

Symposia Date: Wednesday, April 12

Symposia Time: 2:00-3:30pm

Neuropathic ocular pain: A new look at the trigeminal nociceptive system from the periphery to the brain

Primary Content: Translational

Elizabeth R. Felix, PhD, Miami VA and University of Miami; Sue A. Aicher, PhD, Oregon Health & Science University; Eric A. Moulton, OD, PhD, Boston Children's Hospital, Harvard Medical School

The cornea contains the highest density of nociceptors of any tissue in the body, and pain can be evoked by even low threshold stimuli, making ocular surface pain perhaps one of the most intense pain experiences. Though many patients with chronic ocular dysesthesias including pain are diagnosed with “dry eye,” evidence over the past 15 years has mounted to support a more appropriate diagnosis of neuropathic ocular pain (NOP) for a large subgroup of this population. Dr. Felix will present an overview of research using clinical and laboratory assessments that have assisted with differential diagnosis/nociceptive phenotyping in this patient group, including validated pain and dysesthesia symptom questionnaires, quantitative sensory testing, and ocular exam findings. Dr. Aicher will discuss mechanisms associated with ocular pain after refractive surgery in humans and in animal models, exploring common features and translational insights. Finally, Dr. Moulton will present data from fMRI studies in humans showing activation in brain areas associated with nociceptive processing during light stimulation in patients with light-evoked unpleasantness or pain sensations. Dr. Galor (moderator) will provide a brief summary of presentations and the implications of work on NOP for the broader pain community.

Symposia Moderator: Anat Galor, MD MSPH

Chronic cancer pain, opioid management, and substance use disorder: intersecting challenges in a vulnerable population

Primary Content: Clinical

Hailey W. Bulls, PhD, CHallenges in Managing and Preventing Pain (CHAMPP) Clinical Research Center, University of Pittsburgh; Devon K. Check, PhD, Duke Cancer Institute, Duke University; Jessica S. Merlin, MD, PhD, MBA, Director, CHallenges in Managing and Preventing Pain (CHAMPP) Clinical Research Center, University of Pittsburgh

People with cancer are increasingly living longer due to advances in cancer therapies, and are at high risk for developing chronic pain. This “chronic cancer pain” may be from effects of the cancer itself (e.g., back pain from a bone metastasis) or its treatment (e.g., post-surgical pain, chemotherapy-induced peripheral neuropathy). Opioid management may be particularly complex for the management of chronic cancer pain. Substance use is associated with higher

risk of cancer diagnosis and opioids are first line therapy for cancer pain, leading to concerns about development of opioid misuse/use disorder. Additionally, regardless of risk, opioid and addiction stigma may negatively impact perceptions of opioid therapy among patients, caregivers, and clinicians, and management strategies may need to be different based on cancer-related factors such as prognosis. However, little is known about opioid prescribing in people with chronic cancer pain, including patient, caregiver, and clinician experiences, clinical epidemiology of high risk substance use/use disorder including opioids, and effective opioid management that balances opioid risks and benefits. Instead, research has focused on pain management in people with acute pain just after cancer diagnosis or at the end of life, or people with non-cancer pain. This lack of evidence makes people with chronic cancer pain particularly vulnerable to suboptimal pain management. Therefore, research and clinical guidance at this intersection is urgently needed. This symposium will begin with an overview of chronic cancer pain. Then, Dr. Bulls will review clinician, patient, and support person perspectives on the opioid management in people with chronic cancer pain and ways to improve it. Dr. Check will describe overall prevalence of high-risk substance use and use disorder (including opioids) in people with cancer, as well as subtypes of patients who may require the most need for integrated services and harm reduction interventions. Dr. Merlin will describe consensus-level management strategies for chronic cancer pain people with opioid misuse/use disorder, highlighting strategies specifically appropriate for patients likely to survive for years after their diagnoses.

Symposia Moderator: Jessica S. Merlin, MD, PhD, MBA

Pain and the Extracellular Matrix

Primary Content: Basic Science

Laura S Stone, PhD, University of Minnesota; Arkady Khoutorsky, PhD, DVM, McGill University; Maral Tajarian, PhD, Queens College, City University of New York

The field of pain research has focused on intracellular mechanisms to regulate neuronal functions in pathological pain rather than modulation of the extracellular matrix (ECM). The ECM not only provides structural support but is also involved in the regulation of neuronal excitability, as well as synaptic and structural plasticity. Changes in neuronal activity via modulation of the ECM have been shown to play key roles in physiological processes such as memory formation and pathologies such as Alzheimer's disease. In this symposium, we will highlight new insights into the role of the ECM in the generation and maintenance of chronic pain. The workshop will cover mechanisms of pain generation and regulation driven by the ECM in peripheral tissues (intervertebral discs; Dr. Laura Stone, PhD, U. of MN), spinal cord (Arkady Khoutorsky, PhD, DVM, McGill University) and supraspinal areas such as hippocampus (Maral Tajarian, PhD, CUNY). Upon completion of this session, attendees will be able to describe the extracellular matrix plasticity that parallels chronic pain in the intervertebral disc, spinal cord, and brain. The results presented at the symposium will delineate extracellular mechanisms of pain-related plasticity, thereby offering new therapeutic targets that could modulate already-established peripheral and central nervous system alterations in chronic pain.

Symposia Moderator: Laura S Stone

Racial disparities, underlying differential epigenetic pathways and mitigation approaches across pediatric and adult pain conditions

Primary Content: Diversity, Equity, and Inclusion

Keesha Powell-Roach, PhD, RN, Assistant Professor of Nursing, University of Tennessee Health Science Center (UTHSC), TN; Edwin N. Aroke, Ph.D., CRNA, FAANA, FAAN, Associate professor of Nursing, School of Nursing, University of Alabama at Birmingham, AL; Vidya Chidambaran, MD, MS, FASA, Professor of Anesthesia, Cincinnati Childrens Hospital, Cincinnati, OH; Monika Goyal MD, MSCE, Associate Professor of Pediatrics and Emergency Medicine, George Washington University, Washington DC

Inequities in pain experiences based on racial and ethnic groups are increasingly described in adult and pediatric settings. Mechanisms underlying these disparities may be patient, provider, or systemic-related, and there is an urgent need to understand these factors and mitigate them. Pain experiences are influenced by individual psychosocial, genetic, and environmental factors related to early life stress, discrimination, upbringing, etc. These gene environmental interactions are captured by epigenetic mechanisms such as DNA methylation. In this panel, we bring together a diverse spectrum of multidisciplinary speakers differing in clinical backgrounds (nursing, emergency medicine, anesthesia, pain). Their research includes clinical and translational research in a spectrum of pain conditions across the life span ranging from acute to chronic pain in different settings in racially diverse cohorts. We will discuss racial disparities in subjective pain experiences in pediatric acute and chronic pain conditions, epigenetic mechanisms underlying these differences, and pain management inequities in the ED and research employing systems approaches to mitigate them. We will start with snap talks (not exceeding 15 min per speaker) followed by an active panel discussion, audience polls, and audience questions (over 30 min) to enable a robust interactive format. We have included speakers of diverse backgrounds affiliated with premier academic institutions all over the country (Cincinnati (OH), DC, Alabama, Tennessee) in various stages of their careers. We anticipate that the timeliness and impact of the topic (including epigenetic mechanisms, mixed methods research, and mitigation strategies) will be of interest to the USASP audience. Our panel also targets a broad audience across pediatric/adult pain with interests ranging from basic science to clinical areas.

Symposia Moderator: Vidya Chidambaran

Long-term outcomes of children with chronic pain: adult health and functioning

Primary Content: Pediatric

Caitlin B. Murray, PhD, University of Washington, Department of Anesthesiology and Pain Medicine; Susmita Kashikar-Zuck, PhD, Professor, UC Department of Pediatrics; Amanda Stone, PhD, Assistant Professor of Anesthesiology, Vanderbilt University Medical Center

Pediatric chronic pain is a highly prevalent public health problem. Chronic pain is associated with disability during childhood, and evidence suggests that pain tends to persist into adulthood for many youth. Recent research demonstrates that long-term outcomes are highly variable in individuals with childhood-onset chronic pain, with some youth adapting well over the years, while others suffer from persistent disability and other adverse health outcomes into adulthood. More systematic investigation - including prospective longitudinal studies, are needed to understand early psychological and familial predictors of this variability in long-term outcomes of youth with chronic pain. Dr. Murray will discuss results from a longitudinal study of adolescents with chronic pain who were followed into emerging adulthood, indicating pain intensity, sleep quality, anxiety, and family functioning may play a crucial role in predicting long-term health and functioning. Dr. Kashikar-Zuck will discuss quantitative and qualitative results from a longitudinal study of trajectories of youth with juvenile-onset fibromyalgia and discuss patient perspectives on resilience factors that could be promoted to mitigate the negative impacts of pain into adulthood. Dr. Stone will present research evaluating outcomes of a pediatric abdominal pain cohort 20 years later, in adulthood. Dr. Tonya Palermo, an expert in behavioral intervention research in pediatric chronic pain will lead a 30-minute Q&A session about the implications of findings from these studies. In particular, she will focus on how results might be incorporated into designing more effective treatments and developing tailored treatment strategies for young adults with chronic pain. In alignment with the conference theme on “translational pain science approaches for the whole person,” the goal of this symposium is to highlight recent findings on modifiable psychosocial risk and resilience factors that shape long-term health outcomes of youth with chronic pain, and ways we may apply these results to enhance and tailor treatment for this population.

Symposia Moderator: Tonya Palermo, PhD