



## David Clark

Professor of Anesthesiology, Perioperative and Pain Medicine (MSD)

 NIH Biosketch available Online

### Bio

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#### BIO

My career is dedicated to improving the safety, effectiveness and availability of pain relief. Both the needs and opportunities in these areas are limitless. I have had the good fortune of working as a clinician, teacher and scientist at Stanford University and the Palo Alto VA hospital for more than two decades.

Much of my time is spent on laboratory, translational and clinical research. In the laboratory, we are pursuing several projects related to the questions of why pain sometimes becomes chronic after injuries and why opioids lose their effectiveness over time. Alterations in endogenous pain control mechanisms and the involvement of the adaptive system of immunity are central to these investigations. We would like to find ways to maximize functional recovery after surgery and other forms of trauma while minimizing the risks of analgesic use. This work involves local, national and international collaborations. Clinical trials work involves establishing the efficacy of novel forms of analgesic therapy as well as the comparative effectiveness of long-established approaches to controlling common forms of pain such as low back pain. This spectrum of pain-related pursuits continues to evolve with the rapid expansion of the field.

#### ACADEMIC APPOINTMENTS

- Professor - University Medical Line, Anesthesiology, Perioperative and Pain Medicine
- Member, Bio-X
- Member, Wu Tsai Neurosciences Institute

#### ADMINISTRATIVE APPOINTMENTS

- Vice-Chair for Academic Affairs, Stanford Department of Anesthesiology, Perioperative and Pain Medicine, (2022- present)
- Director, Pain Relief Service, VAPAHCS, (1998-2018)
- Vice-Chair for Research, Stanford Department of Anesthesiology, Perioperative and Pain Medicine, (2012-2022)

#### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Handling Editor, Anesthesiology (2013 - 2022)
- Member, American Pain Society (1998 - 2020)
- Member, Board of Directors, Palo Alto Institute for Research and Education (PAVIR) (2012 - 2022)
- Chairman, VAPAHCS Research and Development Committee (2012 - 2021)
- Member, Association of University Anesthesiologists (2006 - present)
- Member, International Association for the Study of Pain (1995 - present)

- Member, International Anesthesia Research Society (1993 - present)
- Member, American Society of Anesthesiologists (1993 - present)

## PROFESSIONAL EDUCATION

- Board Certification, ABA , Pain Management (1998)
- Board Certification, ABA , Anesthesiology (1996)
- MD, Vanderbilt University , Medicine (1992)
- PhD, Vanderbilt University , Pharmacology (1991)
- BA, Carleton College , Chemistry (1985)

## Teaching

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### STANFORD ADVISEES

#### Postdoctoral Faculty Sponsor

Hui Yuan

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Anesthesia (Fellowship Program)

## Publications

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### PUBLICATIONS

- **[EXPRESS] Autoinflammatory and Autoimmune Contributions to Complex Regional Pain Syndrome.** *Molecular pain*  
Clark, J. D., Tawfik, V., Tajerian, M., Kingery, W.  
2018: 1744806918799127
- **Just the FACTS: The Role of Diagnostic Blocks in Lumbar Facet Interventions.** *Anesthesiology*  
Brummett, C. M., Clark, J. D.  
2018
- **Exercise Reverses Nociceptive Sensitization, Upregulated Neuropeptide Signaling, Inflammatory Changes, Anxiety, and Memory Impairment in a Mouse Tibia Fracture Model.** *Anesthesiology*  
Shi, X., Guo, T., Li, W., Sahbaie, P., Rice, K. C., Sulima, A., Clark, J. D., Kingery, W. S.  
2018
- **Chronic Pain After Traumatic Brain Injury: Pathophysiology and Pain Mechanisms** *PAIN MEDICINE*  
Irvine, K., Clark, J.  
2018; 19 (7): 1315–33
- **Nociceptive and Cognitive Changes in a Murine Model of Polytrauma.** *The journal of pain : official journal of the American Pain Society*  
Sahbaie, P., Tajerian, M., Yang, P., Irvine, K. A., Huang, T., Luo, J., Wyss-Coray, T., Clark, J. D.  
2018
- **Reply to Dr Peltz.** *Journal of addiction medicine*  
Chu, L. F., Sun, J., Clemenson, A., Erlendson, M. J., Rico, T., Cornell, E., Obasi, H., Sayyid, Z. N., Encisco, E. M., Yu, J., Gamble, J. G., Clark, J. D.  
2018; 12 (3): 252–53
- **Traumatic Brain Injury Disrupts Pain Signaling in the Brainstem and Spinal Cord** *JOURNAL OF NEUROTRAUMA*  
Irvine, K., Sahbaie, P., Liang, D., Clark, J.  
2018
- **Neuropeptide regulation of adaptive immunity in the tibia fracture model of complex regional pain syndrome** *JOURNAL OF NEUROINFLAMMATION*  
Li, W., Guo, T., Shi, X., Bircklein, F., Schlereth, T., Kingery, W. S., Clark, J.

2018; 15: 105

- **Ondansetron does not prevent physical dependence in patients taking opioid medications chronically for pain control.** *Drug and alcohol dependence*  
Chu, L. F., Rico, T. n., Cornell, E. n., Obasi, H. n., Encisco, E. M., Vertelney, H. n., Gamble, J. G., Crawford, C. W., Sun, J. n., Clemenson, A. n., Erlendson, M. J., Okada, R. n., Carroll, et al  
2018; 183: 176–83
- **America's Opioid Epidemic: Supply and Demand Considerations** *ANESTHESIA AND ANALGESIA*  
Clark, D. J., Schumacher, M. A.  
2017; 125 (5): 1667–74
- **Nervous system delivery of antilyso-phosphatidic acid antibody by nasal application attenuates mechanical allodynia after traumatic brain injury in rats** *PAIN*  
Eisenried, A., Meidahl, A. C. N., Klukinov, M., Tzabazis, A. Z., Sabbadini, R. A., Clark, J., Yeomans, D. C.  
2017; 158 (11): 2181–88
- **Palonosetron and hydroxyzine pre-treatment reduces the objective signs of experimentally-induced acute opioid withdrawal in humans: a double-blinded, randomized, placebo-controlled crossover study** *The American Journal of Drug and Alcohol Abuse*  
Erlendson, M., D'Arcy, N., Encisco, E., Yu, J., Rincon-Cruz, L., Peltz, G., Clark, D. J., Chu, L. F.  
2016: 1-9
- **Three-dimensional imaging of dislocation propagation during crystal growth and dissolution** *Nature Materials*  
Clark, J. N., Ihli, J., Schenk, A. S., Kim, Y., Kulak, A. N., Campbell, J. M., Nisbit, G., Meldrum, F. C., Robinson, I. K.  
2015; 14: 780–784
- **Dynamic Imaging Using Ptychography** *Physical Review Letters*  
Clark, J. N., Huang, X., Harder, R. J., Robinson, I. K.  
2014; 112: 113901
- **Extracellular superoxide dismutase is important for hippocampal neurogenesis and preservation of cognitive functions after irradiation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Zou, Y., Corniola, R., Leu, D., Khan, A., Sahbaie, P., Chakraborti, A., Clark, D. J., Fike, J. R., Huang, T.  
2012; 109 (52): 21522-21527
- **Modulation of remifentanil-induced postinfusion hyperalgesia by the beta-blocker propranolol in humans** *PAIN*  
Chu, L. F., Cun, T., Ngai, L. K., Kim, J. E., Zamora, A. K., Young, C. A., Angst, M. S., Clark, D. J.  
2012; 153 (5): 974-981
- **Collecting and measuring wound exudate biochemical mediators in surgical wounds.** *Journal of visualized experiments : JoVE*  
Carvalho, B., Clark, D. J., Yeomans, D., Angst, M. S.  
2012
- **Continuous Subcutaneous Instillation of Bupivacaine Compared to Saline Reduces Interleukin 10 and Increases Substance P in Surgical Wounds After Cesarean Delivery** *ANESTHESIA AND ANALGESIA*  
Carvalho, B., Clark, D. J., Yeomans, D. C., Angst, M. S.  
2010; 111 (6): 1452-1459
- **Calcitonin-gene-related peptide stimulates stromal cell osteogenic differentiation and inhibits RANKL induced NF-kappa B activation, osteoclastogenesis and bone resorption** *BONE*  
Wang, L., Shi, X., Zhao, R., Halloran, B. P., Clark, D. J., Jacobs, C. R., Kingery, W. S.  
2010; 46 (5): 1369-1379
- **Designing an automated clinical decision support system to match clinical practice guidelines for opioid therapy for chronic pain** *IMPLEMENTATION SCIENCE*  
Trafton, J. A., Martins, S. B., Michel, M. C., Wang, D., Tu, S. W., Clark, D. J., Elliott, J., Vucic, B., Balt, S., Clark, M. E., Sintek, C. D., Rosenberg, J., Daniels, et al  
2010; 5
- **Substance P stimulates bone marrow stromal cell osteogenic activity, osteoclast differentiation, and resorption activity in vitro** *BONE*  
Wang, L., Zhao, R., Shi, X., Wei, T., Halloran, B. P., Clark, D. J., Jacobs, C. R., Kingery, W. S.

2009; 45 (2): 309-320

- **Pentoxifylline attenuates nociceptive sensitization and cytokine expression in a tibia fracture rat model of complex regional pain syndrome** *EUROPEAN JOURNAL OF PAIN*  
Wei, T., Sabsovich, I., Guo, T., Shi, X., Zhao, R., Li, W., Geis, C., Sommer, C., Kingery, W. S., Clark, D. J.  
2009; 13 (3): 253-262
- **TNF signaling contributes to the development of nociceptive sensitization in a tibia fracture model of complex regional pain syndrome type I** *PAIN*  
Sabsovich, I., Guo, T., Wei, T., Zhao, R., Li, X., Clark, D. J., Geis, C., Sommer, C., Kingery, W. S.  
2008; 137 (3): 507-519
- **Opioid-induced hyperalgesia in humans - Molecular mechanisms and clinical considerations** *CLINICAL JOURNAL OF PAIN*  
Chu, L. F., Angst, M. S., Clark, D.  
2008; 24 (6): 479-496
- **Local and systemic release of cytokines, nerve growth factor, prostaglandin E2, and substance P in incisional wounds and serum following cesarean delivery** *JOURNAL OF PAIN*  
Carvalho, B., Clark, D. J., Angst, M. S.  
2008; 9 (7): 650-657
- **Collecting and measuring nociceptive and inflammatory mediators in surgical wounds.** *Journal of visualized experiments : JoVE*  
Carvalho, B., Clark, D. J., Yeomans, D., Angst, M. S.  
2008
- **Genetic variants of the P-glycoprotein gene Abcb1b modulate opioid-induced hyperalgesia, tolerance and dependence** *PHARMACOGENETICS AND GENOMICS*  
Liang, D., Liao, G., Lighthall, G. K., Peltz, G., Clark, D. J.  
2006; 16 (11): 825-835
- **Characteristics and treatment of headache after traumatic brain injury - A focused review** *AMERICAN JOURNAL OF PHYSICAL MEDICINE & REHABILITATION*  
Lew, H. L., Lin, P., Fuh, J., Wang, S., Clark, D. J., Walker, W. C.  
2006; 85 (7): 619-627
- **Persistence of rock-derived nutrients in the wet tropical forests of La Selva, Costa Rica** *ECOLOGY*  
Porder, S., Clark, D. A., Vitousek, P. M.  
2006; 87 (3): 594-602
- **Latent plaque rupture in a patient undergoing stenting for acute coronary syndrome and diffuse coronary disease: A case report and review of literature** *CATHETERIZATION AND CARDIOVASCULAR INTERVENTIONS*  
Koizumi, T., Wilson, A. M., Clark, D. A., Fitzgerald, P. J.  
2006; 67 (2): 241-245
- **Opioid tolerance and hyperalgesia in chronic pain patients after one month of oral morphine therapy: A preliminary prospective study** *JOURNAL OF PAIN*  
Chu, L. F., Clark, D. J., Angst, M. S.  
2006; 7 (1): 43-48
- **Transient disruption of ventrolateral prefrontal cortex during verbal encoding affects subsequent memory performance** *JOURNAL OF NEUROPHYSIOLOGY*  
Kahn, I., Pascual-Leone, A., Theoret, H., Fregni, F., Clark, D., Wagner, A. D.  
2005; 94 (1): 688-698
- **Orientation of bound ligands in mannose-binding proteins - Implications for multivalent ligand recognition** *JOURNAL OF BIOLOGICAL CHEMISTRY*  
Ng, K. K., Kolatkar, A. R., Park-Snyder, S., Feinberg, H., Clark, D. A., Drickamer, K., Weis, W. I.  
2002; 277 (18): 16088-16095
- **Flying pigs and other possibilities** *Catheterization and cardiovascular interventions : official journal of the Society for Cardiac Angiography & Interventions*  
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2000; 51 (1): 10

- **BALLOON ANGIOPLASTY RESULTS IN INCREASED SEGMENTAL CORONARY DISTENSIBILITY - A LIKELY MECHANISM OF PERCUTANEOUS TRANSLUMINAL CORONARY ANGIOPLASTY** *JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY*  
Botas, J., Clark, D. A., Pinto, F., Chenzbraun, A., Fischell, T. A.  
1994; 23 (5): 1043-1052
- **THE ASSESSMENT AND TREATMENT OF PERFORMANCE ANXIETY IN MUSICIANS** *AMERICAN JOURNAL OF PSYCHIATRY*  
Clark, D. B., Agras, W. S.  
1991; 148 (5): 598-605
- **SURREPTITIOUS DRUG-USE BY PATIENTS IN A PANIC DISORDER STUDY** *AMERICAN JOURNAL OF PSYCHIATRY*  
Clark, D. B., Taylor, C. B., Roth, W. T., Hayward, C., Ehlers, A., MARGRAF, J., Agras, W. S.  
1990; 147 (4): 507-509
- **CARDIOVASCULAR AND SYMPTOMATIC REDUCTION EFFECTS OF ALPRAZOLAM AND IMIPRAMINE IN PATIENTS WITH PANIC DISORDER - RESULTS OF A DOUBLE-BLIND, PLACEBO-CONTROLLED TRIAL** *JOURNAL OF CLINICAL PSYCHOPHARMACOLOGY*  
Taylor, C. B., Hayward, C., King, R., Ehlers, A., MARGRAF, J., Maddock, R., Clark, D., Roth, W. T., Agras, W. S.  
1990; 10 (2): 112-118
- **TONIC AROUSAL AND ACTIVITY - RELATIONSHIPS TO PERSONALITY AND PERSONALITY-DISORDER TRAITS IN PANIC PATIENTS** *PSYCHIATRY RESEARCH*  
KING, R. J., BAYON, E. P., Clark, D. B., Taylor, C. B.  
1988; 25 (1): 65-72
- **Treadmill exercise test and ambulatory measures in panic attacks.** *American journal of cardiology*  
Taylor, C. B., King, R., Ehlers, A., MARGRAF, J., Clark, D., Hayward, C., Roth, W. T., Agras, S.  
1987; 60 (18): 48J-52J