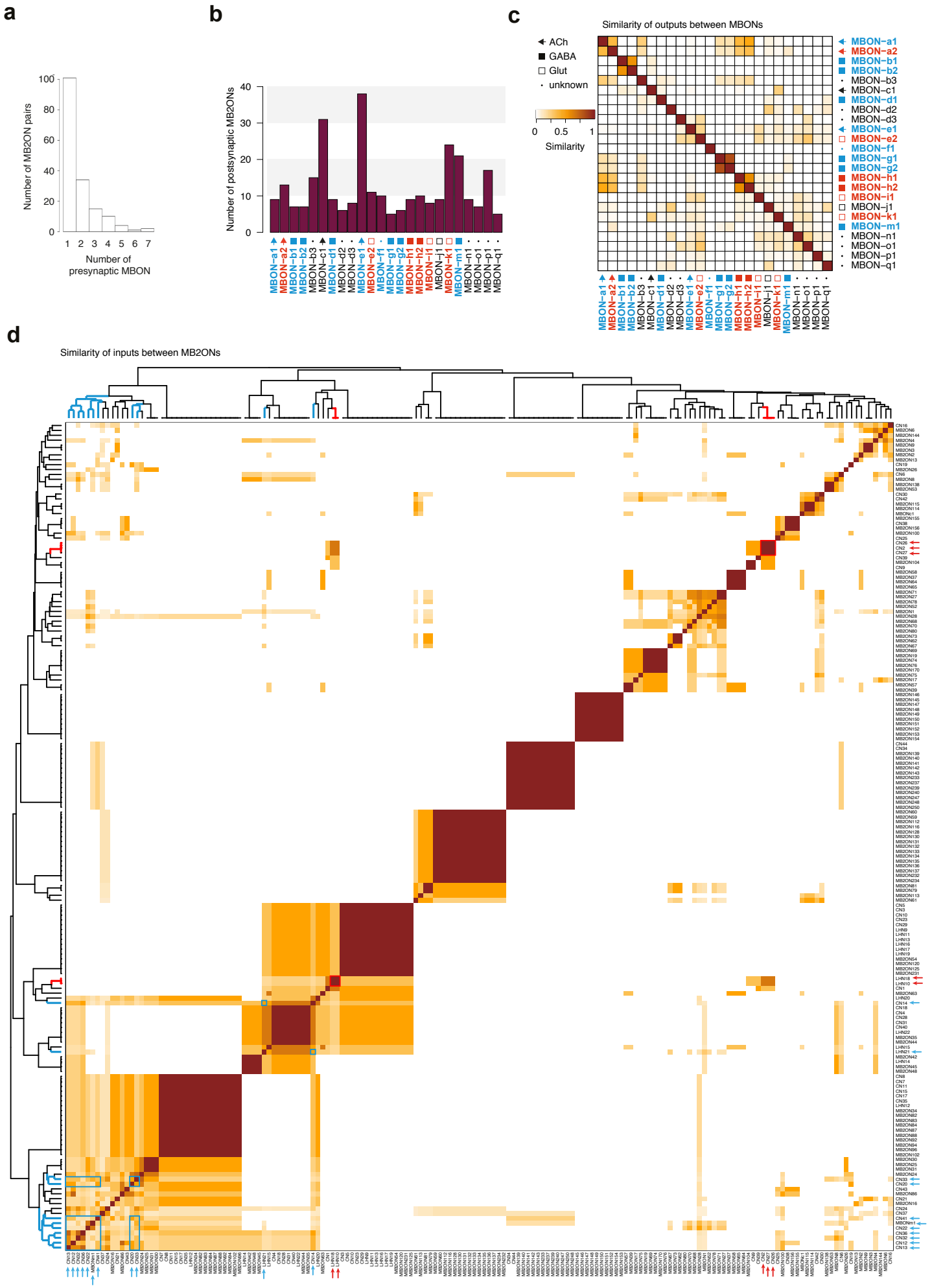


**Figure 3 - Figure Supplement 2: Analysis of M2BONs inputs.** *See next page.*

**Figure 3 - Figure Supplement 2: Analysis of M2BONs inputs.** *See previous page.*
For all the analyses (**a-d**), left-right homologous neurons are pooled. **a.** Histogram of number of strong presynaptic connections from MBONs to each MB2ON. **b.** Number of strong postsynaptic connections onto MB2ONs from each MBON. **c.** Matrices of similarity between MBONs based on their outputs onto MB2ONs. Similarity is obtained by counting the total number of outputs in a row neuron that are also outputs in a column neuron (matches) and counting the total number of outputs that are only observed in row or column neurons, but not both (mismatches). The similarity score is the total number of matches, divided by the total number of matches and mismatches. An output connection is only considered if there are at least 3 synapses from the presynaptic left neuron and 3 synapses from the presynaptic right neuron onto the postsynaptic left and right neurons and a sum of at least 10 synapses total. Ipsilateral and contralateral connections are considered. Most MBONs have a unique combination of postsynaptic partners and display low similarity scores. **d.** Similarity matrix of MB2ONs based on their total number of inputs from MBONs. Methodology similar to c., but comparing column neuron inputs, instead of row neuron outputs. Many MB2ONs have low similarity scores but there are some groups that receive strong connections from the same MBON(s). Hierarchical clustering was applied to the similarity scores to sort MB2ONs. Blue and red arrows indicate positive and negative value neurons, respectively, independently predicted based on MBON inputs (from Fig. 3f). Blue and red boxes highlight similarity between the predicted positive and negative value neurons, respectively, within clusters.