

# Poster presentation abstracts

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Poster session 1

**DIFFERENCES BETWEEN SUSTAINED GANGLION CELLS AND MOTION DETECTORS IN TERMS OF CONTRAST SENSITIVITY AND COLOR PROPERTIES.**

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The primary processing of the visual information is carried out at the retinal level in vertebrates. Directional selective ganglion cells (DSGCs), orientation selective ganglion cells (OSGCs) and probably some others (spot detectors) can be referred to using a general term «motion detectors» because their response depends on whether the stimulus is moving or not. Unlike those the response of sustained ganglion cells only depends on size of stimulus and its contrast on the background. This leads to the hypothesis that the main properties of the stimuli for these ganglion cells should involve such characteristics as brightness, contrast and color.

*Carassius gibelio* served as an object for our research. This is a close relative of goldfish and zebrafish. We recorded extracellular activity from single units – axon terminals of ganglion cells projecting to *tectum opticum*. For stimulation we used CRT monitor, which allows selective stimulation of different cone types - longwave-sensitive (L), middlewave-sensitive (M), shortwave-sensitive (S). Size, orientation, contrast and color of the stimuli were adjusted using control module with unique software developed for our research. To measure contrast sensitivity of the ganglion cells we performed stimulation series with moving or flickering with achromatic stimuli in the range from black to white in quasi-random order. For the tests on color coding properties we calculated seven colors for CRT stimulation module, one of which served as background color for stimulation area (neutral gray), and the other six for stimuli. Designated as L+, M+, S+, L-, M-, S-, these colors are characterized with decrease or increase of illumination to be discriminated only by certain cone type.

Our current findings are that sustained ganglion cells can be divided to light sustained and dark sustained types as they respond on lightening of the receptive field or either on its darkening. Unlike other ganglion cells projecting to *tectum opticum* sustained units can respond on changes in diffuse light, but they still need contrast to show activity. When compared to retinal motion detectors sustained units are more susceptible to illuminance of unresponsive far surround and have gentler curves of contrast sensitivity; also they are less conservative in terms of color coding properties than motion detectors.

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