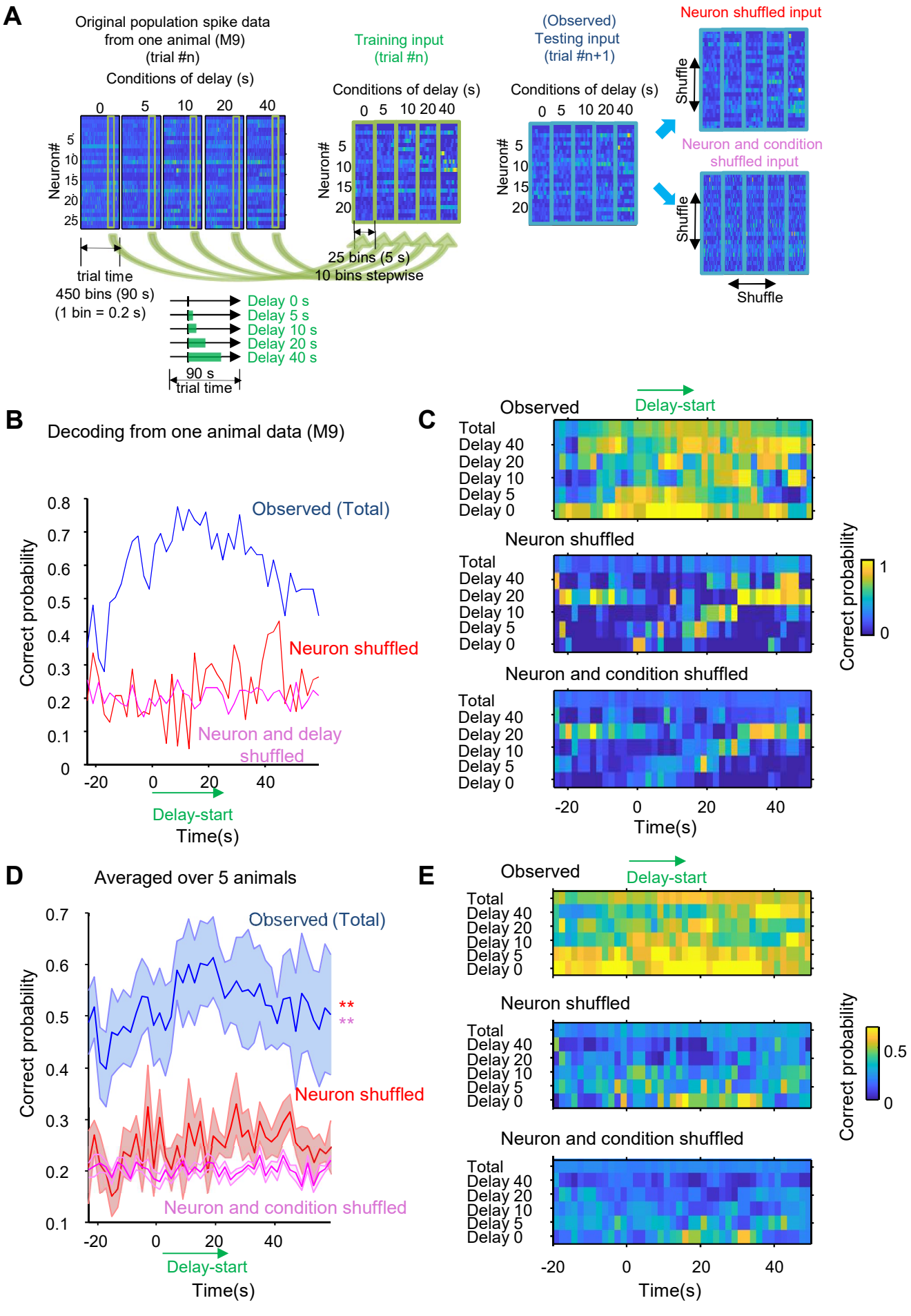
A
Original population spike data
from one animal (M9)
(trial #n)
Conditions of delay (s)
0 5 10 20 40
Neuron#
trial time
450 bins (90 s)
(1 bin = 0.2 s)
Training input
(trial #n)
25 bins (5 s)
10 bins stepwise
Delay 0 s
Delay 5 s
Delay 10 s
Delay 20 s
Delay 40 s
90 s
trial time
(Observed)
Testing input
(trial #n+1)
Neuron shuffled input
Shuffle
Neuron and condition
shuffled input
B
Decoding from one animal data (M9)
Correct probability
Observed (Total)
Neuron shuffled
Neuron and delay
shuffled
Delay-start
Time(s)
C
Observed
Delay-start
Total
Delay 40
Delay 20
Delay 10
Delay 5
Delay 0
Neuron shuffled
Neuron and condition shuffled
Correct probability
Time(s)
D
Averaged over 5 animals
Observed (Total)
Neuron shuffled
Neuron and condition shuffled
**
**
E
Observed
Neuron shuffled
Neuron and condition shuffled

Figure 5-figure supplement 1. Decoding of delay length from population spike activity.

(A) Schematic of the SVM decoding of delay length. Spiking trains of five delay conditions (0, 5, 10, 20 and 40 s) are transformed into normalized firing rates as training datasets. The population rate estimates are binned (200 ms) and those of 5 s (25 bins) were coupled and given in the multiclass models for SVM as training datasets. Testing datasets are produced with spike activity of next trial. Two control testing datasets are created by shuffling the labels of conditions and/or neurons.

(B) Representative result of delay length decoding computed from spike activity of 28 neuron from one animal (M9). Blue line indicates the probability of correct prediction (prediction to observed but untrained testing data). Red and magenta lines indicate result of shuffled testing inputs (red: neuron shuffled; magenta: neuron and condition shuffled).

(C) Color-coded correction rate map for the five delay conditions (0, 5, 10, 20 and 40 s) and total average. Top, result of observed inputs; middle, result of neuron-shuffled inputs; bottom, result of inputs neuron and condition-shuffled.

(D) Averaged decoding results from population spikes of five animals (M9, 28 neurons; M10, 43 neurons; M17, 22 neurons; M25, 34 neurons; M27, 23 neurons). Data were shown as mean ± SEM. Red **: Observed vs neuron shuffled, $P < 0.001$, magenta **, observed vs neuron and condition shuffled, $P < 0.001$, group effect, $F_2 = 882.1$, $P < 0.001$, 2-way ANOVA.

(E) The decoding results of individual delay length. Color-coded rate maps for the five delay conditions (0, 5, 10, 20 and 40 s) and total average. Top, result of observed inputs; middle, result of neuron-shuffled inputs; bottom, result of inputs neuron and condition-shuffled. Data from 5 mouse were used.