



Nagoya City University Academic Repository

学位の種類	博士 (医学)
報告番号	甲第1421号
学位記番号	第1026号
氏名	太田 晴子
授与年月日	平成 26年 3月 25日
学位論文の題名	<p>Proteomic analysis of Girdin-interacting proteins in migrating new neurons in the postnatal mouse brain (生後マウス脳の新生ニューロンにおける Girdin 相互作用分子のプロテオミクス解析)</p> <p>Biochem Biophys Res Commun Vol.442 (1-2): PP16-21, 2013</p>
論文審査担当者	主査： 澤本 和延 副査： 飛田 秀樹, 祖父江 和哉

Proteomic analysis of Girdin-interacting proteins in migrating new neurons in the postnatal mouse brain

Haruko Ota, Takao Hikita, Tomoki Nishioka, Mami Matsumoto, Jun Ito, Naoya Asai, Atsushi Enomoto, Masahide Takahashi, Kozo Kaibuchi, Kazuya Sobue, Kazunobu Sawamoto

Biochemical and Biophysical Research Communications, Volume 442, Issues 1–2, 6 December 2013, Pages 16–21

Abstract

Neural stem cells continuously generate new neurons in the ventricular–subventricular zone (V–SVZ) of the postnatal and adult mammalian brain. New neurons born in the rodent V–SVZ migrate toward the olfactory bulb (OB), where they differentiate into interneurons. These new neurons are reported to join the existing neural circuitry in the OB and to have olfactory functions. The migration of new neurons from the V–SVZ to OB has several unique characteristics. In the RMS, the new neurons form aggregates that migrate tangentially over a long distance. Once they reach the OB, they migrate radially to their final positions. The molecular mechanisms underlying this unique neuronal migration process are not fully understood. To reveal novel intracellular molecular mechanisms that control postnatal neuronal migration, we performed a global proteomic search for proteins interacting with Girdin, an essential protein for postnatal neuronal migration. Using GST pull-down and LC–MS/MS shotgun analysis, we identified cytoskeletal proteins, cytoskeleton-binding proteins, and signal-transduction proteins as possible participants in neuronal migration. Our results suggest that Girdin and Girdin-interacting proteins control neuronal migration by regulating actin and/or microtubule dynamics.