

# 第 532 回 難研セミナー

## 第 105 回 難治疾患共同研究拠点セミナー

下記により難研セミナーを開催しますので、多数御来聴下さい。

### 記

日 時：平成 27 年 4 月 1 日（水） 17:00～18:30

場 所：M&D タワー21 階 大学院講義室 1

演 者：Professor Gabor Szabo

(Institute of Experimental Medicine, Hungarian Academy of Sciences)

演 題：The multi-faced GABA: role of GABA signaling in basic developmental processes in and outside the nervous system

要 旨： $\gamma$ -aminobutyric acid (GABA) is present in the whole living kingdom from bacteria through yeast and plants to vertebrates with diverse, but also shared basic signaling functions. In mammals, GABA is mostly recognized as the principal inhibitory neurotransmitter, however it is also present in a wide variety of peripheral tissues. During development both in the nervous system and other organs, GABA regulates basic processes including proliferation, differentiation and migration. GABA's diverse action is underlined by the molecular complexity of its signaling components including the synthesizing enzymes (adult and embryonic GADs), receptors and transporters. Here we describe the presence and the role of GABA signaling in undifferentiated ES cells that corresponds to the blastocyst developmental stage, where it modulates proliferation and differentiation through GABA<sub>A</sub> and GABA<sub>B</sub> receptors in an opposite way by regulating intracellular calcium levels. For the first time, we detected all GAD forms, a variety of GABA receptor subunits and both membrane and vesicular GABA transporters in the developing eye lens, where they are expressed in the fiber cells in a spatially and temporally regulated fashion. Using mouse models with genetically altered GAD levels and primary lens cultures, we determined that different GAD forms have distinct functions in fiber cell proliferation, differentiation and elongation. In these processes GABA also acts through intracellular calcium rise. The developmental role of GABA signaling in the formation and migration of the GnRH neuronal system will also be discussed.

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