

# 149<sup>th</sup> ECM Society Seminar

場所：基礎研究棟 4 階 人体構成学分野セミナー室

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## Dynamics of perineuronal nets in the adult brain

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### Abstract

Plasticity, the capability of neurons to remodel their connections in response to environmental stimuli or after injury, is high during postnatal temporary windows called critical periods, and then typically declines with increasing age. Perineuronal nets (PNNs) are reticular structures surrounding many types of CNS neuron that result from the aggregation of extracellular matrix molecules during postnatal development. Interestingly, the adult CNS retains certain levels of plasticity despite the presence of PNNs. To elucidate molecular underpinnings of adult CNS plasticity, we investigated whether PNN expression changes in the mouse cerebellum in different paradigms that induce plasticity. Exposing mice to an enriched environment leads to a substantial PNN reduction in the cerebellar nuclei in concomitance with axon remodelling of the local circuitry. In deafferented cerebellar nuclei, we also found remarkable plasticity of axon terminals, which was accompanied by a reduction of the PNN. After partial denervation of vestibular nuclei, obtained by unilateral labyrinthectomy, PNNs in the lateral vestibular nucleus were strongly attenuated during the process of vestibular compensation. Nonetheless, at later stages a complete restoration of the PNNs has been found, in coincidence with the resolution of vestibular deficits. On the whole our data show that PNNs are dynamic structures, playing a crucial role in the control of adult brain plasticity.

今回は、神経糖鎖国際シンポジウムに招聘された Carulli 先生に岡山まで足を伸ばしていただき講演をお願いしました。

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この研究会は、博士課程授業科目の「研究方法論（基礎）の授業に出席したとみなされる講演会」としてカウントすることが可能です。出席記録簿を持参して、開催担当教授の「押印」を受けてください。