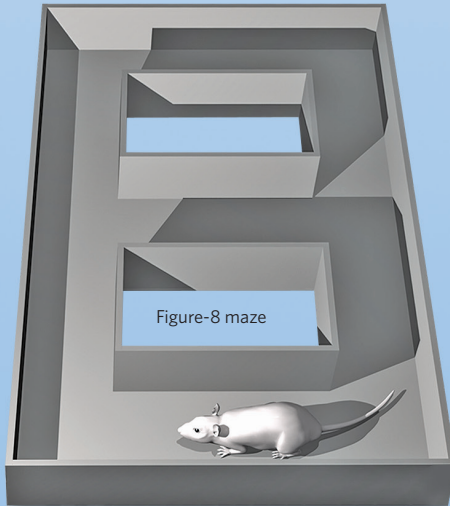


LOST IN SPACE

Looking for a more realistic way to study memory, we turned to place cells—a network of cells that record a rat’s memory of an environment. Each place cell would fire only when the rat was in one particular location in space, creating a map as the animal traversed a maze. Since spatial memory deteriorates with age, we tested how well young and old rats could retrieve their place-cell maps.

MEMORY MAPS

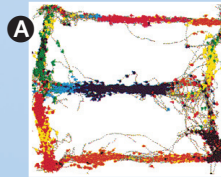
When young rats traversed a figure-eight maze, they created a cognitive map, with one particular neuron firing (one color per neuron) at particular locations in the maze **A**. When these rats were brought back to the maze several hours later, the same neurons fired as in the morning, suggesting that the rats had retrieved the same neuronal map they had created earlier **B**. When older rats were returned to the maze after an earlier session, 30 percent of the time they retrieved the wrong map, with a new set of neurons lighting up as the animals traversed the maze (**C** and **D**).



Maps:

Young rat

First time in maze

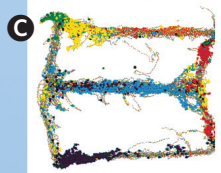


Second time in maze



Old rat

First time in maze



Second time in maze

