Introduction

Adaptive dynamics and producing omitted stimulus response (OSR) after turning off the external drive is a generic phenomenon in biological systems (Fig. 1a). What are the biophysical mechanisms of OSR and how may the signal provide predictive coding (Fig. 1b)?

Methods

Bull frog retina were perfused in oxygenated Ringer’s solution and attached to the Multiple Electrode Array (MEA). Stimuli were produced by laser, LED, or projector (Fig. 2).

Results

1. Activities of retinal ganglion cells recorded by MEA (Fig. 3)

2. Timing in OSR is predictive (Fig. 4)

Conclusions

- Simple circuits in the retina can produce OSR with latency accurately reflecting the stimuli.
- Predictive coding might be computed through a model circuit with adaptive analog and biphasic paths:

References