

CRMP1

CRMP1, a member of the collapsin response mediator protein family (CRMPs), was reported to regulate axon outgrowth in *Sema3A* signaling pathways via interactions with its co-receptor protein neuropilin-1 and plexin-As through the Fyn-cyclin-dependent kinase 5 (CDK5) cascade and the sequential phosphorylation of CRMP1 by glycogen synthase kinase-3 β (GSK-3 β). Using yeast two-hybrid, we identified a new molecule, Speedy A1 (Spy1), a member of the Speedy/RINGO family, with an interaction with CRMP1. Besides, for the first time, we observed the association of CRMP1 with actin. Based on this, we wondered the association of them and their function in *Sema3A*-induced growth cones collapse and regeneration process after SNC. During our study, we constructed overexpression plasmid and short hairpin RNA (shRNA) to question the relationship of CRMP1/Spy1 and CRMP1/actin. We observed the interactions of CRMP1/Spy1 and CRMP1/actin. Besides, we found that Spy1 could affect CRMP1 phosphorylation activated by CDK5 and that enhanced CRMP1 phosphorylation might disturb the combination of CRMP1 and actin, which would contribute to abnormal of *Sema3A*-induced growth cones collapse and finally lead to influent regeneration process after rat sciatic nerve crush. Through rat walk footprint test, we also observed the variance during regeneration progress, respectively. We speculated that CRMP1 interacted with Spy1 which would disturb the association of CRMP1 with actin and was involved in the collapse of growth cones induced by *Sema3A* and regeneration after sciatic nerve crush ¹⁾.

¹⁾

Yao L, Liu YH, Li X, Ji YH, Yang XJ, Hang XT, Ding ZM, Liu F, Wang YH, Shen AG. CRMP1 Interacted with Spy1 During the Collapse of Growth Cones Induced by *Sema3A* and Acted on Regeneration After Sciatic Nerve Crush. *Mol Neurobiol*. 2016 Mar;53(2):879-93. doi: 10.1007/s12035-014-9049-2. Epub 2014 Dec 20. PubMed PMID: 25526860.

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