Keynotes

• Challenges in translational pain research
  David Clark, Stanford University
• Applying new technologies & approaches
  Rob Gereau, Washington University
• Complex disease models
• Junior Investigators
• Patient Perspective
• APS
The NIH Pain Consortium

Mission
• To enhance pain research and promote collaboration among researchers across the NIH Institutes and Centers that have programs and activities addressing pain

Leadership
• Dr. Walter Koroshetz, Director NINDS, NIH Pain Consortium Chair
• Dr. Josephine Briggs, Director NCCIH
• Dr. Patricia A. Grady, Director NINR
• Dr. Martha Somerman, Director NIDCR
• Dr. Nora Volkow, Director NIDA

Staff: Office of Pain Policy
• Dr. Linda Porter, Director
• Dr. Cheryse Sankar, Dr. Leah Pogorzala, and Dr. Khara Ramos, Pain Policy Analysts
The NIH Pain Consortium

Membership

National Cancer Institute
National Eye Institute
National Institute on Aging
National Institute on Alcohol Abuse and Alcoholism
National Institute of Arthritis and Musculoskeletal and Skin Diseases
National Institute of Biomedical Imaging and Bioengineering
National Institute of Child Health and Human Development
National Institute on Deafness and Other Communication Disorders
National Institute of Dental and Craniofacial Research
National Institute of Diabetes and Digestive and Kidney Disorders
National Institute on Drug Abuse
National Institute of General Medical Sciences
National Institute of Mental Health
National Institute of Minority Health and Disparities
National Institute of Neurological Disorders and Stroke
National Institute of Nursing Research
National Heart Lung and Blood Institute
National Center for Advancing Translational Science
National Center for Complementary & Integrative Health
John E. Fogarty International Center
Warren Grant Magnuson Clinical Center
Office of Science Policy and Analysis
Office of Behavioral and Social Sciences Research
Office of Technology Transfer
Office of Research on Women’s Health
Office of Rare Diseases
100 million American adults report chronic pain

25 million people report daily pain

6 million people report that pain interferes with lifestyle

635 billion dollars

Access to quality care is limited
Public Health: Opioid Abuse

3 of 4 people who used heroin in the past year took Rx opioids first


National Vital Statistics System, DEA’s Automation of Reports and Consolidated Orders System, SAMHSA’s TEDS
Federal Pain Research Strategy

Fulfill the IPRCC mandate

Identify critical gaps in basic and clinical research on the symptoms and causes of pain

Make recommendations to ensure that the activities of the National Institutes of Health and other Federal agencies are free of unnecessary duplication of effort

Complete the research recommendations of the IOM

Include an agenda for developing physiological, clinical, behavioral, psychological, outcomes, and health services research and appropriate links across these domains that align with the NPS.
The CONTINUUM of PAIN: the characterization of pain as a temporal process, beginning with an acute stage, which may progress to a chronic state of variable duration. Chronic pain may start early after injury or surgery, because of an individual’s susceptibility, through mechanisms activated in the acute setting.

WHAT HAPPENS AND TO WHOM?

WHY AND HOW DOES IT HAPPEN?

HOW TO MANAGE?
The panel noted there are no long-term studies on the effectiveness of opioids for pain, function, or quality of life, nor on the long-term safety of opioid use. There are documented adverse outcomes.

The challenge is to identify the conditions for which opioid use is most appropriate, the alternatives for those who are unlikely to benefit from opioids, and the best approach to ensuring that individual needs are met by a patient-centered health care system.
Partners Meeting Research Recommendations

- Identify the types of pain, diseases, and patients most likely to benefit and incur harm from opioids
- Develop and evaluate multidisciplinary pain interventions
- Develop and validate research measurement tools for identification of risk and outcomes related to long-term opioid use, which can be adapted for clinical settings
Limiting Abuse by Predicting Addiction

- **OPRM1** encodes for the target of opioids
- Can variants predict likelihood addiction?
- **OPRM1** gene variant
  - Affects receptor levels in brain
  - Associated with increased risk for addiction, overdose severity

Hancock et al., *Biol Psychiatry* 2015; 78.
Peciña et al., *Neuropsychopharmacology* 2015; 40.
NINR Pain Research Activities

• Mechanisms Underlying Pain Associated with Spinal Cord Injury (BDNF/trkB system)

• Posterior Hypothalamic Modulation of Pain (α-AR system)

• Daily Pain in Patients with Dementia (delirium and function)
Mechanisms, Models, Measurement, & Management in Pain Research (R01, R21) (PA-16-188, PA-16-187)

The purpose of this Funding Opportunity Announcement (FOA) is to inform the scientific community of the pain research interests of the various Institutes and Centers (ICs) at the National Institutes of Health (NIH) and to stimulate and foster a wide range of basic, clinical, and translational studies on pain as they relate to the missions of these ICs.
The NIH Pain Consortium

- Categorizing the severity of pain using questions from the 2012 National Health Interview Survey.
- The Prevalence and Characteristics of Fibromyalgia in the 2012 National Health Interview Survey.
- Out-Of-Pocket Expenditures on Complementary Health Approaches Associated With Painful Health Conditions in a Nationally Representative Adult Sample.
- Limited Health Knowledge as a Reason for Non-Use of Four Common Complementary Health Practices.
- Estimates of pain prevalence and severity in adults: United States
- Use of complementary health approaches among children aged 4-17 years in the United States: National Health Interview Survey
NIDCR Pain Research

- Pain pharmacogenomics research (SOPPRANO study)
  COMT alleles and response to propranolol

- Orofacial Pain: Prospective Evaluation and Risk Assessment (OPPERA)
  - Exciting results on:
    - Genetic risk factors for TMD based on GWAS studies
    - Psychological risk factors for TMD including heightened somatic awareness and stress
    - Sleep complaints associated with chronic pain
    - Differences in clinical pain perception between different ethnic groups
  - Women are more likely to transition from acute to chronic pain
Sex-based Differences in Pain Hypersensitivity

Different immune cells mediate mechanical pain hypersensitivity in male and female mice

Practice-Based Research Network: Opioids and Pain

National Dental Practice-Based Research Network

Engaging practitioners to generate the evidence base to improve precision health care

- Study to evaluate the opioid prescribing practices of dentists
- Prospective study to identify predictive factors related to pain from root canal treatment
Dr. David Clark, Stanford University

Challenges of Translational Pain Research

What Makes a Good Model?