National Institute of Neurological Disorders and Stroke

NIH Programs for Developing and Testing Pain Treatments

NIH

HEAL Partnership Committee (HPC) Face to Face August 1, 2019

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HEAL Programs for Pain Cover the Research Spectrum





HEAL Pain Programs Engage Multiple NIH Institutes and Centers



National Institute of Arthritis and Musculoskeletal and Skin Diseases



National Institute of **Diabetes and Digestive** and Kidney Diseases



National Center for Advancing Translational Sciences



National Institute of Nursing Research



National Center for Complementary and Integrative Health



National Institute of **Biomedical Imaging** and Bioengineering



NIH National Institute of Dental and Craniofacial Research

NIH National Institute on Drug Abuse







National Institute of **Neurological Disorders** and Stroke



Eunice Kennedy Shriver National Institute of Child Health and Human Development

Discover and Validate Novel Targets + Device Development

Examples of funded projects include:

- Novel GPCR reported to be increased in spinal cord after nerve injury
- Modulating an epigenomic target
- Tissue metalloproteinase
- Astrocyte secreted synaptogenic protein
- VegF signaling
- Modified Kappa Opioid Receptor agonist
- Role of macrophages in development of chronic pain in cord
- Role of apoA-1 in chronic pain.
- Twik-related spinal cord K+ (TRESK) channel in migraine
- DBS for medically refractory pain
- Plus more coming soon...



Examples of funded projects include:

- Auto Abs to predict risk of neuropathic pain after spinal cord injury
- EEG and TMS cortical biomarker signature for pain in TMD
- Microneuromas as a biomarker for neuropathic corneal pain
- IL-1 family cytokine activity (plasma) and associated brain endogenous opioid function (11C-CFN Positron Emission Technology) in post op pain.
- Clinical and Neuroimaging predictors of persistent post traumatic headache
- Plus more coming soon...



Examples of effectiveness trials cover pain conditions such as:

- Perioperative pain
- Chronic Overlapping Conditions
- Musculoskeletal pain
- Chronic pain
- Hip/Knee OA
- Cancer pain: GI & Lung
- Post-caesarian pain
- Low back pain
- Fibromyalgia



...and interventions such as:

- Acupuncture
- Physical therapy
- Telehealth CBT
- Coached self-management



Examples of clinical research include :

- <u>Biomarkers</u> of chronic low back pain including liquid biopsies, wearables, imaging and better ways to evaluate patients.
- <u>Treatments</u> of chronic low back pain including support devices, non pharmacologic pain management techniques and technologies.



HEAL Programs You'll Hear About Today





Both programs address needs in the pathway of developing non-addictive therapies for pain

Early Phase Pain Investigation Clinical Network (EPPIC-Net)

- Incentivize, accelerate early phase trials for therapeutics and devices
- Focus on well-defined pain conditions with high-unmet need
- Reduce the time to start, enroll, run, and complete trials

Preclinical Screening Platform for Pain (PSPP)

- Offer academia and industry an efficient, rigorous screening resource
- Generate high quality efficacy data in models relevant to human pain conditions
- Provide expertise to participants from the research community and industry at no cost

Successful programs will incentivize the academic and industry communities to re-invest in pain therapeutics development



Past challenges of animal models of pain



Jan. 30-31, 2019



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What can NINDS do to facilitate development of non-opioid therapeutics/devices?

Pain (PSPP)