Opto-kinetic Measurements (Visual Acuity and Contrast Sensitivity)

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(note that the following list should be linked to the appropriate location.)

Summary: A virtual optometry system is used to quantify the spatial vision of laboratory animal.

Protocol:

1. Animal is placed inside a square box displaying a rotating cylinder comprised of a vertical sine wave grating is calculated and drawn in virtual three-dimensional coordinate space on four computer monitors facing the animal to form a square.
2. Animal stands unrestrained on a platform in the center of the square
3. The animal's head movement is tracked for reflexive head and neck movements in response to the grating rotating around the animal
4. The spatial frequency of the grating is clamped at the viewing position by repeatedly re-centering the cylinder on the head in real time
5. Visual acuity is quantified by increasing the spatial frequency of the grating until an optomotor response could not be elicited
6. Contrast sensitivity is measured by identifying the minimum contrast that generates tracking over a range of spatial frequencies