Docket #: S15-354

Peptide modulators to reduce reperfusion injury

Dr. Eric Gross and colleagues have developed non-narcotic, peptide therapeutics that reduce cellular injury that also has efficacy as pain relievers. This technology provides a new therapeutic to limit reperfusion trauma and the pain associated with this cellular injury. In light of the opioid epidemic in the United States, these researchers generated these peptides to help meet a need for non-opioid based therapeutics. The peptides modulate the interaction between calcineurin (a protein phosphatase important for regulating a number of cellular processes and pathophysiological states) and TRPV1 (a pain receptor channel) to substantially reduce cellular injury and the pain associated with cellular injury. This technology provides a new therapeutic to limit reperfusion trauma and the pain associated with traumatic injury.

Stage of research
In intact rodent models, these peptides greatly rescue the chronic pain associated with traumatic nerve injury using a spared nerve injury model.
In isolated heart and *in vivo* heart attack models, these peptides greatly reduce the cellular injury caused by ischemia-reperfusion injury.

Applications

- Non-narcotic pain reliever, particularly for use in traumatic injury and potentially for use as a therapeutic for chronic pain
- Therapeutic for ischemia-reperfusion injury, including during:
    - Myocardial infarction
    - Stroke
    - Organ transplants
    - Percutaneous transluminal coronary angiography

Advantages

- Unmet need- first peptide to specifically and selectively target a non-opioid receptor to reduce traumatic injury and the pain associated with traumatic injury
- Potential to limit side effects as seen with opioids

Publications

- Hurt, Carl M. et al. "Transient Receptor Potential Vanilloid 1 Regulates Mitochondrial Membrane Potential and Myocardial Reperfusion Injury." Journal of the American Heart Association, vol. 5, no. 9, 2016

Patents

- Published Application: WO2017156128
- Published Application: 20190085040
- Issued: 11,136,362 (USA)

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