**File naming convention:**

The fiber fluorometry data files are labeled with the following rules, depending on the task type:

1. Reversal learning

“Task type”\_”Sensor”\_”Animal ID”\_”Session”.mat

e.g. “ReversalLearning\_GCaMP7f\_497\_day1.mat”

This example means reversal learning data from session day1 of mouse 497 using GCaMP7f.

496, 497, 498, and 499 contains simultaneously recorded data from the VTA and the ventral striatum (VS). If “Session” is labeled as VTA (e.g. day1VTA), that means recording from the VTA, otherwise the recording is from the VS.

1. All other task types

“Task type”\_”Animal ID”\_”Session”.mat

e.g. “FirstTimeLearning\_437\_day1.mat”

This example means first-time learning data from session day1 of mouse 437.

**File content information:**

“FirstTimeLearning”

Each .mat file contains zscore data of dopamine sensor signal for each trial (DeltaF\_licktrial) and number of each trial type (Trial\_number\_lick).

* “DeltaF\_licktrial“ contains zscored photometry signal for each trial (sampling rate 1000Hz).
* The data for each trial type were sorted by the following order: type1 (CS-100% Rw), type2 (CS-50% Rw), type3 (CS-0% Rw), and type4 (free Rw).
* “Trial\_number\_lick“ contains number of trials for each type in “DeltaF\_licktrial“. For example, if the value is [10, 10, 10, 10], the data for type1 correspond to DeltaF\_licktrial(1:10,:), the data for type2 correspond to DeltaF\_licktrial(11:20,:), the data for type2 correspond to DeltaF\_licktrial(21:30,:), the data for type4 correspond to DeltaF\_licktrial(31:40,:).
* Odor onset@2 sec, Odor offset@3 sec, Water onset@5 sec from the trial start.

“ReversalLearning”

Each .mat file contains zscore data of GCaMP or dopamine sensor signal for each trial (DeltaF) and number of each trial type (Trial\_number). Some files also contains “DeltaF\_tdTom“ for control tdTomato signal.

* “DeltaF“ contains zscored photometry signal for each trial (sampling rate 1000Hz).
* The data for each trial type were sorted by the following order:
* GCaMP7f: type1 (nothing-reward reversal; CS-100% reward), type2 (airpuff-reward reversal; CS-100% Reward), type3 (reward-nothing reversal; CS-nothing), type4 (reward-airpuff reversal; CS-100% airpuff), and type5 (free reward).
* GCaMP6f: type1 (airpuff-reward reversal; CS-80% Reward), type2 (CS-40% Reward), type3 (CS-nothing), type4 (reward-airpuff reversal; CS-80% airpuff), type5 (free reward ).
* GrabDA: type1 (nothing-reward reversal; CS-80% Reward), type2 (CS-40% Reward), type3 (reward-nothing reversal; CS-nothing), type4 (blank), type5 (free reward).
* “Trial\_number“ contains number of trials for each trial type in a session data, “DeltaF” (and “DeltaF\_tdTom” if applicable) as described above.
* “ReversalLearning\_Licking.mat” contains licking count data for airpuff-reward reversal trials (1-40 trials) of 351, 353, 459, 460, and 461. (lick count (1000Hz) x trial x mouse).
* Odor onset@2 sec, Odor offset@3 sec, Water/airpuff onset@5 sec
* Reversal learning starts from 1st trial of session day1. Prereversal data were not included.

“RepeatedLearning”

Each .mat file contains zscore data of GCaMP or dopamine sensor signal for each trial (DeltaF) and number of each trial type (Trial\_number).

* “DeltaF“ contains zscored photometry signal for each trial (sampling rate 1000Hz).
* The data for each trial type were sorted by the following order;
* 459, 460, 461: type1 (**new odor**; CS-100% reward), type2 (CS-100% Reward), type3 (CS-nothing), type4 (CS-100% airpuff).
* 351, 353: type1 (**new odor**; CS-80% Reward), type2 (CS-40% Reward), type3 (CS-nothing).
* “Trial\_number“ contains number of trials for each type in “DeltaF” as described above.
* Odor onset@2 sec, Odor offset@3 sec, Water/airpuff onset@5 sec

“2photon Imaging”

* “2pImaging\_EachCell.mat" contains preprocessed zscored data of GCaMP signal for each neuron (see method).
* This mat file includes “fluo\_allcells\_trial3\_add” for nothing-reward reversal and “fluo\_allcells\_trial4\_add” for airpuff-reward reversal. (signal (pseudo sampling rate: 30 Hz) x trial x neuron
* “2pImaging\_WholeFrame.mat” contains preprocessed zscored data of GCaMP signal from full field of view for 4 animals.
* This mat file includes “fluo\_mean\_allcells\_trial3\_add” for nothing-reward reversal and “fluo\_mean\_allcells\_trial4\_add” for airpuff-reward reversal. (animal x signal (pseudo sampling rate: 30 Hz) x trial)
* 1-10 trial is pre-reversal trials. Reversal learning starts from 11th trial
* Odor onset: 181st frame, Water/airpuff onset: 271st frame