StimComb.mat: Optogenetic stimulation strength for each trial.
* AveSongComb.mat: Average ΔF/F for the difference between pulse and sine song around song-type for each recording.
* SongTypeP.mat: Variables for running Fig04\_SongTypeRespDiffHist.m.
* SongTypeP\_shuffle.mat: Variables for running Fig04\_SongTypeRespDiffHist\_shuffle.m.