|  |  |
| --- | --- |
| **投稿學會：台灣基礎神經科學學會** | **編號:** |
| **Involvement of advillin in somatosensory neuron subtype-specific axon regeneration and neuropathic pain**  Yu-Chia Chuang1,2,3, Cheng-Han Lee2, Chih-Cheng Chen1,2,4\*  1 Taiwan International Graduate Program in Molecular Medicine, National Yang-Ming University and Academia Sinica, Taipei 112, Taiwan  2 Institute of Biomedical Sciences, Academia Sinica, Taipei 115, Taiwan  3 Institute of Biochemistry and Molecular Biology, National Yang-Ming University, Taipei 112, Taiwan  4 Taiwan Mouse Clinic – National Comprehensive Phenotyping and Drug Testing Center, Academia Sinica, Taipei 115, Taiwan  **Abstract**  Advillin is a sensory neuron-specific actin-binding protein expressed at high levels in all types of somatosensory neurons in early development. However, the precise role of advillin in axon regeneration and neuropathic pain, especially in adulthood, is largely unknown. Here we revealed advillin expression restricted to isolectin B4-positive (IB4+) neurons in adult dorsal root ganglia (DRG) and located at growth cones and the very tips of filopodia. Advillin knockout (KO) specifically impaired axonal regeneration in adult IB4+ DRG neurons. In the recovery phase of experimental autoimmune encephalomyelitis (EAE), a neuropathic pain model, advillin KO disturbed neural plasticity in the spinal-cord dorsal horn, especially in IB4+ lamina, and aggravated neuropathic pain, including mechanical hyperalgesia and cold allodynia. Our study highlights a role for advillin in growth cone formation, axon regeneration, and neuropathic pain associated with IB4+ DRG neurons in adulthood. | |