

Hall A

Thursday 8:30 — 10:30 AM

Retina, Electrophysiology, Retinal Cell Biology Retinal Prosthesis I

PGM#	BRD#	AUTHORS
4576	B327	Szurman, Walter, Berk, Heimann
4577	B328	Walter, Szurman, Peixoto, Strassburger, Trieu, Ewe, Stieglitz, Meyer, Heimann
4578	B329	Hornig, Eckmiller
4579	B330	Eckmiller, Hunermann, Becker
4580	B331	Gerding, Uhlig, Thelen
4581	B332	Yagi, Ito, Watanabe, Matsushima, Kawase, Uchikawa
4582	B333	Katona, Humayun, de Juan, Suzuki, Weiland, Greenberg
4583	B334	Weiss, Herrmann, Kohler, Stett, Haemmerle

NOTE: Potential conflicts of interest of presenters and authors are noted at the end of the Abstract either by "None" or with codes (see code definitions under the section "Abstract Content/Commercial Relationships/Disclosure Codes" in the front matter).

4577—B328

EVOKED CORTICAL POTENTIALS AFTER ELECTRICAL SURFACE STIMULATION OF THE RABBIT'S RETINA ((P.Walter¹, P.Szurman¹, N.Peixoto², S.Straßburger², H.K.Trieu³, L.Ewe³, T.Stieglitz⁴, J.U.Meyer⁴, K.Heimann¹)) 1) Department of Ophthalmology University Cologne, 2) Department of Computer Science University Bonn, 3) Fraunhofer Institute of Microelectronic Circuits and Systems, Duisburg, 4) Fraunhofer Institute for Biomedical Engineering, St.Ingbert Germany.

Purpose. To demonstrate successful electrical stimulation of the retina in rabbits and to separate artificial responses due to passive signal conduction from event related cortical activity. **Methods.** Pigmented rabbits were vitrectomized after previous injection of tissue plasminogen activator. An array of stimulating electrodes was implanted onto the retinal surface and temporarily fixated under PFCL. Stimulation was performed with bi- or monophasic resp. bi- or monopolar single pulses or pulse trains with stimulus currents of 10-200 μ A and a duration of 100 μ s. Evoked potentials (EEPs) were recorded using gold plated electrodes after trepanation of the skull over the visual cortex and a reference electrode at the forehead. **Results.** Event related cortical potentials could be recorded after biphasic cathodic pulse train stimulation using 30 μ A or more. The EEP amplitude increased with stimulus intensity. EEP threshold increased using single pulse stimulation. Responses could be blocked after retrobulbar injection of 4 ml lidocaine 2% or by simply pulling off the stimulator. The resulting waveforms exhibited artefacts resembling passive signal conduction. **Conclusions.** Stimulus related cortical potentials clearly separable from stimulus artefacts and from waveforms resulting from passive signal conduction could be recorded after implantation of an electrode array, which already proved its long-term biocompatibility and its spatial stability after tack fixation in rabbits. The next step is to demonstrate that cortical potentials can be recorded after chronic implantation. Supported by BMBF grant 01IN501K. None.