andis part of the insulin-secreting calcium signaling. Therefore, impaired CaBP-9Ksignaling may be linked with diabetes mellitus and CaBP-9K protein is as apotential candidate for gene therapy of type 1 diabetes.

P-184

Generation of an immortalized porcine 11βHSD1-Transgenic hepatocyte

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Introduction: The liver plays a major organ in metabolism, has numerous functions,mostly consists of hepatocytes, and is a principal target of cortisol. Cortisol is asteroid hormone essential to the maintenance of homeostasis, and is released inresponse to stress and low blood glucose concentration. It is convertedfrom cortisone by 11β hydroxysteroiddehydrogenase type 1 (11βHSD1). In previous studies, it was observed that toomuch cortisol or overexpression of 11βHSD1 induced obesity and the insulinresistance that accompanies metabolic syndrome in rodent adipose tissue.

Materials and Methods: In our previous study, 11β HSD1-transgenic (TG)fibroblasts were established, and then the porcine model was generated by SCNTusing those fibroblasts. Hepatocytes overexpressing 11βHSD1 obtained fromliver of this porcine model, and *in vitro*cultured. However, primary hepatocytes show short life span or lowproliferation rate. To overcome these problems, SV40 large T antigen, oncogene,was transduced into primary 11β HSD1-TG hepatocytes and those cells wereimmortalized.

Results: Immortalized 11βHSD1-TG hepatocytes shows restoredmorphology, more rapid proliferation rate, and more expression of 11βHSD1 thanprimary ones.

Conclusions: These immortalized cells maybe be useful forstudying traits and potential therapeutic drugs for metabolic disorders induced byoverexpression of 11βHSD1 in hepatocytes

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P-185

BDNF/ERK pathway in TMT-induced neurotoxicity

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Introduction: Trimethyltin (TMT) toxicity causes histopathological damage in the hippocampus and induces seizure behaviors in mice. The lesions and symptoms recover spontaneously over time; however, little is known about the precise mechanisms underlying this recovery from TMT toxicity. We investigated changes in the brain-derived neurotrophic factor/extracellular signal-regulated kinases (BDNF/ERK) signaling pathways in the mouse hippocampus following TMT toxicity.

Materials and Methods: Mice (7 weeks old,C57BL/6) were administered TMT (2.6 mg/kg intraperitoneally). Changes in BDNF/ERK signaling pathways were evaluated through TUNEL, qRT-PCR, Western blot analysis, immunohistochemistry and double staining.

Results: Mice administered TMT showed acute and severe neurodegeneration with increased TUNEL-positive cells in the dentate gyrus (DG) of the hippocampus. The mRNA and protein levels of BDNF in the hippocampus were elevated by TMT treatment. Immunohistochemical analysis showed that TMT treatment markedly increased phosphorylated ERK1/2 expression in the mouse hippocampus 1-4 days after TMT treatment, although the intensity of ERK immunoreactivity in mossy fiber decreased at 1-8 days post-treatment. In addition, ERK-immunopositive cells were localized predominantly in doublecortin-positive immature progenitor neurons in the DG. In primary cultured immature hippocampal neurons (4 days *in vitro*), BDNF treatment alleviated TMT-induced neurotoxicity, via activation of the ERK signaling pathway.

Conclusions: Thus, we suggest that BDNF/ERK signaling pathways may be associated with cell differentiation and survival of immature progenitor neurons, and will eventually lead to spontaneous recovery in TMT-induced hippocampal neurodegeneration.

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P-186

GABAergic transmission in developmental and degenerative hippocampus

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