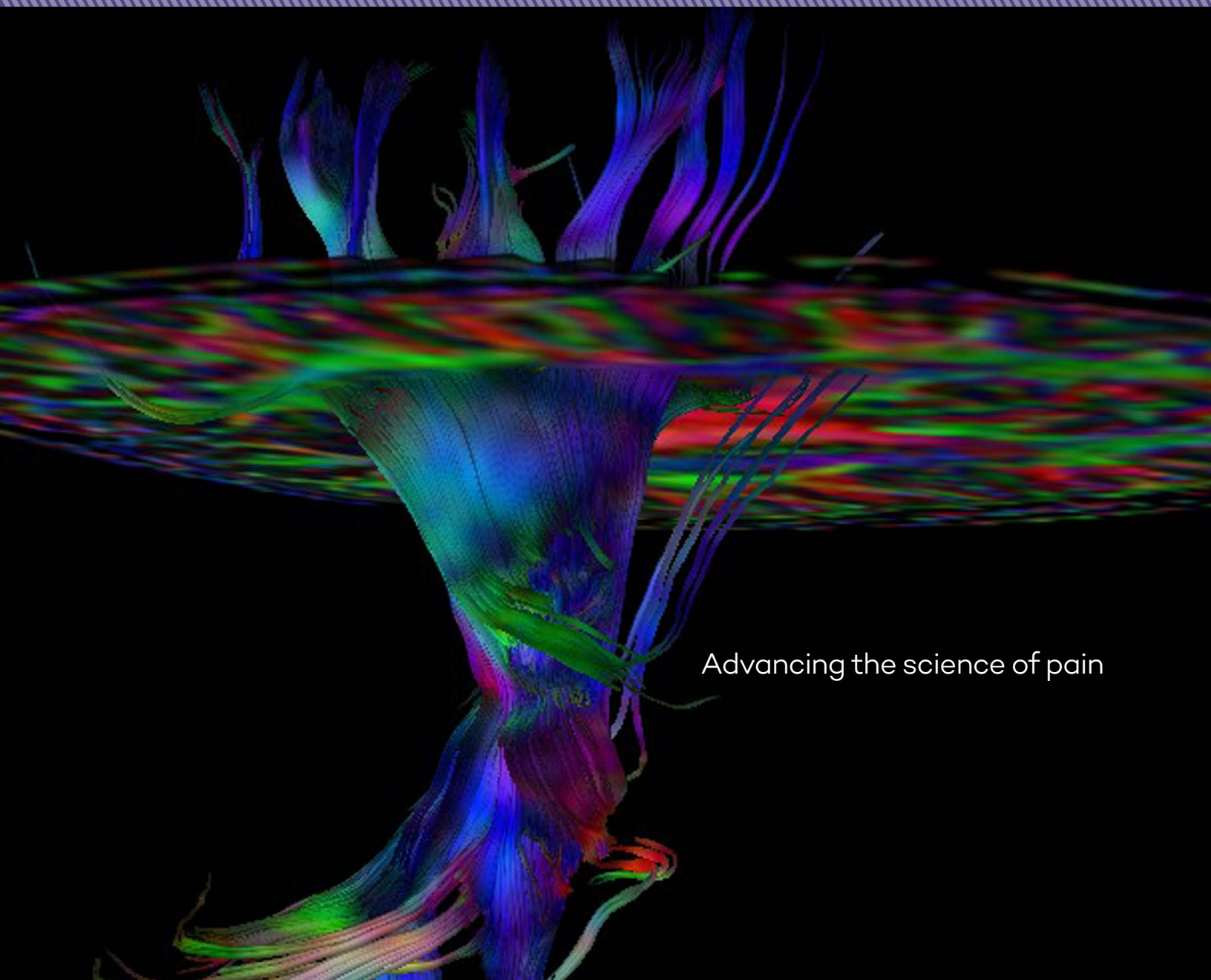


# Center for Translational Pain Research



Advancing the science of pain

# Center for Translational Pain Research

Pain is the most common reason that Americans visit a doctor. About 15 percent of Americans report daily pain such as back, neck, or shoulder pain. Others suffer with pain related to degenerative joint or spine disease, arthritis, cancer, diabetes, or pain following a stroke, trauma, surgery, or cancer treatment. While pain will typically dissipate on its own, in many instances pain becomes chronic, progressive, and debilitating for so many people.

At Northwestern University Feinberg School of Medicine, we are making research discoveries that will lead to new treatments to help the millions of individuals and families suffering from pain in its many forms. Through our new **Center for Translational Pain Research**, which is the first-of-its-kind nationally, we are endeavoring to develop a dynamic organizational structure that integrates research, education, and clinical practice and supports the training of future basic and clinical scientists.

With the leadership of director Apkar Apkarian, PhD, professor of Neuroscience, Anesthesiology, and Physical Medicine and Rehabilitation, we are integrating the efforts of investigators engaged in pain research across the Northwestern University community and are working to create a formal pathway to bring new therapies to patients via clinical research. Our vision is to become the nation's leader in pain science and care. We are focused on introducing scientific breakthroughs that change the course of pain medicine worldwide.

To accelerate the exciting trajectory of our efforts, the Center is growing in size and scope with the leadership and participation of faculty experts from our Departments of Anesthesiology, Neuroscience, Neurological Surgery, Neurology, Pharmacology, Physical Medicine and Rehabilitation, and Medical Social Sciences. As the Center for Translational Pain Research evolves, faculty across Northwestern who find common ground in collaborating might include social scientists, engineers, and psychologists, among others. To fully realize the potential of the Center for Translational Pain Research and sustain its future, we invite individuals and groups that care deeply about improving how pain is studied, diagnosed, and treated to consider investing in our work.

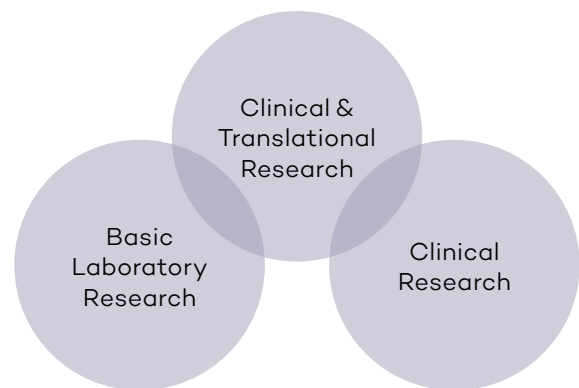
## Focus and Structure of the Center for Translational Pain Research

The overarching goal of the Center for Translational Pain Research is to expand our creative, clinically relevant, and high-quality research at Northwestern to:

- Foster an enhanced understanding of the mechanisms of pain;
- Develop new non-opioid treatments for managing and relieving acute and chronic pain conditions of various types, and
- Explore novel ways in which neuromodulation techniques and nerve blocks can be used to improve outcomes for patients.

Three core programs within our structure will help us to pursue and achieve these advances in pain medicine.

The **Basic Laboratory Research Core** will further knowledge of the cellular, sub-cellular, and brain anatomical basis for pain including the pathophysiological mechanisms for the conversion of acute and sub-acute pain to a chronic pain. This core will identify potential therapeutic targets that can foster the development of drug and non-drug therapies, which will be further investigated by the **Clinical and Translational Research Core**. Promising treatments will then be developed for human trials in the **Clinical Research Core**.



“Our center is a new, exciting phase for pain research at Northwestern. It is a timely and urgently needed structure that should quickly translate into new opportunities to grow research, education, and patient care within Feinberg and create a world-famous center with the intent of relieving pain suffering worldwide.”

Apkar V. Apkarian, PhD  
Director, Center for Translational Pain Research  
Professor of Neuroscience, Anesthesiology, and Physical Medicine and Rehabilitation

## The Prevalence of Pain in Our Society

- **In the US, chronic pain affects at least 116 million adults—that is more than the total population affected by heart disease, cancer, and diabetes combined.**
- **Pain costs the nation up to \$635 billion each year in medical treatment and lost productivity.**
- **Chronic pain is now a top source of disability in the US and a considerable health burden in the elderly.**
- **Because chronic pain has been commonly treated with opioids, addiction and substance use disorders have become major healthcare concerns nationally.** Overdose deaths involving prescription opioids have quadrupled since 1999, leading to opioid abuse being characterized as an “epidemic.” Yet, evidence for opioid efficacy in chronic pain patients is conspicuously lacking.
- **In children, chronic pain can affect emotional, psychological, physical, behavioral, and social development.** At the same time, the efficacy of pain treatments for children and whether they differ from that for adults have not been thoroughly evaluated.
- **Currently, we have few scientifically validated treatments available for those with chronic pain.** Most pharmacological treatments result in no more than a 30% decrease in pain in no more than 30% of the patients, accompanied with substantial side effects, and most of these studies are short-term, on the order of 4-12 weeks of observation of treatment effects.

The fundamental structure of the Center for Translational Pain Research will harness the collective expertise of the larger Northwestern University community from the colleges of Chemistry and Biomedical Engineering to the various schools encompassing the Social Sciences. Access to Lake Side Discovery, a partnership between Northwestern University and Deerfield Development, will help us promote the delivery of discovered compounds to patients. The Center also will offer innovative training programs for future basic scientists and clinical researchers. An executive committee consisting of senior faculty members from clinical and basic science disciplines will help to oversee and coordinate the Center’s activities.

## Pain Research At Northwestern

Our research programs in Pain are robust and have individually attracted international attention. Northwestern scientists and clinicians in the field of pain science and medicine are widely recognized as leaders in this field. Nationally, there is an urgent need to develop new, non-addictive effective treatments tailored specifically for distinct types of chronic pain. Given the enormous societal toll of chronic pain, there is an urgent need to advance our understanding of its underlying mechanisms and the effects of opioids and surgical procedures on the chronic pain state.

The Feinberg School of Medicine has contributed fundamental research demonstrating the brain circuitry changes that occur with chronic pain and its overlap with opioid addiction. These findings have provided the basis for a recent award to Dr. Apkarian from the National Institutes of Health (NIH) for the coordinated and interdisciplinary study of chronic pain mechanisms in animal models and in humans suffering from chronic pain. Combined, experimental results from Northwestern have provided potential *non-opioid* therapeutic strategies for the management of chronic pain and possible resolution of chronic pain states without the use of addicting drugs. Testing of these new therapies in patients is necessary to bring these new therapeutics to the clinical setting.

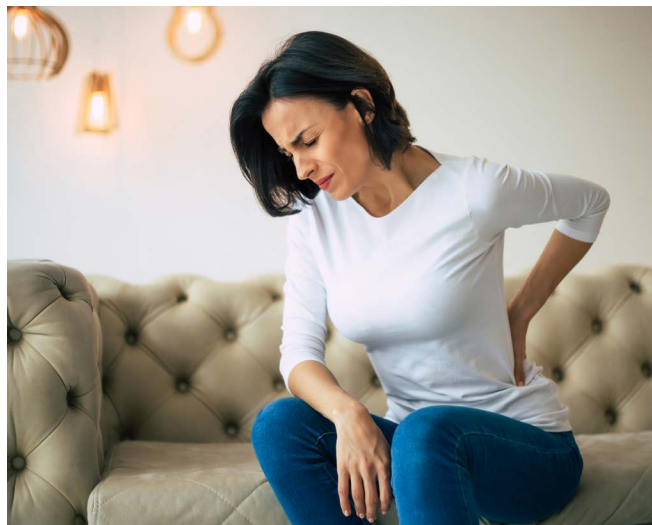
In the enclosed insert, we are pleased to share examples of exciting pain-focused research that is underway within the Center for Translational Pain Research. These studies are being led by some of our most accomplished and dedicated investigators.



## Clinical Pain Management

The outpatient Pain Medicine Center within the Department of Anesthesiology at Northwestern Medicine offers hope to patients with chronic pain and is an integral partner and collaborator with the Center for Translational Pain Research.

Through the Pain Medicine Center, a variety of modalities are used to treat pain including evidence-based interventional treatments like spinal or joint injections, nerve ablation therapies, intra-discal modulation procedures, vertebral augmentation, regenerative treatments with platelet rich plasma and stem cells, and neuromodulation techniques including spinal cord stimulation, dorsal root ganglion stimulation, peripheral nerve stimulation, and spinal drug delivery. Through the devoted efforts of our Pain Medicine team, the treatment goal is to restore or optimize a patient's physical functioning and quality of life with a long-term treatment plan when needed.



## Join Us—An Invitation for Your Partnership

At Northwestern University Feinberg School of Medicine, so many of the high-impact contributions we have made to advance medical research and education have been made possible by forward-looking donors and friends who have entrusted us with philanthropic support. We invite interested individuals and groups to join us as partners in our launch of the Center for Translational Pain Research. The Center has a bold vision to introduce pain breakthroughs that improve treatment options, clinical care, and, ultimately, outcomes for patients and their families across the globe.

*Philanthropic opportunities to advance the Center's urgent work include:*

- Leadership gifts of endowment and outright funds to support start-up packages to recruit the nation's top leaders in Pain Medicine, as well as to establish a prestigious endowed professorship in this field;
- Endowment and outright gifts that help support our training of postdoctoral fellows;
- Gifts to support promising basic science, clinical, and translational research projects to fuel innovation and discovery in the field of Pain Medicine.
- Philanthropic funds to support our clinical research staff, clinical research office, experimental pain clinic, and database development.

Through the generosity and foresight of our donors and friends, the Center for Translational Pain Research will have resources it needs to thrive, leading to the creation of intellectual property, awards of competitive research grants from the NIH and other funders, and the recruitment of leading scientists who can accelerate what we understand and know about pain, paving the way forward to a brighter future.

For more information about supporting the Center for Translational Pain Research, please contact:

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**Center for Translational Pain Research:** <https://www.feinberg.northwestern.edu/sites/pain/>