



Cholawat Pacharinsak, DVM, PhD

Professor of Comparative Medicine

Bio

BIO

Cholawat Pacharinsak, DVM, PhD Professor and Director of Anesthesia, Pain Management, and Surgery, at Stanford University's Department of Comparative Medicine; he is a Diplomate of the American College of Veterinary Anesthesia and Analgesia (DACVAA). He received his DVM from Chulalongkorn University, Thailand and trained in an Anesthesiology/Pain Management residency program and received his Master's degree at Washington State University. He completed his PhD in Comparative and Molecular Biosciences from the University of Minnesota. Prior to arriving at Stanford, Dr. Pacharinsak was a faculty member in Anesthesiology and Pain Management at Michigan State University and Purdue University; and served as a Clinical Specialist at UCLA's David Geffen School of Medicine. His research focuses on understanding the neurobiology of cancer pain, chemotherapeutic-induced peripheral neuropathy, acute surgical pain models, and methods to improve clinical pain management e.g. sustained release analgesics supporting refinement. Research methodology includes electrophysiologic and behavioral techniques.

ACADEMIC APPOINTMENTS

- Professor - University Medical Line, Comparative Medicine
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Professor, Stanford University, (2026- present)
- Associate Professor, Stanford University, (2021-2026)
- Assistant Professor, Stanford University, (2011-2021)

HONORS AND AWARDS

- Distinction in Teaching Award, Stanford University Dept. of Comparative Medicine (December 2020)
- Board Certification, Diplomate American College of Veterinary Anesthesia and Analgesia (Dipl. ACVAA) (2010)

PROFESSIONAL EDUCATION

- Ph.D., University of Minnesota , Neurobiology of Pain
- Residency, Washington State University , Anesthesiology and Pain Management
- M.S., Washington State University , Pain Management
- D.V.M., Chulalongkorn University , Veterinary Medicine

Teaching

COURSES

2025-26

- Ouch it Hurts! The Comparative Neurobiology of Pain: COMPMED 89Q (Win)
- The Neurobiology of Pain: COMPMED 89SS (Sum)

2024-25

- The Neurobiology of Pain: COMPMED 89SS (Sum)

2023-24

- The Neurobiology of Pain: COMPMED 89SS (Sum)

2022-23

- Ouch it Hurts! The Comparative Neurobiology of Pain: COMPMED 89Q (Win)
- The Neurobiology of Pain: COMPMED 89SS (Sum)

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Anesthesia (Fellowship Program)
- Cardiovascular Medicine (Fellowship Program)

Publications

PUBLICATIONS

- **Effects of peripheral nerve block adjuvants with and without local anesthetic on ex vivo rodent nerve A-alpha/beta, A-delta, and C fiber activity.** *Regional anesthesia and pain medicine*
Dugan, M. Q., Dubus, M., Flippen, A. M., Catapusan, M. R., Thomas, Z., Sangwan, N., Klukinov, M., Pacharinsak, C., Yeomans, D., Anderson, T. A.
2026
- **Total Intravenous Anesthesia with Propofol Effectively Provides a Light Anesthesia Plane in Cynomolgus Male Monkeys (Macaca fascicularis) Undergoing Nociceptive Heat Stimulation.** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Zhang, M., Schwartz, K., Klukinov, M., Fisher, K. M., Darian-Smith, C., Franco, B., Crowley, M., Huss, M., Sharp, P., Jampachaisri, K., Yeomans, D. C., Pacharinsak, C.
2026: 1-9
- **The Analgesic Effect of Two Different Extended-Release Meloxicam Formulations for Attenuation of Hypersensitivity in Rats (Rattus norvegicus).** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Ge, Y., Alamaw, E. D., Jampachaisri, K., Sharp, P., Pacharinsak, C., Huss, M. K.
2025: 1-7
- **Tiletamine-Zolazepam for Total Intravenous Anesthesia in Sheep.** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Mocarski, E., Heng, K., Huss, M., Saenz, Y., Franco, B., Butts Pauly, K., Jampachaisri, K., Sharp, P., Pacharinsak, C.
2025: 1-6
- **Focused Ultrasound-Induced Peripheral Nerve Blockade: Duration of Changes to Thermal Withdrawal Latency and Nerve Structure After Focused Ultrasound Application to the Sciatic Nerve in a Rat Model of Acute Pain.** *Journal of neuroscience research*
Gao, G., Thomas, Z., Kantarci, H., Pacharinsak, C., Zuchero, J. B., Pauly, K. B., Yeomans, D. C., Anderson, T. A.
2025; 103 (9): e70079
- **Whole Nerve Electrophysiology and Analyses of A-alpha/beta, A-delta, and C Fiber Action Potentials.** *Current protocols*
Flippen, A., Dubus, M., Dugan, M., Catapusan, M. R., Sangwan, N., Klukinov, M., Pacharinsak, C., Yeomans, D., Anderson, T.
2025; 5 (8): e70190
- **Extended-release buprenorphine with bupivacaine effectively provides postoperative analgesia in a mouse laparotomy model** *THAI JOURNAL OF VETERINARY MEDICINE*

- Huss, M. K., Kerk, A., Cotton, R., Chum, H., Hsieh, M., Jampachaisri, K., Sharp, P., Pacharinsak, C.
2025; 55 (3)
- **Alfaxalone as a Total Intravenous Anesthesia Protocol in New Zealand White Rabbits (*Oryctolagus cuniculus*) Improves Cardiovascular Stability Compared to Isoflurane.** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Tsai, J. Y., Palomera, E. E., Kundo, J. P., Jampachaisri, K., Pacharinsak, C., Reyes, N. L.
2025: 1-8
 - **Comparison of Dexmedetomidine/Morphine and Xylazine/Morphine as Premedication in Isoflurane-Anesthetized Sheep.** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Akaraphutiporn, E., Bunnag, P., Limprasutr, V., Rattanapinyopituk, K., Durongphongtorn, S., Pablo, L. S., Sharp, P., Pacharinsak, C., Wangdee, C.
2025: 1-7
 - **Perspective integration capability: A valid and reliable measurement instrument for assessing knowledge integration readiness in interdisciplinary collaborations** *JOURNAL OF CLINICAL AND TRANSLATIONAL SCIENCE*
Campo, M., Lant, T. K.
2025; 9 (1): e93
 - **Analgesic Efficacy of Oral Carprofen-Treated Gel and Tablets for an Incisional Pain Model in NSG Mice** *JOURNAL OF THE AMERICAN ASSOCIATION FOR LABORATORY ANIMAL SCIENCE*
Alamaw, E. D., Tien, K., Zhang, M., Ge, Y., Gorman, G., Nagamine, C. M., Jampachaisri, K., Ray, R. R., Pacharinsak, C., Huss, M. K.
2025; 64 (2): 228-240
 - **Efficacy and Effects of High-Dose Carprofen after Plantar Incision in C57BL/6J Mice** *JOURNAL OF THE AMERICAN ASSOCIATION FOR LABORATORY ANIMAL SCIENCE*
Cotton, R. M., Casey, K. M., Alamaw, E., Gates, K., Jampachaisri, K., Garner, J. P., Kendall, L., Pacharinsak, C., Huss, M. K.
2025; 64 (2): 204-211
 - **An Overview of Anesthetic Procedures for Ferret (*Mustela putorius furo*) Preclinical Brain MRI: A Call for Standardization.** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Celdran-Bonafonte, D., O'Connell, K. A., Dieckhaus, L., Mocarski, E., Adras, N. M., Hutchinson, E. B., Pacharinsak, C.
2025; 64 (1): 16-28
 - **High Shear Stress Reduces ERG Causing Endothelial-Mesenchymal Transition and Pulmonary Arterial Hypertension.** *Arteriosclerosis, thrombosis, and vascular biology*
Shinohara, T., Moonen, J. R., Chun, Y. H., Lee-Yow, Y. C., Okamura, K., Szafron, J. M., Kaplan, J., Cao, A., Wang, L., Guntur, D., Taylor, S., Isobe, S., Dong, et al
2024
 - **Tiletamine/Zolazepam and Ketamine with Dexmedetomidine (TKD) Cocktail Is as Effective as Tiletamine/Zolazepam and Ketamine with Xylazine (TKX) in Providing Pig General Anesthesia.** *Animals : an open access journal from MDPI*
Akaraphutiporn, E., Durongphongtorn, S., Jampachaisri, K., Sharp, P., Pacharinsak, C., Wangdee, C.
2024; 14 (19)
 - **General Anesthesia Induced by a Combination of Medetomidine/Vatinoxan with Ketamine and Buprenorphine-ER in C57BL/6J Mice (*Mus musculus*).** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Tien, K., Franco, B., Alamaw, E. D., Jampachairsi, K., Casey, K., Huss, M., Pacharinsak, C.
2024
 - **Mouse Anesthesia and Analgesia.** *Current protocols*
Schwartz, K., Pacharinsak, C.
2024; 4 (4): e1006
 - **Carprofen Attenuates Postoperative Mechanical and Thermal Hypersensitivity after Plantar Incision in Immunodeficient NSG Mice.** *Comparative medicine*
Alamaw, E. D., Casey, K. M., Tien, K., Franco, B. D., Gorman, G., Cotton, R. M., Nagamine, C., Jampachaisri, K., Sharp, P., Pacharinsak, C., Huss, M. K.
2024
 - **Comparing Three Formulations of Buprenorphine in an Incisional Pain Model in Mice.** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Lopez-Echeverria, G., Alamaw, E., Gorman, G., Jampachaisri, K., Huss, M. K., Pacharinsak, C.

2023

- **Effects of atipamezole on selected physiologic parameters in cynomolgus macaques (*Macaca fascicularis*).** *Journal of medical primatology*
Schwartz, K., Zhang, M., Franco, B., Jampachaisri, K., Cotton, R. M., Huss, M. K., Fisher, K. M., Darian-Smith, C., Sharp, P., Pablo, L., Pacharinsak, C.
2023
- **Assessment of a Combination of Tiletamine/ Zolazepam, Ketamine, and Dexmedetomidine for Anesthesia of Swine (*Sus domesticus*).** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Bunnag, N., Akaraphutiporn, E., Durongphongtorn, S., Soontornvipart, K., Sharp, P., Pacharinsak, C., Wangdee, C.
2023
- **Focused ultrasound-induced inhibition of peripheral nerve fibers in an animal model of acute pain.** *Regional anesthesia and pain medicine*
Anderson, T. A., Pacharinsak, C., Vilches-Moure, J., Kantarci, H., Zuchero, J. B., Butts-Pauly, K., Yeomans, D.
2023
- **Bupivacaine as a euthanasia agent for African Clawed Frogs (*Xenopus laevis*).** *PloS one*
Navarro, K., Jampachaisri, K., Chu, D., Pacharinsak, C.
2022; 17 (12): e0279331
- **Efficacy of Supplemental Diet Gels for Preventing Postoperative Weight Loss in Mice (*Mus musculus*).** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Gates, K. V., Alamaw, E., Jampachaisri, K., Huss, M. K., Pacharinsak, C.
2022
- **A Review of Long-acting Parenteral Analgesics for Mice and Rats.** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Huss, M. K., Pacharinsak, C.
2022
- **Dexmedetomidine Effectively Sedates Asian Elephants (*Elephas maximus*).** *Animals : an open access journal from MDPI*
Buranapim, N., Kulnanan, P., Chingpathomkul, K., Angkawanish, T., Chansitthiwet, S., Langkaphin, W., Sombutputorn, P., Monchaivanakit, N., Kasemjai, K., Namwongprom, K., Boonprasert, K., Bansiddhi, P., Thitaram, et al
2022; 12 (20)
- **Efficacy of 3 Buprenorphine Formulations for the Attenuation of Hypersensitivity after Plantar Incision in Immunodeficient NSG Mice.** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Arthur, J. D., Alamaw, E. D., Jampachaisri, K., Sharp, P., Nagamine, C. M., Huss, M. K., Pacharinsak, C.
2022
- **Use of Ketamine or Xylazine to Provide Balanced Anesthesia with Isoflurane in C57BL/6J Mice.** *Journal of the American Association for Laboratory Animal Science : JAALAS*
David, E. M., Pacharinsak, C., Jampachaisri, K., Hagan, L., Marx, J. O.
2022
- **Anesthetic effects of dexmedetomidine-tiletamine/zolazepam combination in cats undergoing ovariohysterectomy** *THAI JOURNAL OF VETERINARY MEDICINE*
Jiwlawat, N., Pacharinsak, C., Durongphongtorn, S.
2022; 52 (2): 267-274
- **Extended-release Buprenorphine, an FDA-indexed Analgesic, Attenuates Mechanical Hypersensitivity in Rats (*Rattus norvegicus*).** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Alamaw, E. D., Franco, B. D., Jampachaisri, K., Huss, M. K., Pacharinsak, C.
1800; 61 (1): 81-88
- **Effectiveness of two extended-release buprenorphine formulations during postoperative period in neonatal rats.** *PloS one*
Zhang, M., Alamaw, E., Jampachaisri, K., Huss, M., Pacharinsak, C.
2022; 17 (10): e0276327
- **Mouse Anesthesia: The Art and Science.** *ILAR journal*
Navarro, K. L., Huss, M., Smith, J. C., Sharp, P., Marx, J. O., Pacharinsak, C.
2021

- **Lipid bound extended release buprenorphine (high and low doses) and sustained release buprenorphine effectively attenuate post-operative hypersensitivity in an incisional pain model in mice (*Mus musculus*).** *Animal models and experimental medicine*
Navarro, K., Jampachaisri, K., Huss, M., Pacharinsak, C.
2021; 4 (2): 129-137
- **Tiletamine/zolazepam and dexmedetomidine with tramadol provide effective general anesthesia in rats.** *Animal models and experimental medicine*
Limprasutr, V., Sharp, P., Jampachaisri, K., Pacharinsak, C., Durongphongtom, S.
2021; 4 (1): 40–46
- **Sustained release buprenorphine effectively attenuates postoperative hypersensitivity in an incisional pain model in neonatal rats (*Rattus norvegicus*).** *PloS one*
Blaney, A. n., Jampachaisri, K. n., Huss, M. K., Pacharinsak, C. n.
2021; 16 (2): e0246213
- **Differential effects of four intramuscular sedatives on cardiorespiratory stability in juvenile guinea pigs (*Cavia porcellus*).** *PloS one*
Sixtus, R. P., Pacharinsak, C., Gray, C. L., Berry, M. J., Dyson, R. M.
2021; 16 (11): e0259559
- **Buprenorphine, but not lidocaine, effectively attenuates post-operative thermal hypersensitivity in an incisional model in neonatal rats (*Rattus norvegicus*).** *SCANDINAVIAN JOURNAL OF LABORATORY ANIMAL SCIENCE*
Katz, E. M., Huss, M. K., Jampachaisri, K., Pacharinsak, C.
2021; 47 (1): 1–11
- **The Stability and Efficacy of Tricaine Methanesulfonate (MS222) Solution After Long-Term Storage** *JOURNAL OF THE AMERICAN ASSOCIATION FOR LABORATORY ANIMAL SCIENCE*
Katz, E. M., Chu, D. K., Casey, K. M., Jampachaisri, K., Felt, S. A., Pacharinsak, C.
2020; 59 (4): 393–400
- **Effects of Standard and Sustained-release Buprenorphine on the Minimum Alveolar Concentration of Isoflurane in C57BL/6 Mice.** *Journal of the American Association for Laboratory Animal Science : JAALAS*
LaTourette, P. C., David, E. M., Pacharinsak, C., Jampachaisri, K., Smith, J. C., Marx, J. O.
2020; 59 (3): 298–304
- **High dose propofol effectively euthanizes zebrafish (*Danio rerio*).** *THAI JOURNAL OF VETERINARY MEDICINE*
Chu, D. K., Jampachaisri, K., Pacharinsak, C.
2020; 50 (1): 13–16
- **Use of Flavored Tablets of Gabapentin and Carprofen to Attenuate Postoperative Hypersensitivity in an Incisional Pain Model in Rats (*Rattus norvegicus*).** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Zude, B. P., Jampachaisri, K., Pacharinsak, C.
2020; 59 (2): 163–69
- **Continuous Rate Infusion of Alfaxalone during Ketamine-Xylazine Anesthesia in Rats.** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Heng, K. n., Marx, J. O., Jampachaisri, K. n., Huss, M. K., Pacharinsak, C. n.
2020; 59 (2): 170–75
- **Doppler and oscillometric mean blood pressure best represent direct blood pressure measurements in anesthetized rhesus macaques (*Macaca mulatta*).** *Journal of medical primatology*
Kang, S. C., Jampachaisri, K., Pacharinsak, C.
2019
- **Influence of Pain and Analgesia on Orthopedic and Wound-healing Models in Rats and Mice.** *Comparative medicine*
Huss, M. K., Felt, S. A., Pacharinsak, C. n.
2019
- **Use of Liposomal Bupivacaine for Postoperative Analgesia in an Incisional Pain Model in Rats (*Rattus norvegicus*).** *Journal of the American Association for Laboratory Animal Science : JAALAS*
Kang, S. C., Jampachaisri, K., Seymour, T. L., Felt, S. A., Pacharinsak, C.
2017; 56 (1): 63-68

- **Handbook of Laboratory Animal Anesthesia and Pain Management: Rodents**
edited by Pacharinsak, C., Smith, J. C.
CRC Press Taylor & Francis Group.2017
- **Postoperative Analgesia Due to Sustained-Release Buprenorphine, Sustained-Release Meloxicam, and Carprofen Gel in a Model of Incisional Pain in Rats (*Rattus norvegicus*)** *JOURNAL OF THE AMERICAN ASSOCIATION FOR LABORATORY ANIMAL SCIENCE*
Seymour, T. L., Adams, S. C., Felt, S. A., Jampachaisri, K., Yeomans, D. C., Pacharinsak, C.
2016; 55 (3): 300-305
- **The Physiologic Effects of Isoflurane, Sevoflurane, and Hypothermia Used for Anesthesia in Neonatal Rats (*Rattus norvegicus*).** *Journal of the American Association for Laboratory Animal Science*
Huss, M. K., Chum, H. H., Chang, A. G., Jampachaisri, K., Pacharinsak, C.
2016; 55 (1): 83-88
- **Mouse anesthesia and analgesia.** *Current protocols in mouse biology*
Adams, S., Pacharinsak, C.
2015; 5 (1): 51-63
- **Antinociceptive Effects of Sustained-Release Buprenorphine in a Model of Incisional Pain in Rats (*Rattus norvegicus*).** *Journal of the American Association for Laboratory Animal Science*
Chum, H. H., Jampachaisri, K., McKeon, G. P., Yeomans, D. C., Pacharinsak, C., Felt, S. A.
2014; 53 (2): 193-197
- **Mechanisms of Cancer Pain** *Pain Management in Veterinary Practice*
Pacharinsak, C., Beitz, A. J.
edited by Egger, C. M., Love, L., Doherty, T.
2013
- **Pain Management** *Pocket Handbook of Nonhuman Primate Clinical Medicine*
Pacharinsak, C., Sharp, P.
edited by Courtney, A.
CRC Press Taylor & Francis Group.2013: 35-54
- **Anesthesia in Nonhuman Primates** *Pocket Handbook of Nonhuman Primate Clinical Medicine*
Pacharinsak, C., Sharp, P.
edited by Courtney, A.
CRC Press Taylor & Francis Group.2013; 1ST: 1-34
- **Endotracheal intubation in swine** *LAB ANIMAL*
Chum, H., Pacharinsak, C.
2012; 41 (11): 309-311
- **Microfluidic Single-Cell Analysis Shows That Porcine Induced Pluripotent Stem Cell-Derived Endothelial Cells Improve Myocardial Function by Paracrine Activation** *CIRCULATION RESEARCH*
Gu, M., Nguyen, P. K., Lee, A. S., Xu, D., Hu, S., Plews, J. R., Han, L., Huber, B. C., Lee, W. H., Gong, Y., de Almeida, P. E., Lyons, J., Ikeno, et al
2012; 111 (7): 882-893
- **Analgesic Effects of Sustained Release Buprenorphine in an Incisional Model of Hyperalgesia in Rats (*Rattus norvegicus*)**
Chum, H., McKeon, G., Yeomans, D. C., Jampachaisri, K., Pacharinsak, C., Felt, S.
AMER ASSOC LABORATORY ANIMAL SCIENCE.2012: 692-92
- **Differential modulation of neurons in the rostral ventromedial medulla by neurokinin-1 receptors** *JOURNAL OF NEUROPHYSIOLOGY*
Brink, T. S., Pacharinsak, C., Khasabov, S. G., Beitz, A. J., Simone, D. A.
2012; 107 (4): 1210-1221
- **Preclinical Derivation and Imaging of Autologously Transplanted Canine Induced Pluripotent Stem Cells** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Lee, A. S., Xu, D., Plews, J. R., Nguyen, P. K., Nag, D., Lyons, J. K., Han, L., Hu, S., Lan, F., Liu, J., Huang, M., Narsinh, K. H., Long, et al
2011; 286 (37): 32697-32704

- **Comparison of rectal and tympanic core body temperature measurement in adult Guyanese squirrel monkeys (*Saimiri sciureus*)** *JOURNAL OF MEDICAL PRIMATOLOGY*
Long, C. T., Pacharinsak, C., Jampachaisri, K., McKeon, G. P., Howard, A. M., Albertelli, M. A., Felt, S. A.
2011; 40 (2): 135-141
- **Analgesic Effects of Tramadol, Tramadol-Gabapentin, and Buprenorphine in an Incisional Model of Pain in Rats (*Rattus norvegicus*)** *JOURNAL OF THE AMERICAN ASSOCIATION FOR LABORATORY ANIMAL SCIENCE*
McKeon, G. P., Pacharinsak, C., Long, C. T., Howard, A. M., Jampachaisri, K., Yeomans, D. C., Felt, S. A.
2011; 50 (2): 192-197
- **Cannabinoid Modulation of Cutaneous A delta Nociceptors During Inflammation** *JOURNAL OF NEUROPHYSIOLOGY*
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2008; 100 (5): 2794-2806
- **NK-1 receptors in the rostral ventromedial medulla contribute to hyperalgesia produced by intraplantar injection of capsaicin** *PAIN*
Pacharinsak, C., Khasabov, S. G., Beitz, A. J., Simone, D. A.
2008; 139 (1): 34-46
- **Animal models of cancer pain** *COMPARATIVE MEDICINE*
Pacharinsak, C., Beitz, A.
2008; 58 (3): 220-233
- **Effective Pain Management in Small Animals** *15th Congress of the Federation-of-Asian-Veterinary-Association/FAV-OIE Joint Symposium on Emerging Diseases*
Pacharinsak, C.
THAI VETERINARY MED ASSOC ROYAL PATRONAGE.2008: S85-S85
- **Postoperative analgesia in dogs receiving epidural morphine plus medetomidine** *JOURNAL OF VETERINARY PHARMACOLOGY AND THERAPEUTICS*
Pacharinsak, C., Greene, S. A., Keegan, R. D., Kalivas, P. W.
2003; 26 (1): 71-77