Docket #: S15-354

Non-opioid therapeutic to treat pain

In light of the opioid epidemic within the United States, Dr. Eric Gross and colleagues developed a non-opioid therapeutic that reduces pain (Stanford Medicine Press Release). These researchers in experimental rodent models discovered a discrete region of the transient potential vanilloid 1 (TRPV1) that can be targeted by a therapeutic which limits acute and chronic pain in rodent models. This technology provides a fresh approach to limiting pain that does not target the opioid receptor system. This research was published in the Journal of Clinical Investigation (JCI paper 2023) and received media attention from several news outlets regarding this breakthrough.

Stage of Development

- The therapeutic greatly rescues chronic pain caused by a spared nerve injury model in rodents.
- The therapeutic is effective in reducing acute pain triggered by noxious insults in rodent models.
- Chronic delivery of the therapeutic to rodents is also without unwanted side-effects including thermoregulation, respiratory, or cardiovascular.

Applications

- Non-narcotic pain reliever, particularly for use in acute and chronic pain

Advantages

- Unmet need - therapeutic limits acute and chronic pain
- Limited unwanted side-effects when compared to opioids

Publications

- He S, Zambelli VO, Sinharoy P, Brabenec L, Bian Y, Rwere F, Hell H, Neto BS, Hung B, Yu X, Zhao M, Luo Z, Wu C, Xu L, Svensson KJ, McAllister SL, Stary CM, Wagner NM, Zhang Y, Gross ER (**2023**). A human TRPV1 genetic variant within the channel gating domain regulates pain sensitivity in rodents. Journal of Clinical Investigation, Feb 1;133(3): e163735
- Otto M, Bucher C, Liu W, Müller M, Schmidt T, Kardell M, Driessen MN, Rossaint J, Gross ER, Wagner N (2020). 12(S)-HETE mediates diabetes induced endothelial dysfunction by activating intracellular endothelial cell TRPV1. Journal of Clinical Investigation, Aug 17:136621
- Wang B, Wu C, He S, Wang Y, Wang D, Tao H, Wang C, Pang X, Li F, Yuan Y, Gross ER, Liang G, Zhang Y (2022). V1-cal hydrogelation enhances its effects on ventricular remodeling reduction and cardiac function improvement post myocardial infarction. Chemical Engineering Journal April Vol 433 Part 1, 134450.

Patents

- Published Application: WO2017156128
- Published Application: 20190085040

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