MRGB2 Contributes to Mechanical and Thermal Allodynia in an Animal Models of Inflammatory and Neuropathic Pain

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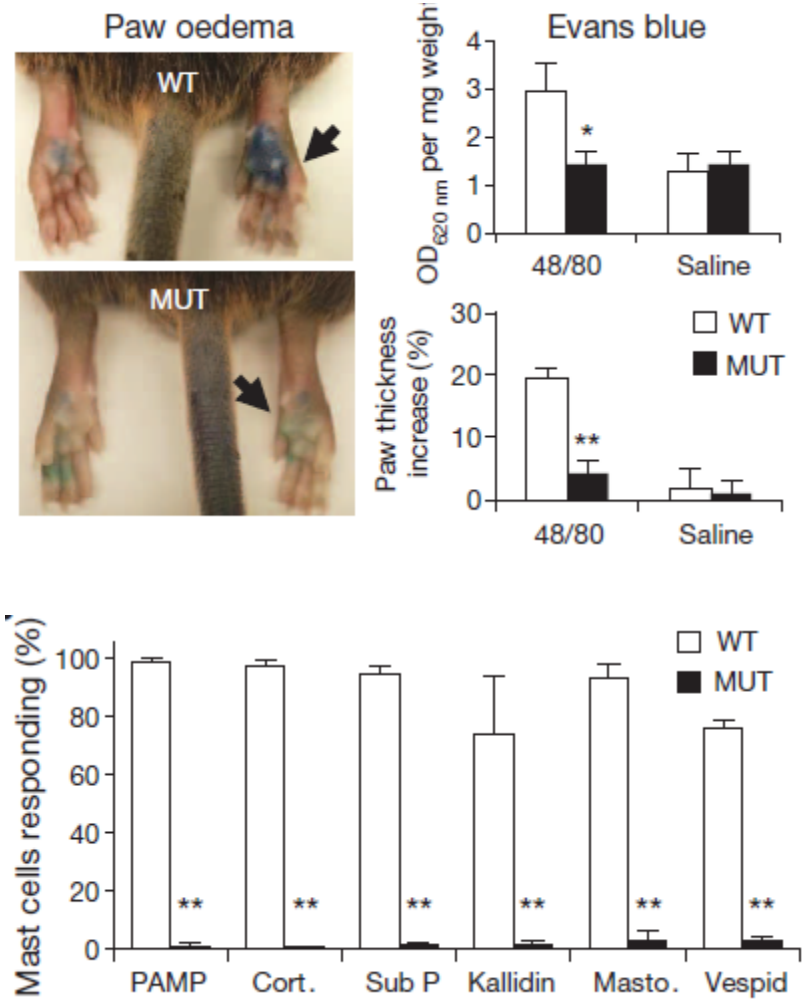
MrgprB2 plays a role in non-allergenic activation of mast cells

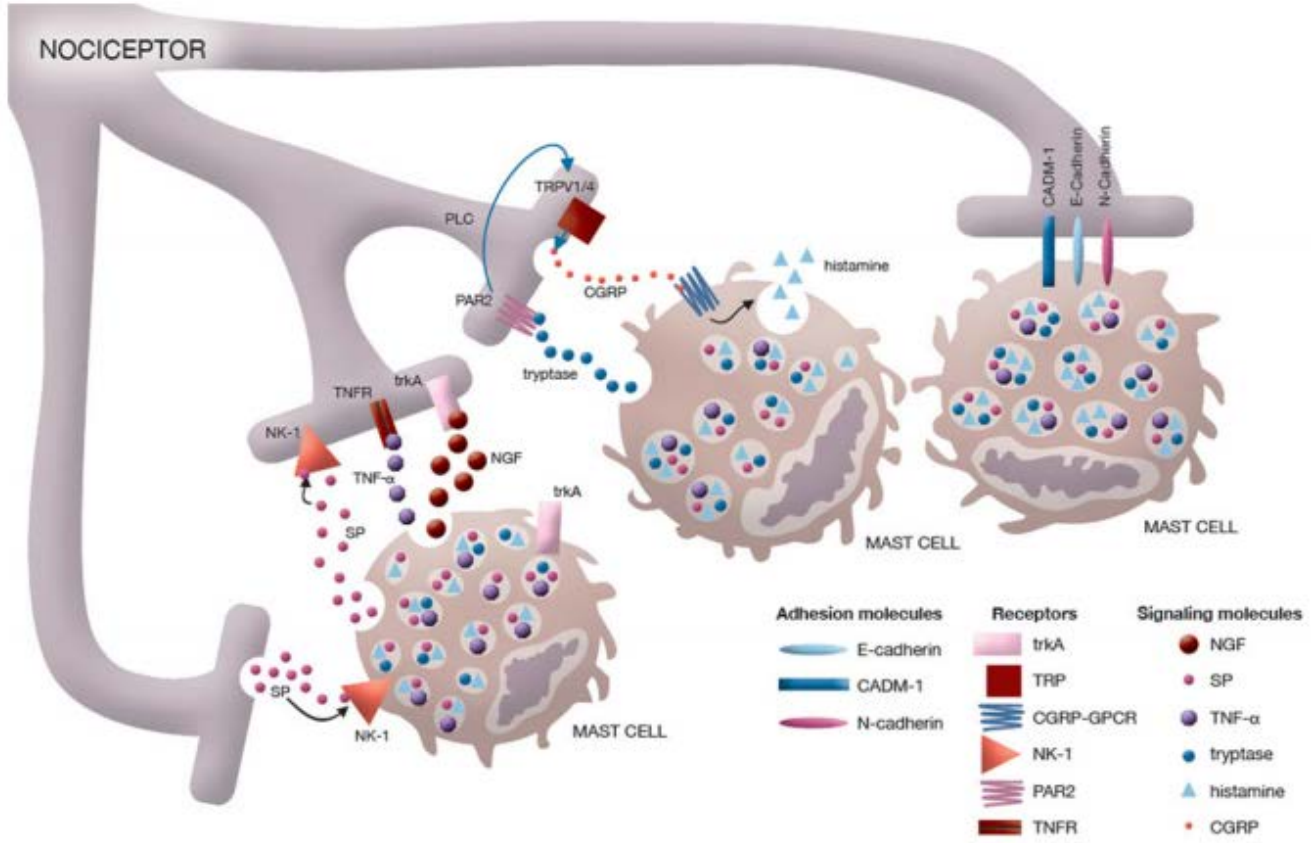
- Mast cells known to be activated by immunoglobulin (Ig)E antibodies
- Mas-related G-protein-coupled receptor B2 (Mrgprb2) and its human orthologue, MRGPRX2 mediates non-allergenic activation of mast cells



McNeil, et al. *Nature* 2015

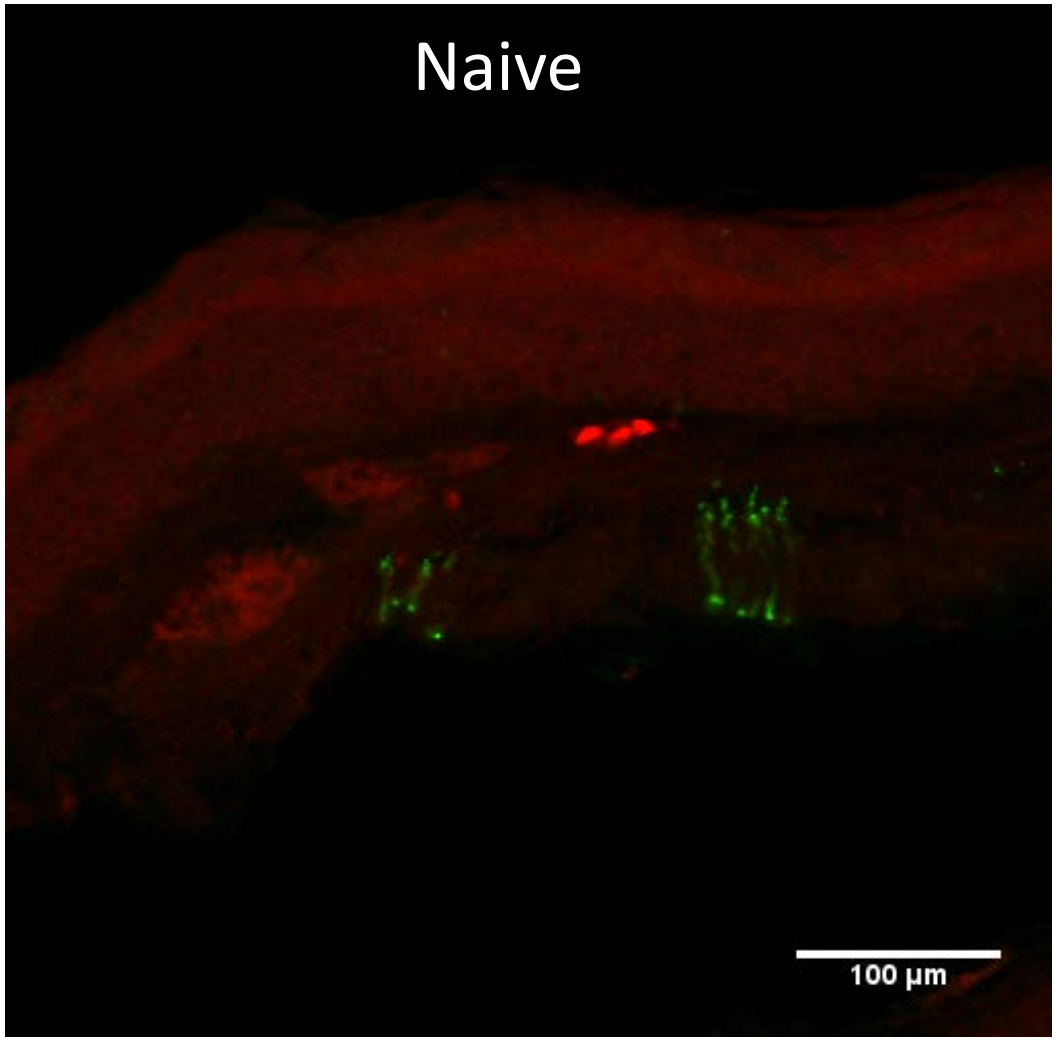
Mast Cells and Pain

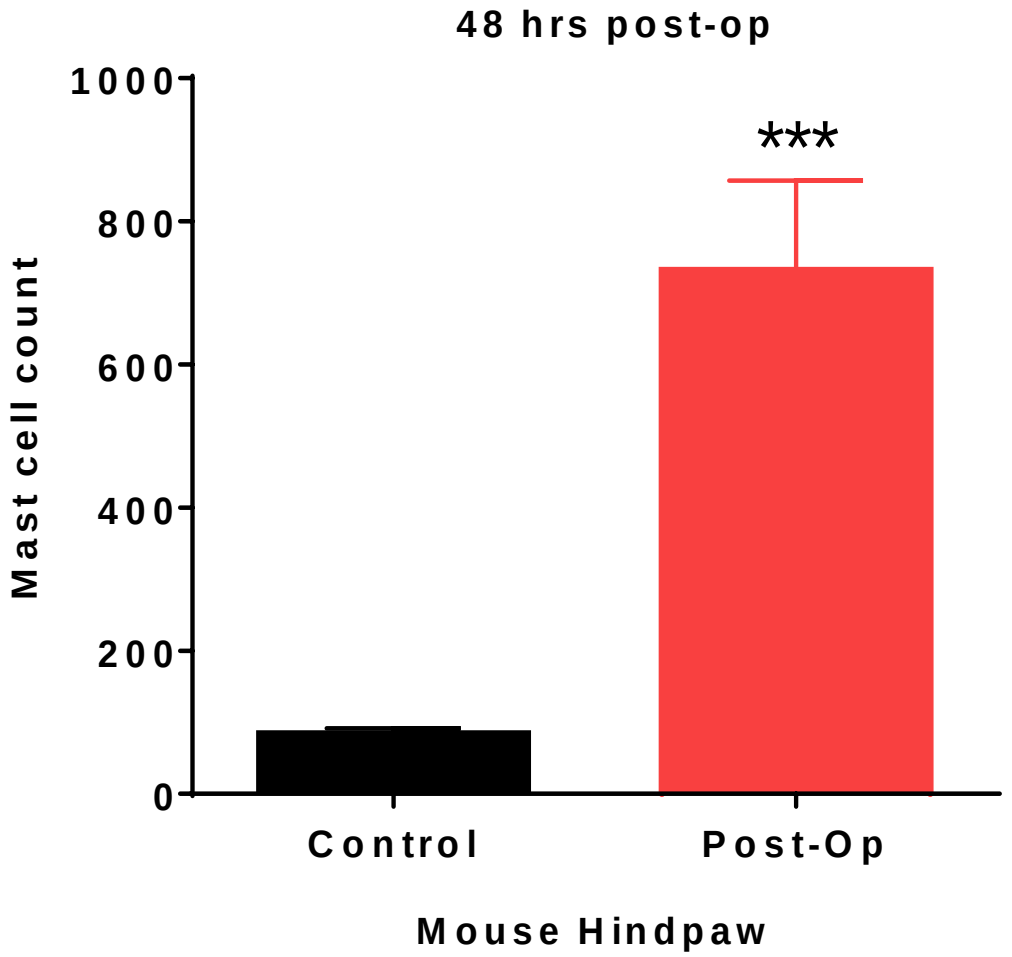
- Chemically induced heat and pressure sensitivity (Cunha et al., 1992; Verri et al., 2006)
- Passive cutaneous anaphylaxis pain (Lavich et al., 2003, 2006)
- Compound 48/80-induced migraine (Levy et al., 2007, 2012; Zhang et al., 2012)
- Experimental cystitis and prostatitis (Done et al., 2012; Rudick et al., 2008, 2009; Quick et al., 2012)
- Venom-induced hyperalgesia (Martinov et al., 2012; Bonavita et al., 2006; Liu et al., 2007)
- Oxazolone-induced vulvar pain (Martinov et al., 2013)
- Post-operative pain (Oliveira et al., 2011, 2013; Yasuda et al., 2013)
- Neuropathic pain and Complex Regional Pain (Zuo et al., 2003; Taiwo et al., 2005; Chen et al., 2011; Li et al., 2012)
- Sickle cell disease-associated pain (Vincent et al., 2013)



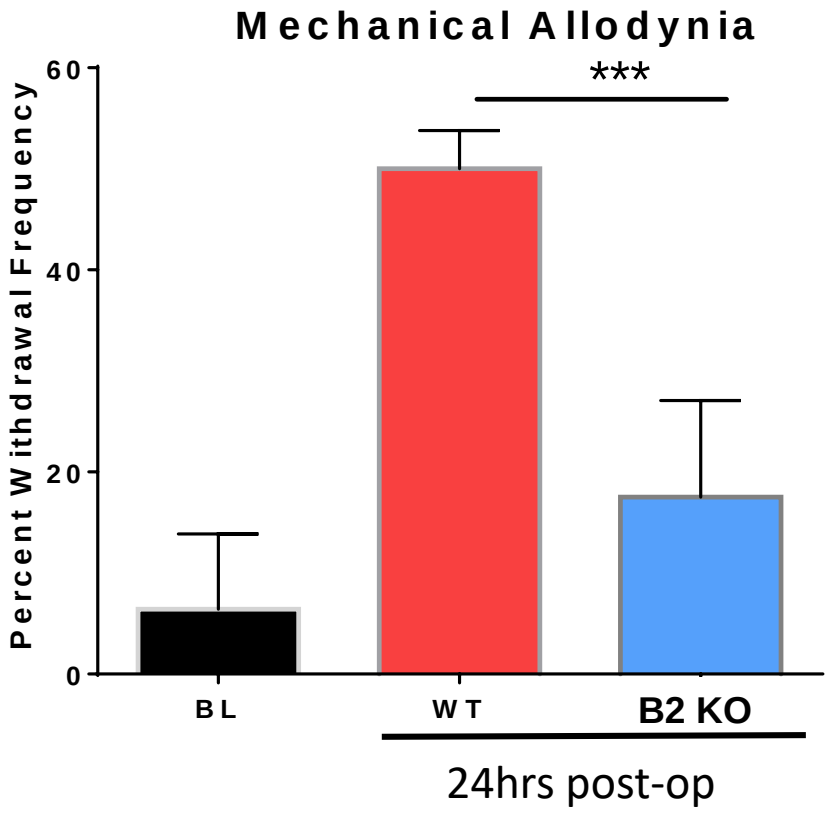
Chatterjea and Martinov, *Mol. Immunol.,* 2016

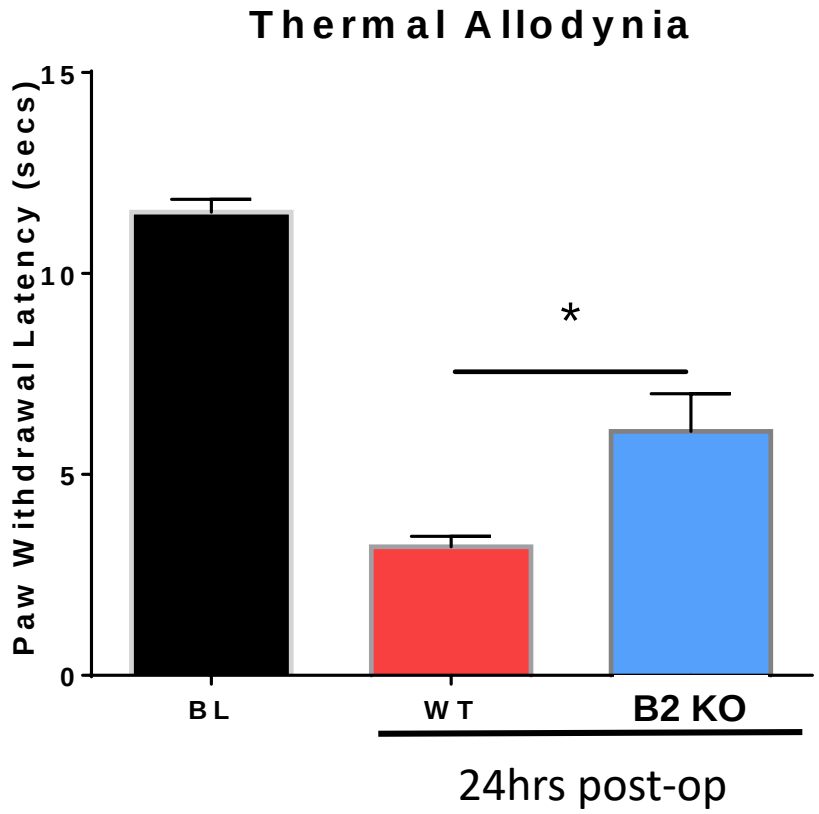
Mrgprb2 CRE tdT expression at the site of post-op injury





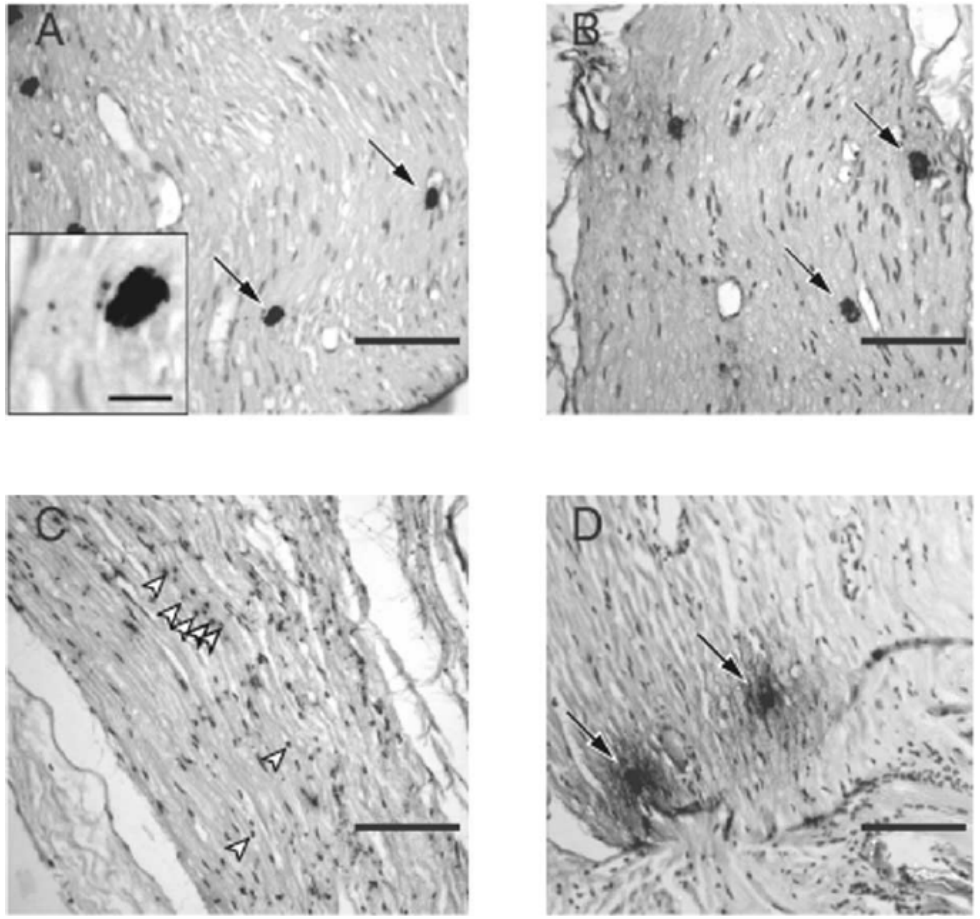
Mrgprb2 contributes to mechanical and thermal hypersensitivity in an animal model of post-operative pain





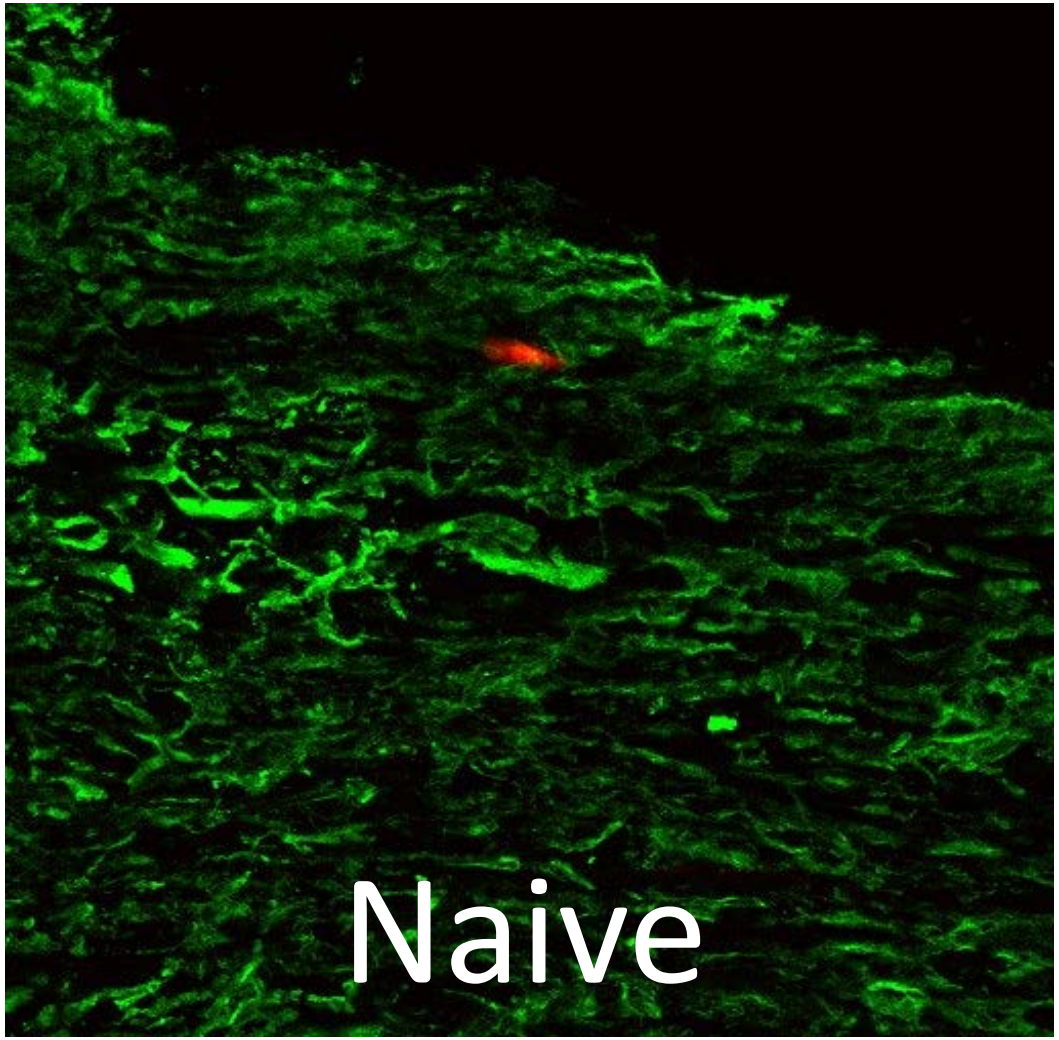
CCI model of neuropathic pain

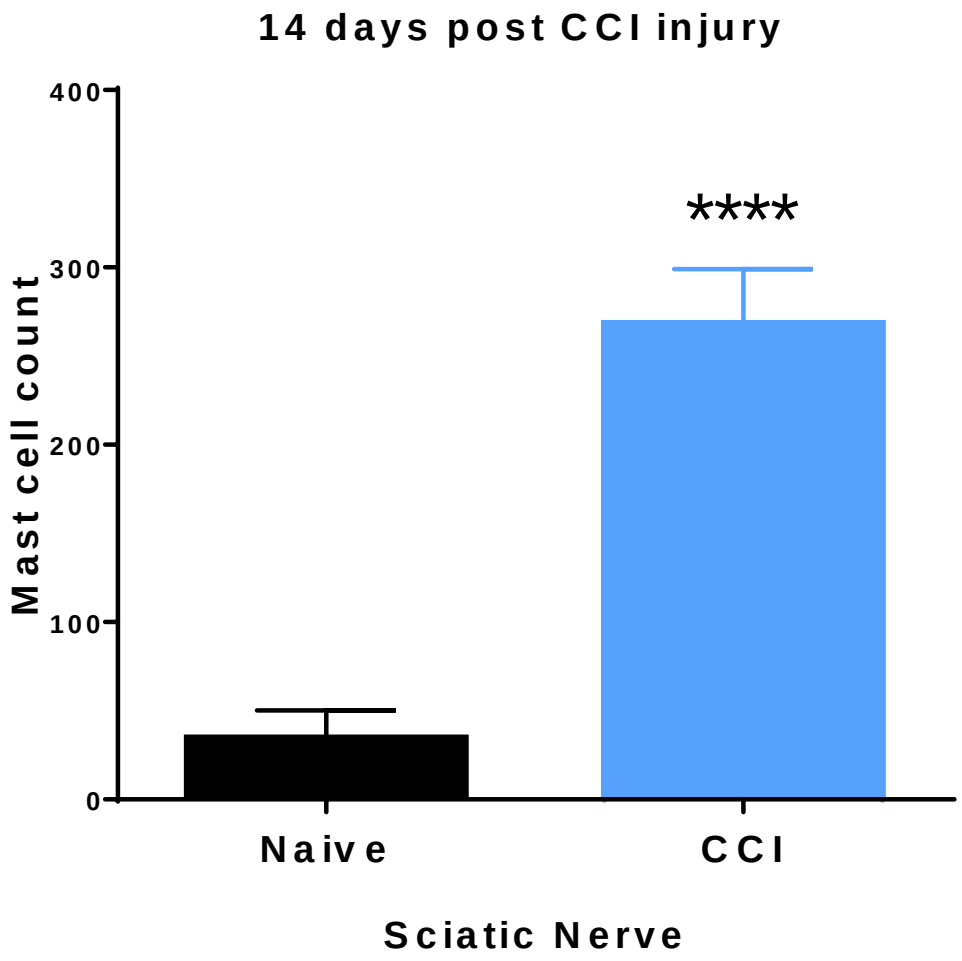
- Mast cell numbers increase near the site of peripheral nerve lesion (Enerbaack et al., 1965)
- Degranulating mast cells have been identified at the lesion site (Olsson, 1967; Zochodne et al., 1994).
- “There is a sustained increase in the number of mast cells within both the epineurium and endoneurium distal to a traumatic injury.” (Hall, S. 2005).



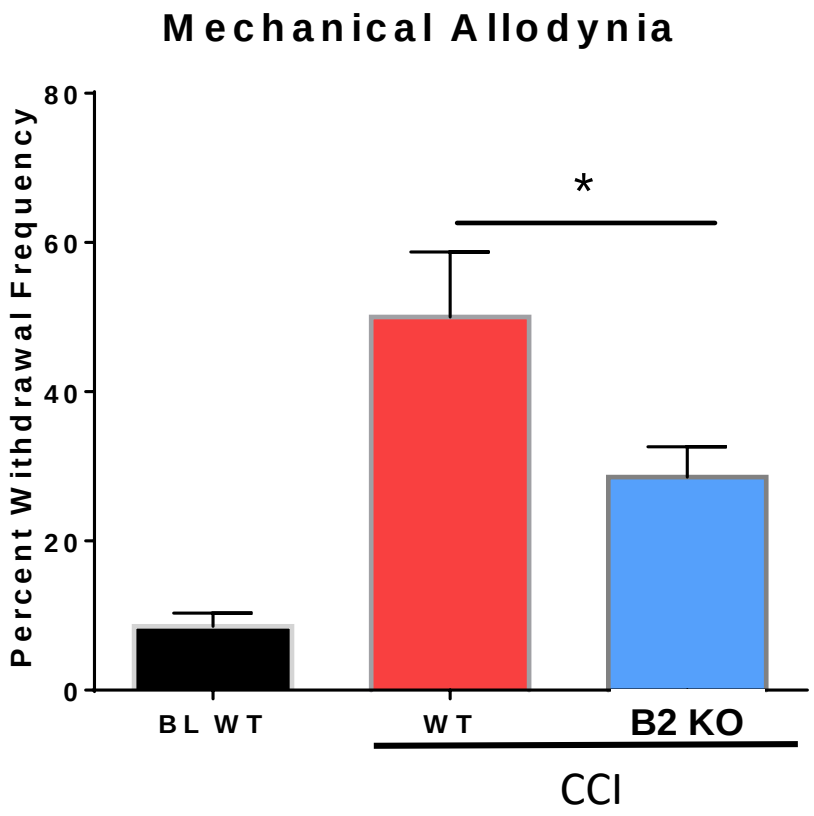
Zuo, et al. *Pain* 2003

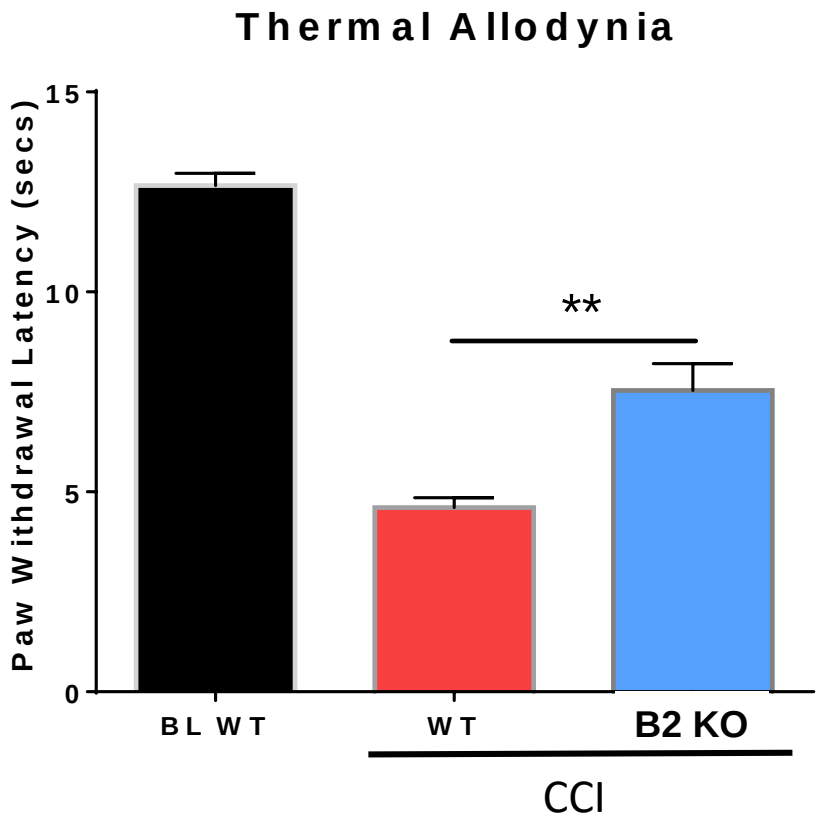
Mrgprb2 CRE tdT expression at the site of CCI injury



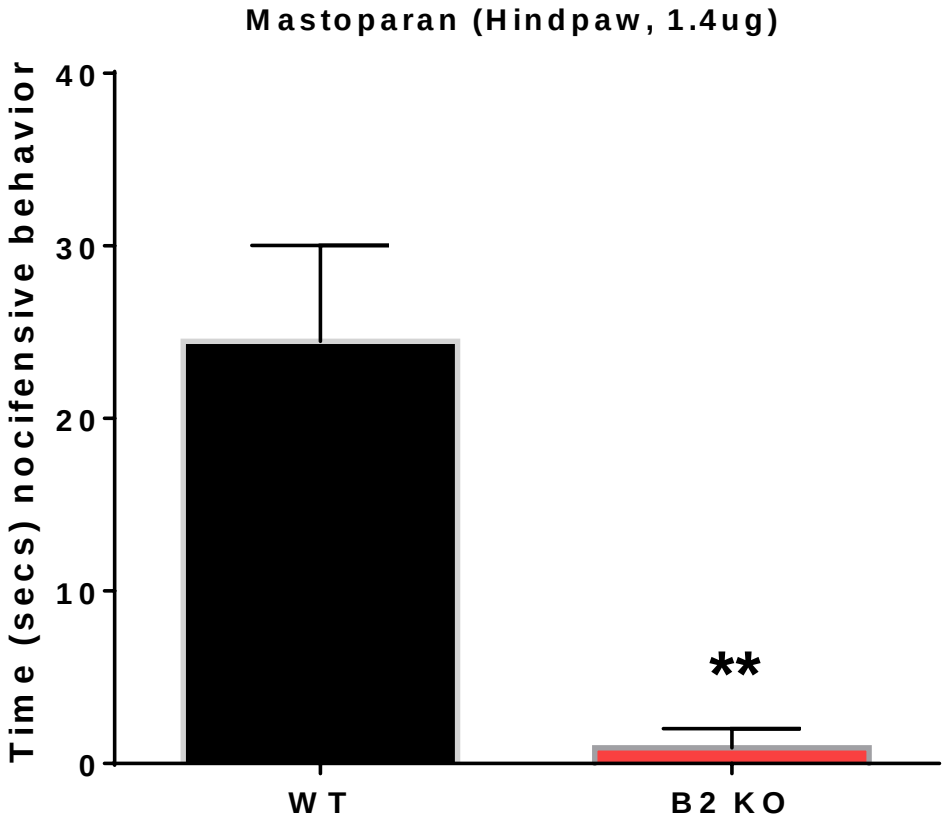


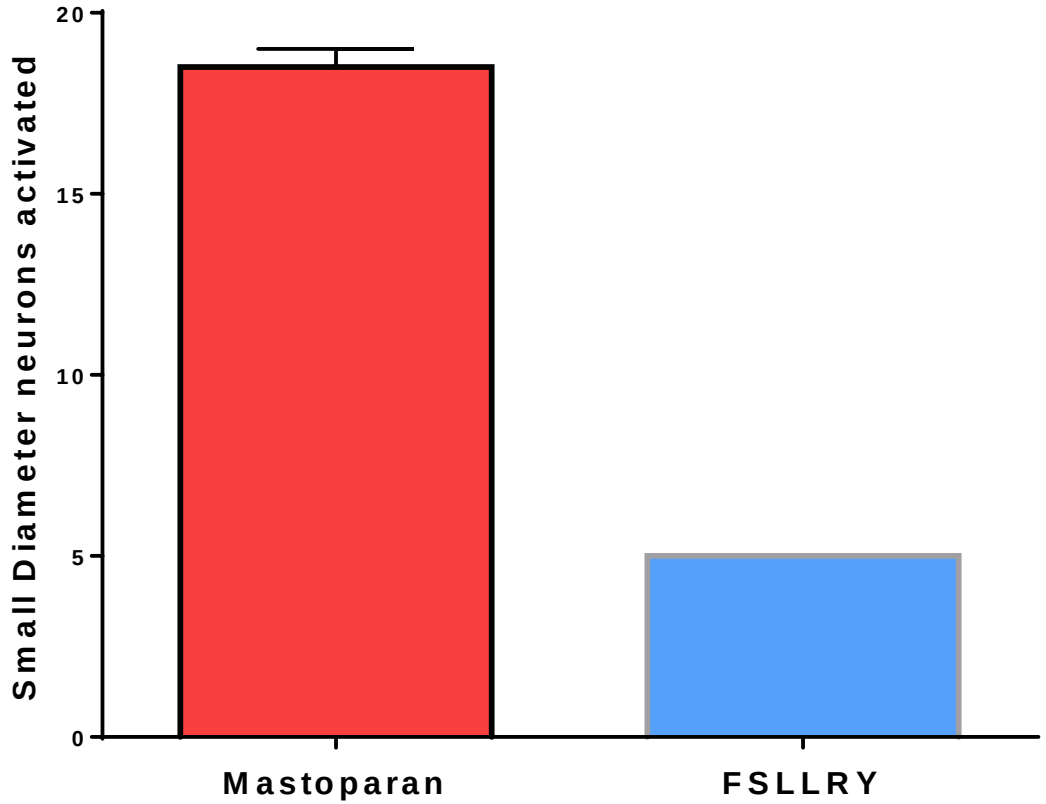
Mrgprb2 contributes to mechanical and thermal hypersensitivity in the CCI model of neuropathic pain



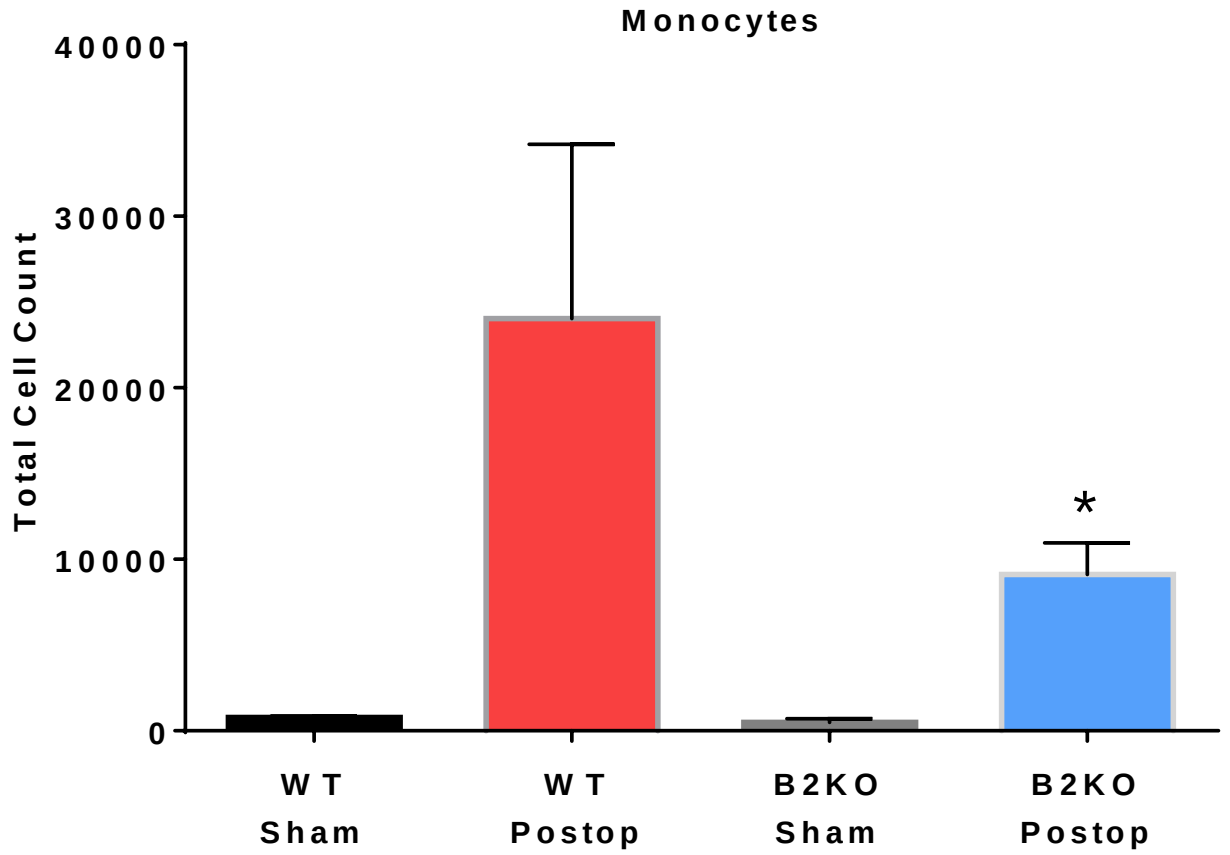


Mrgprb2 mediated PAR2 activation





Mrgprb2 and immune cell modulation



Acknowledgements

- Special Thanks:
  - Xinzhong Dong
  - Michael Anderson
  - James Limjunyawong
  - Vinod Tiwari
- Lab Members
  - Yixun Geng
  - Priyanka Pundir
  - Jimmy Meixiong
  - Collen LaVinka
  - Xintong Dong
  - Qin Zheng
- The study was supported by NIH, F32-GM121030, NINDS R01-NS054791, and the Howard Hughes Medical Institute