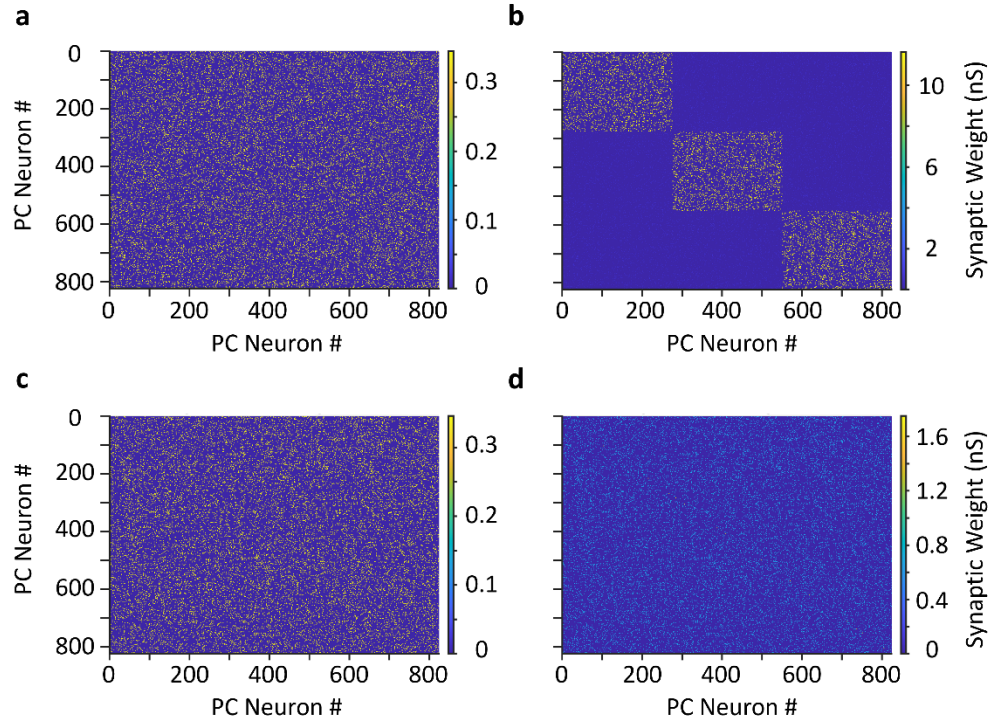
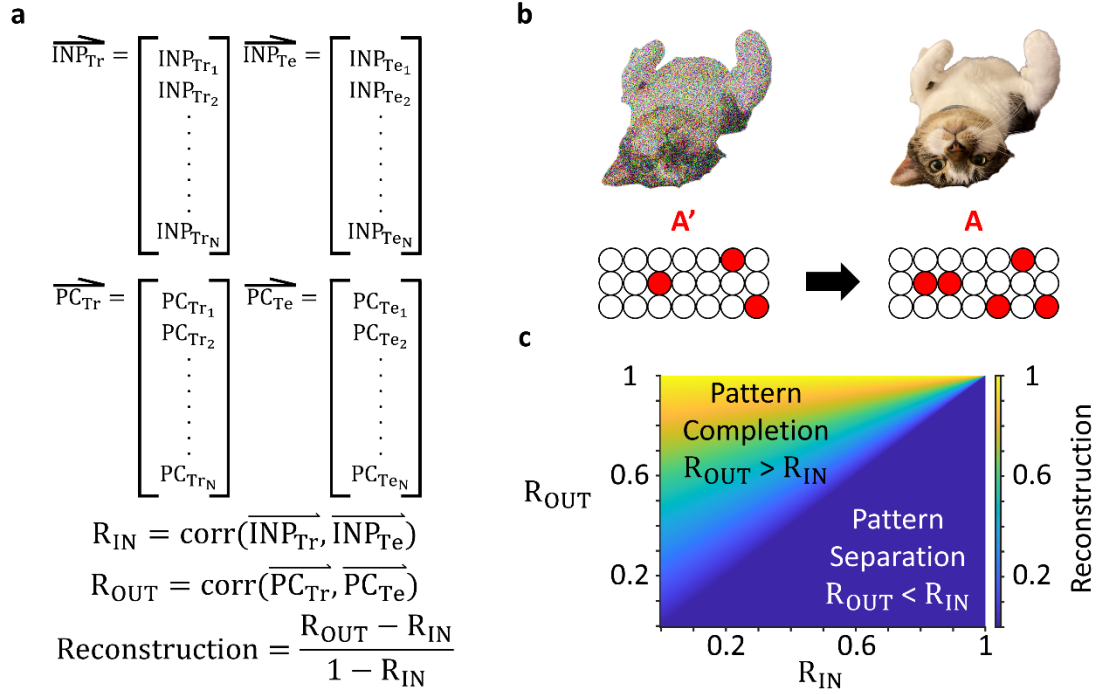


## Supplementary Figure 1



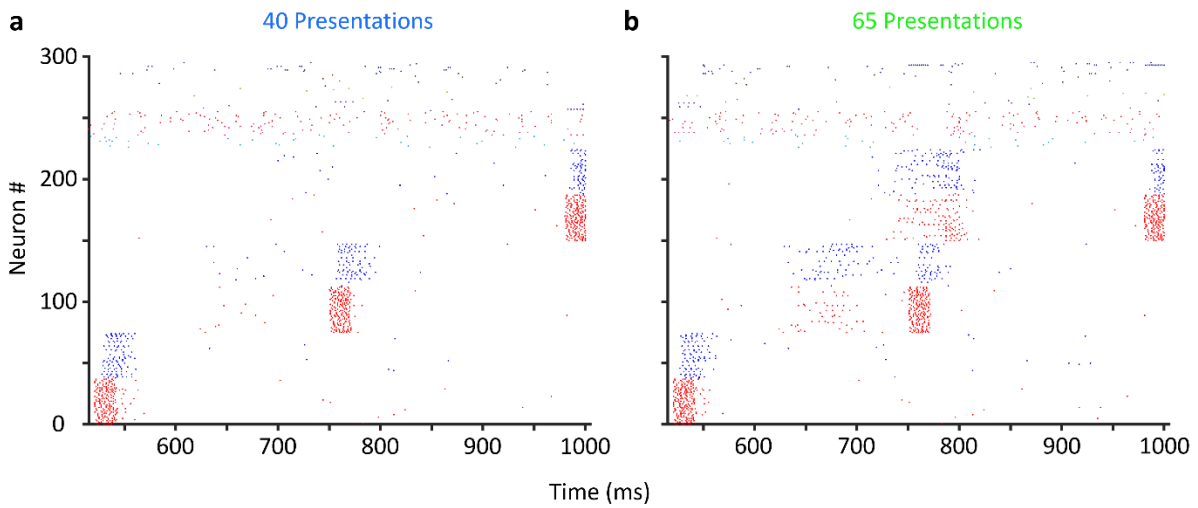
Supplementary Figure 1: Adjacency matrices graphically display auto-association in the CA3 SNN. (a,b,c,d) PC-PC synaptic weights between assembly (a,b) and non-assembly (c,d) members before (a,c) and after (b,d) training of the SNN with 65 repetitions of the patterns. Presentation of the pattern sets induced auto-association in the form of 'blocks' in the PC-PC synaptic weight matrix in (b).

**Supplementary Figure 2**



Supplementary Figure 2: Pattern reconstruction as a measure of pattern completion accuracy. (a) Pearson correlation coefficients (PCCs) are first computed from the training and testing input and training and testing output [45]. Pattern reconstruction is then calculated as the difference between output and input PCCs divided by the difference between the maximum PCC value (1) and the input PCC. (b) Schematic representation of two similar assemblies before and after pattern completion. A noisy input pattern (A') is converted into a strong output pattern (A). (c) Analysis of pattern reconstruction based on input-output PCCs reveal regimes where pattern separation and pattern completion occur [37].

### Supplementary Figure 3



Supplementary Figure 3: Small assembly sizes exhibit pattern interference with increased training. Testing with pattern degradation of 50% and assembly sizes of 75 trained on (a) 40 and (b) 65 presentations.