第９回　最先端脳科学セミナー

Adult neurogenesis and hippocampal memory

演 者: Paul Frankland 教授　トロント大学

日 時: 2013 年 3 月 14 日（木）17:00～18:30

場 所: 薬学部研究棟Ⅱ 7 階 セミナー室 8

要 旨

New neurons are continuously added to the subgranular zone of the hippocampus throughout the lifespan, but the functional consequences of hippocampal neurogenesis remain unclear. While the majority of previous studies have examined the impact of increasing or decreasing hippocampal neurogenesis on subsequent memory formation, few have examined the effects of similar manipulations on established, hippocampus-dependent memories. Computational models predict that addition of new neurons should lead to extensive remodeling of hippocampal circuits, and consequently degradation or forgetting of established memories. Consistent with this, lifespan changes in hippocampal neurogenesis are inversely correlated with memory persistence: During infancy, when hippocampal neurogenesis levels are high, freshly-generated memories tend to be rapidly forgotten. In contrast, during adulthood, when neurogenesis levels are lower, memories are typically much more persistent. We have conducted two types of experiments that suggest that neurogenesis and forgetting are causally related. First, in adult mice (P60), we find that increasing neurogenesis after memory formation is sufficient to induce forgetting. Second, in infant mice (P17), we find that decreasing neurogenesis after memory formation mitigates normal forgetting observed at this age. Our data suggest a causal relationship between neurogenesis and memory persistence, and provide a neurobiological account for infantile amnesia.

Paul Frankland先生は、記憶の時間経過に伴う脳内での貯蔵様式について研究を進められ、古い記憶の保持に前帯状皮質(ACC)が重要であることを世界で初めて発見されました(***Science***, 304, 881, 2004)。また、成体海馬新生ニューロンは成熟した既存のニューロンに比べて記憶を保持する回路に取り込まれ易いことを発見し(***Nat Neurosci***, 10, 335, 2007)、成体海馬神経新生の記憶制御機構に対する機能的な役割の解明に精力的に取り組んでこられました(***Nat Commun***, 3, 1253, 2012; ***Nature***, 493, 312, 2013)。

本セミナーでは、成体海馬神経新生の記憶を中心とした脳高次機能に対する最新の研究成果を報告していただく予定です。皆様奮ってご参加下さいますようお願い申し上げます。

※ **本セミナーは、大学院の単位認定の対象となります。**

主催: 医・生化学　井ノ口 馨

第9回セミナー世話人: 医・生化学　野本 真順　内線 7227