Supplementary Materials

Eckmier et al.
Supplementary Figure 1- Schematic describing the configuration of the spectrometer during measurements of light from above and below the simulated caps. Hand-held light meters often have limited sensitivity for detecting blue light, and we were unable to detect caplight using a Voltcraft light meter (LX-1108). Thus, to estimate the power of diffused caplight, three simulated caps were evaluated with a spectrometer (HR-460, Jobin Yvon) equipped with a detection fiber that was fixed to a goniometer, which allowed the collection fiber to be moved above the sample in an arc. The collection fiber had a surface area of 1mm² and it was positioned 9 cm from the cap. The simulated caps had a similar size and shape as those used in the behavioral experiments. The 473nm laser delivered light into the simulate cap’s cannula via a single mode-fiber, with either 10, 15, or 20 mW emanating from the fiber tip. During measurements, the collection fiber arced above the 180⁰ anterior-posterior axis of the simulated cap (in reference to what would correspond to the rat’s skull). 0⁰ was aligned with the cannula axis, and +90⁰ and -90⁰ corresponded to the most “anterior” and “posterior” positons of the cap, respectively. In this way, the number of photons per second (which is proportional to the power of the light collected by the collection fiber) was quantified by a spectrometer, and these measurements were used to evaluate the power of the diffused light. Overall, approximately 20% of the laser light diffused above the sample, whereas approximately 80% of light was transmitted through the sample. Because the acrylic caps are normally surrounded by skull and tissue on their lower edges, we assume that the light diffused above the sample best models the light emitted from the caps during the behavioral experiments.
Supplementary Figure 2 - A. Image showing elements of the measurement configuration. B. Simulated cap shown suspended above the sampling platform while 473 nm light is delivered through the cannula.