



SELECTED OPPORTUNITIES IN NEUROSCIENCE

Fxyd2 as new target for pain management (BIO14109)

FXVD2 AS NEW TARGET FOR PAIN MANAGEMENT (BIO14109)

Product factsheet

▶ Fxyd2 is expressed in peripheral nerve

- ◆ Fxyd2 gene encodes the gamma-subunit of the Na,K-ATPase
- ◆ Fxyd2 is expressed in the mouse DRGs specifically to the TrkB-expressing mechanoreceptive and Ret-positive/IB4-binding non-peptidergic nociceptive neurons
- ◆ Fxyd2 expression has been confirmed in human DRG neurons
- ◆ Inhibition of Fxyd2 expression reduces allodynia in SNI mouse and rat pain models
- ◆ Therapeutic DNA drug candidate is currently being developed and shows **strong efficacy in vivo**
- ◆ No cardiac nor renal toxicity (physiological expression of fxyd2) has been observed in treated animals
- ◆ No requirement to cross the BBB as DRG neurons are part of the peripheral nervous system

▶ Potential applications: Treatment of neuropathic pain

▶ Patent :WO2016005422 A1

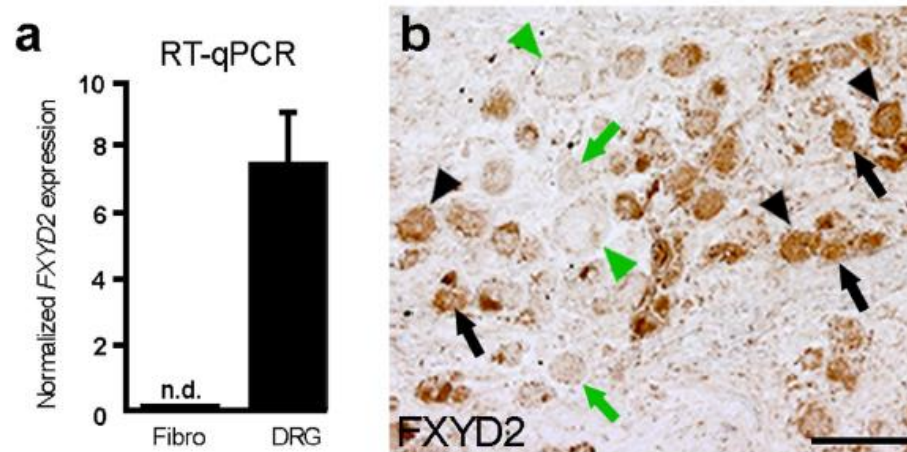
▶ Publications :

- ◆ Fxyd2 regulates A δ - and C-fiber mechanosensitivity and is required for the maintenance of neuropathic pain. Ventéo S, Laffray S, Wetzel C, Rivat C, Scamps F, Méchalý I, Bauchet L, Raoul C, Bourinet E, Lewin GR, Carroll P, Pattyn A. Sci Rep. 2016 Nov 2;6:36407
- ◆ Regulation of the Na,K-ATPase gamma-subunit FXVD2 by Runx1 and Ret signaling in normal and injured non-peptidergic nociceptive sensory neurons. Ventéo S, Bourane S, Méchalý I, Sar C, Abdel Samad O, Puech S, Blostein R, Valmier J, Pattyn A, Carroll P. PLoS One. 2012;7(1):e29852

FXVD2 AS NEW TARGET FOR PAIN MANAGEMENT (BIO14109)

Concept

FXVD2 is expressed in human DRG neurons

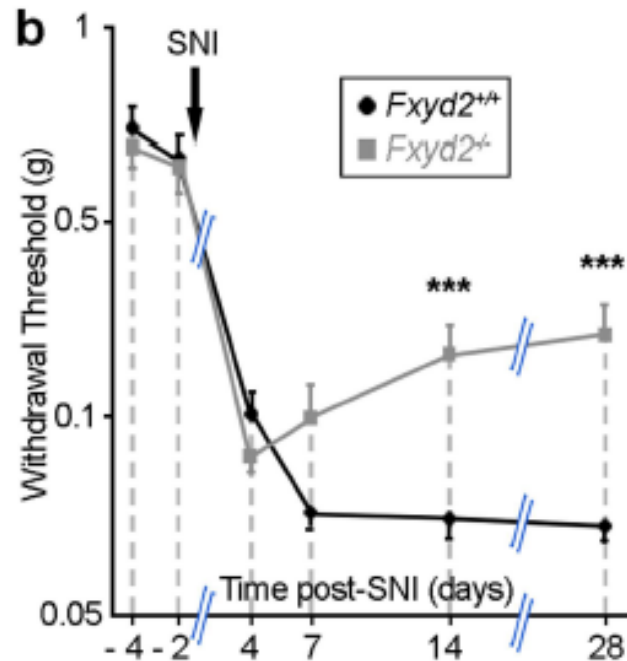


(a) RT-qPCR analysis of *FXVD2* expression on human fibroblasts and human DRG samples revealing specific detection of *FXVD2* in the DRG (n = 3 replicates). (b) Immunohistochemistry on human lumbar DRG transverse sections using an anti-*FXVD2* antibody. *FXVD2* is detected in subpopulations of sensory neurons of small- (black arrows) and medium-diameters (black arrowheads). Green arrows and arrowheads point to *FXVD2*-negative small and large diameter neurons, respectively.

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Concept

Fxd2 KO prevents allodynia due to Spared Nerve Injury

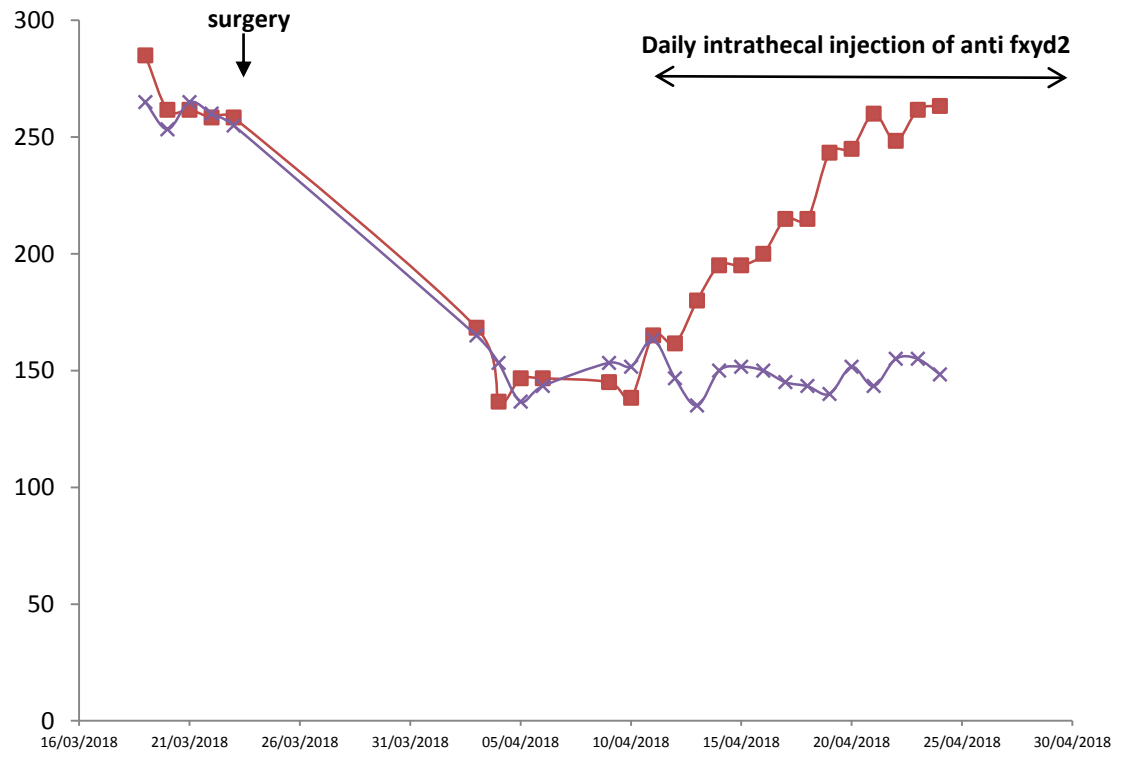


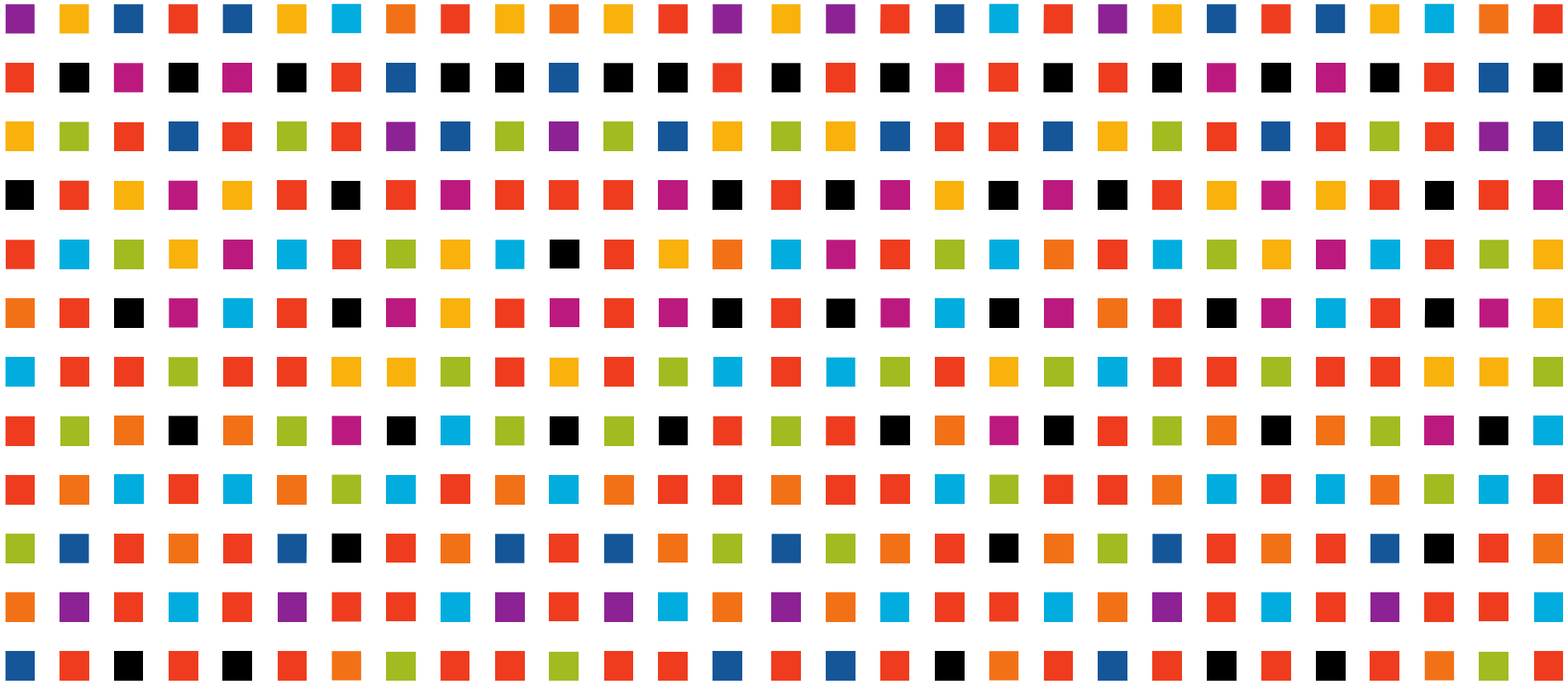
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Proof of Concept

Fxyd2 antisense strategy as treatment to avoid pain (allodynia/hyperalgesia)

Randall-Selitto test





ANNE.COCHI@INSERM-TRANSFERT.FR