Koskela and colleagues make the surprising discovery that mouse behavioral detection in dim light is under diurnal control and is more sensitive at night, but that ganglion cell sensitivity in the retina is not altered between day and night. They then used an automated system of their design to track the behavior of the mice and discovered that a number of features of mouse behavior during searching could be different, in particular the position of the head and the time the mice kept the stimulus in view during the search. They concluded that mice employ a more efficient search strategy at night, and that once they have learned this strategy, they can employ it even in the day.