

## **P2.17.**

### **Comparative immunohistological examination of inner ear in wild type and pituitary adenylate cyclase activating polypeptide (PACAP) deficient mice**

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PACAP is a multifunctional neuropeptide with well known neuroprotective and neurotrophic effects. The involvement of PACAP in sensory processing has also been documented, but little is known about its effects in the auditory system. PACAP and its specific receptor (PAC1), are present in the cochlea and in brain structures involved in auditory pathways. Recently, we have shown that PACAP protects cochlear cells against oxidative stress-induced apoptosis. The endolymphatic Ca<sup>2+</sup> cc. controlled by Ca<sup>2+</sup> buffers of the hair cells is essential for the normal hearing processes. In this study we examined the localization of PAC1-receptor and Ca<sup>2+</sup> buffering proteins (parvalbumin, calretinin) in the inner ear of 5-day-old PACAP deficient mice compared with wild type mice to investigate the effect of endogenous PACAP in the cochlear function. We did not find difference in the distribution of PAC1 receptors between groups. In contrast, inner and outer hair cells of PACAP KO mice showed more pronounced parvalbumin and calretinin immunopositivity compared with wild type mice. Elevated endolymphatic Ca<sup>2+</sup> is deleterious for the cochlear function, against which the high cc. of Ca<sup>2+</sup> buffers in hair cells may protect. Meanwhile, the increased immunoreactivity of Ca<sup>2+</sup> binding proteins in the absence of PACAP provide further evidence the important role of PACAP in the hearing processes.

*(Support: OTKAK72592, F67830, CNK78480, ETT278-04/2009, Bolyai Scholarship, Richter Foundation)*