

Theme	B. EXCITABILITY, SYNAPTIC TRANSMISSION, NETWORK FUNCTIONS
Topic	B.01.h Neurotransmitters and signalling molecules: Neurotrophins and other growth factors
Presentation preference	Poster presentation
Abstract title	Impact of obesity on BDNF-signaling in the brain

Aims: Obesity is becoming a worldwide problem, as its prevalence in developing countries is increasing. Risk factors for an obese phenotype comprise a high fat diet, low physical activity or disorders in the levels of hormones, like leptin, or growth factors, like brain derived neurotrophic factor (BDNF) (Bhurosy and Jeewon 2014). Both, BDNF and leptin mediate anorectic and possibly correlated signaling in the brain. (Friedman 2014; Lebrun et al. 2006) We wanted to examine, whether there is an influence of an obese phenotype on BDNF-protein expression patterns in specific brain regions.

Methods: We used C57Bl6/J mice with an ob/ob genotype, which lack the hormone leptin and therefore establish severe obesity. Brain slices of four, six and 12 month old homozygotes ob/ob mice and its control littermates were immunostained, using antibodies directed against BDNF, its precursor protein proBDNF and its receptor TrkB. Protein distribution in the brain was analyzed generally and more precise in hippocampus, hypothalamus and cortex. Additionally, protein levels of BDNF, proBDNF and TrkB were determined in these regions by Western Blot analysis.

Results: First results indicate that protein levels of mature BDNF and proBDNF are regulated differently between ob/ob and wildtype mice depending on the brain region.

Conclusion: Our results suggest that disruption of normal leptin signaling leads to changes in the biological availability of mature BDNF in specific brain regions. This could be caused by differences in production, release or cleavage of BDNF or its receptor TrkB in ob/ob mice.