Characterisation of the mouse „dark – flash“ electroretinogram (ERG).

J. Ammermüller, Dept. Biology, University of Oldenburg.

In response to prolonged light stimulation, the wild-type mouse does not produce a clearly distinct d-wave in its ERG. The d-wave is supposed to represent the OFF response of the retina, elicited by darkening. In this study the ERG responses to darkening from various light adapted levels were characterised a “dark-flash” stimulus paradigm.

ERGs were recorded from two strains of wild-type mice using standard procedures. Eyes were light adapted for several minutes at different illumination levels. After adaptation light was switched off (“dark-flash”) for short periods of times, whose duration was varied, and the resulting responses were analysed.

Responses to dark-flashes consisted of small positive or negative waves during darkness (dark-response) and a prominent positive wave after switching back to the adapting light (light response). The dark response shape depended on the previous adapting light intensity. It changed from positive to negative to oscillating with increasing light intensity. The light response amplitude increased with adapting light intensity and resembled the b-wave from the normal mouse ERG. At a given adapting intensity the amplitude of the light response increased with dark flash duration, reflecting recovery from the previous adaptation. Time constants of this recovery increased with adapting light intensity.

Dark-flash ERGs of wild-type mice follow fixed response patterns. ERGs are often used to functionally characterise specific deficits of knockout mice. Therefore, dark-flash ERGs might allow further characterisation of functional deficits in genetically manipulated animals.

Supported by: DFG Am70/10 and EC grant CORTIVIS.