Deciphering the function of specific cell types in memory circuits

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A major goal of biology is to understand complex physiological systems in terms of their cell types. What are the cell types? How do their properties and interrelationships allow the system to function? We have begun to tackle this challenge for hippocampus-dependent spatial memory in the mouse. I will describe our progress toward this goal, including our efforts to provide unified descriptions of hippocampal cell types based on gene expression, morphology, circuit integration, and cellular function. This approach has allowed us to make new discoveries about hippocampal cell types and begin to explore cell-type-specific contributions to spatial memory. I will also discuss strategies for continuing to develop a better understanding of the cellular and circuit basis of spatial memory.