



Vivianne Tawfik

Assistant Professor of Anesthesiology, Perioperative and Pain Medicine (Adult Pain) at the Stanford University Medical Center

CLINICAL OFFICES

- **Anesthesia**

300 Pasteur Dr Rm H3580

MC 5640

Stanford, CA 94305

Tel (650) 723-4000 **Fax** (650) 725-8544

Bio

BIO

Vivianne Tawfik, MD, PhD is a board certified Anesthesiologist and Pain Medicine physician who specializes in the treatment of complex chronic pain disorders including chronic post-operative pain, complex regional pain syndrome and peripheral nerve injury.

She obtained her MD and PhD in Neuroscience, with a focus on basic pain mechanisms, at Dartmouth Medical School before joining the Stanford Department of Anesthesiology, Perioperative & Pain Medicine as an anesthesiology resident in the Fellowship in Anesthesia Research and Medicine (FARM) program, of which she now serves as the Director. After completion of her subspecialty fellowship training in Pain Medicine, Dr. Tawfik joined the faculty at Stanford and continues to research the immune contribution to persistent pain while treating patients suffering from chronic pain.

She enjoys science, sushi and snowboarding in her free time.

CLINICAL FOCUS

- Anesthesiology
- Pain Medicine

ACADEMIC APPOINTMENTS

- Assistant Professor - Med Center Line, Anesthesiology, Perioperative and Pain Medicine
- Member, Bio-X
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Director, Fellowship in Anesthesia Research & Medicine (FARM), Department of Anesthesiology, Perioperative & Pain Medicine, (2018- present)
- Assistant Director, Fellowship in Anesthesia Research & Medicine (FARM), Department of Anesthesiology, Perioperative and Pain Medicine, (2015-2018)

HONORS AND AWARDS

- Award in Pain, Rita Allen Foundation (2019-2022)

PROFESSIONAL EDUCATION

- Board Certification: Pain Management, American Board of Anesthesiology (2015)
- Fellowship, Stanford Hospital and Clinics , Pain Medicine (2015)
- Fellowship, Stanford Hospital and Clinics , Research (2014)
- Board Certification: Anesthesiology, American Board of Anesthesiology (2014)
- Residency, Stanford Hospital and Clinics , Anesthesiology (2013)
- M.D./Ph.D., Dartmouth Medical School , Pharmacology/Neuroscience (2009)
- Internship: Dartmouth Hitchcock Medical Center (2010) NH

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My overall research interest is to understand how the immune system interacts with the nervous system after injury to promote the transition from acute to chronic pain. In my clinical practice I care for patients with persistent pain that often occurs after minor trauma such as fracture or surgery. Using basic science approaches including whole system immune phenotyping with mass cytometry and genetic manipulation of peripheral and central immune cells, we seek to dissect the temporal and tissue-specific contribution of these cells to either promotion or inhibition of healing.

CLINICAL TRIALS

- Use of PET/MR Imaging in Chronic Pain, Recruiting
- [18F]FTC-146 PET/MRI in Healthy Volunteers and in CRPS and Sciatica, Not Recruiting

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Lauren Donovan, Shaogen Wu

Doctoral Dissertation Advisor (NonAC)

Janelle Doyle

Postdoctoral Research Mentor

Lauren Donovan, Shaogen Wu

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Anesthesia (Fellowship Program)
- Neurosciences (Phd Program)
- Pain Management (Fellowship Program)

Publications

PUBLICATIONS

- **Predictors of post-anaesthesiology residency research productivity: preliminary report.** *British journal of anaesthesia*
Haight, E. S., Chen, F., Tanaka, P., Brock-Utne, J. G., Macario, A., Sun, E. C., Tawfik, V. L.

2019

- **Cell-specific overexpression of COMT in dopaminergic neurons of Parkinson's disease.** *Brain : a journal of neurology*
Kuzumaki, N., Suda, Y., Iwasawa, C., Narita, M., Sone, T., Watanabe, M., Maekawa, A., Matsumoto, T., Akamatsu, W., Igarashi, K., Tamura, H., Takeshima, H., Tawfik, et al
2019; 142 (6): 1675–89
- **18F-FDG PET/MRI of patients with chronic pain alters management.**
Cipriano, P., Yoon, D., Carroll, I., Curtin, C., Tawfik, V., Xu, Y., Biswal, S.
SOC NUCLEAR MEDICINE INC.2019
- **Musculoskeletal changes on [18F]FDG PET/MRI from complex regional pain syndrome in foot**
Yoon, D., Xu, Y., Cipriano, P., Tawfik, V., Curtin, C., Carroll, I., Biswal, S.
SOC NUCLEAR MEDICINE INC.2019
- **Microglial Modulation as a Target for Chronic Pain: From the Bench to the Bedside and Back.** *Anesthesia and analgesia*
Haight, E. S., Forman, T. E., Cordonnier, S. A., James, M. L., Tawfik, V. L.
2019; 128 (4): 737–46
- **Morphine Exacerbates Postfracture Nociceptive Sensitization, Functional Impairment, and Microglial Activation in Mice** *ANESTHESIOLOGY*
Li, W., Irvine, K., Sahbaie, P., Guo, T., Shi, X., Tawfik, V. L., Kingery, W. S., Clark, J.
2019; 130 (2): 292–308
- **Chronic Pain Management in the Elderly.** *Anesthesiology clinics*
Schwan, J., Sclafani, J., Tawfik, V. L.
2019; 37 (3): 547–60
- **Longitudinal TSPO-PET imaging of peripheral and central myeloid cells in a mouse model of complex regional pain syndrome.** *Pain*
Cropper, H. C., Johnson, E. M., Haight, E., Cordonnier, S. A., Chaney, A. M., Forman, T. E., Biswal, A., Stevens, M. Y., James, M. L., Tawfik, V. L.
2019
- **Morphine Exacerbates Postfracture Nociceptive Sensitization, Functional Impairment, and Microglial Activation in Mice.** *Anesthesiology*
Li, W., Irvine, K., Sahbaie, P., Guo, T., Shi, X., Tawfik, V. L., Kingery, W. S., Clark, J. D.
2018
- **[EXPRESS] Autoinflammatory and Autoimmune Contributions to Complex Regional Pain Syndrome.** *Molecular pain*
Clark, J. D., Tawfik, V., Tajerian, M., Kingery, W.
2018: 1744806918799127
- **Functional Divergence of Delta and Mu Opioid Receptor Organization in CNS Pain Circuits** *NEURON*
Wang, D., Tawfik, V. L., Corder, G., Low, S. A., Francois, A., Basbaum, A. I., Scherrer, G.
2018; 98 (1): 90–+
- **TEMPORAL CONTROL OF MICROGLIAL REACTIVITY REVEALS SEX-INDEPENDENT FUNCTIONAL CONTRIBUTION OF MICROGLIA TO LONG-LASTING PAIN**
Takemura, Y., Clark, D., Forman, T., Haight, E., Tawfik, V.
LIPPINCOTT WILLIAMS & WILKINS.2018: 437
- **Activation of ventral tegmental area dopaminergic neurons reverses pathological allodynia resulting from nerve injury or bone cancer** *MOLECULAR PAIN*
Watanabe, M., Narita, M., Hamada, Y., Yamashita, A., Tamura, H., Ikegami, D., Kondo, T., Shinzato, T., Shimizu, T., Fukuchi, Y., Muto, A., Okano, H., Yamanaka, et al
2018; 14: 1744806918756406
- **Successful treatment of chronic knee pain following localization by a sigma-1 receptor radioligand and PET/MRI: a case report** *JOURNAL OF PAIN RESEARCH*
Cipriano, P., Lee, S., Yoon, D., Shen, B., Tawfik, V., Curtin, C., Dragoo, J. L., James, M., Mccurdy, C., Chin, F., Biswal, S.
2018; 11: 2353–56
- **Loss of mu opioid receptor signaling in nociceptors, but not microglia, abrogates morphine tolerance without disrupting analgesia** *NATURE MEDICINE*
Corder, G., Tawfik, V. L., Wang, D., Sypek, E. I., Low, S. A., Dickinson, J. R., Sotoudeh, C., Clark, J. D., Barres, B. A., Bohlen, C. J., Scherrer, G.

2017; 23 (2): 164-173

- **Complex management of a patient with refractory primary erythromelalgia lacking a SCN9A mutation** *JOURNAL OF PAIN RESEARCH*
Low, S. A., Robbins, W., Tawfik, V. L.
2017; 10: 973-977
- **(118) Physical and psychological predictors of dysfunction in complex regional pain syndrome (CRPS): a Collaborative Health Outcomes Information Registry (CHOIR) study.** *journal of pain*
Adelus, M., Sturgeon, J., RICO, T., Tawfik, V., Mackey, S.
2016; 17 (4S): S5-?
- **(218) Characterization of patients with complex regional pain syndrome (CRPS) in a tertiary care pain management setting: A Collaborative Health Outcomes Information Registry (CHOIR) study.** *journal of pain*
Adelus, M., Sturgeon, J., RICO, T., Tawfik, V., Mackey, S.
2016; 17 (4S): S30-?
- **Electrical Synapses High-speed Communication in the Maintenance of Neuropathic Pain** *ANESTHESIOLOGY*
Tawfik, V. L., Flood, P.
2016; 124 (1): 13-15
- **Input- and Cell-Type-Specific Endocannabinoid-Dependent LTD in the Striatum.** *Cell reports*
Wu, Y., Kim, J., Tawfik, V. L., Lalchandani, R. R., Scherrer, G., Ding, J. B.
2015; 10 (1): 75-87
- **In vivo techniques to investigate the internalization profile of opioid receptors.** *Methods in molecular biology (Clifton, N.J.)*
Pradhan, A. A., Tawfik, V. L., Tipton, A. F., Scherrer, G.
2015; 1230: 87-104
- **Delta Opioid Receptors Presynaptically Regulate Cutaneous Mechanosensory Neuron Input to the Spinal Cord Dorsal Horn** *NEURON*
Bardoni, R., Tawfik, V. L., Wang, D., Francois, A., Solorzano, C., Shuster, S. A., Choudhury, P., Betelli, C., Cassidy, C., Smith, K., de Nooij, J. C., Mennicken, F., O'Donnell, et al
2014; 81 (6): 1312-1327
- **Perioperative interventions to reduce chronic postsurgical pain.** *Journal of reconstructive microsurgery*
Carroll, I., Hah, J., Mackey, S., Ottestad, E., Kong, J. T., Lahidji, S., Tawfik, V., Younger, J., Curtin, C.
2013; 29 (4): 213-222
- **Perioperative Interventions to Reduce Chronic Postsurgical Pain** *JOURNAL OF RECONSTRUCTIVE MICROSURGERY*
Carroll, I., Hah, J., Mackey, S., Ottestad, E., Kong, J. T., Lahidji, S., Tawfik, V., Younger, J., Curtin, C.
2013; 29 (4): 213-222
- **Deep Brain Stimulation Results in Local Glutamate and Adenosine Release: Investigation Into the Role of Astrocytes** *NEUROSURGERY*
Tawfik, V. L., Chang, S., Hitti, F. L., Roberts, D. W., Leiter, J. C., Jovanovic, S., Lee, K. H.
2010; 67 (2): 367-375
- **Propentofylline-induced astrocyte modulation leads to alterations in glial glutamate promoter activation following spinal nerve transection** *NEUROSCIENCE*
Tawfik, V. L., Regan, M. R., Haenggeli, C., Lacroix-Fralish, M. L., Natile-McMenemy, N., Perez, N., Rothstein, J. D., DeLeo, J. A.
2008; 152 (4): 1086-1092
- **Neuregulin 1 is a pronociceptive cytokine that is regulated by progesterone in the spinal cord: Implications for sex specific pain modulation** *EUROPEAN JOURNAL OF PAIN*
LaCroix-Fralish, M. L., Tawfik, V. L., Natile-McMenemy, N., DeLeo, J. A.
2008; 12 (1): 94-103
- **Intracranial self-stimulation of the dorsal raphe sensitizes psychostimulant locomotion** *BEHAVIORAL NEUROSCIENCE*
Boye, S. M., Grant, R. J., Tawfik, V. L.
2007; 121 (3): 550-558
- **Efficacy of propentofylline, a glial modulating agent, on existing mechanical allodynia following peripheral nerve injury** *BRAIN BEHAVIOR AND IMMUNITY*

-
- Tawfik, V. L., Nutile-McMenemy, N., LaCroix-Fralish, M. L., DeLeo, J. A.
2007; 21 (2): 238-246
- **Induction of astrocyte differentiation by propentofylline increases glutamate transporter expression in vitro: Heterogeneity of the quiescent phenotype** *GLIA*
Tawfik, V. L., LaCroix-Fralish, M. L., Bercury, K. K., Nutile-McMenemy, N., Harris, B. T., DeLeo, J. A.
2006; 54 (3): 193-203
 - **Differential spinal cord gene expression in rodent models of radicular and neuropathic pain** *ANESTHESIOLOGY*
LaCroix-Fralish, M. L., Tawfik, V. L., Tanga, F. Y., Spratt, K. F., DeLeo, J. A.
2006; 104 (6): 1283-1292
 - **The tetrapartite synapse: Path to CNS sensitization and chronic pain** *PAIN*
de Leo, J. A., Tawfik, V. L., LaCroix-Fralish, M. L.
2006; 122 (1-2): 17-21
 - **Progesterone mediates gonadal hormone differences in tactile and thermal hypersensitivity following L5 nerve root ligation in female rats** *NEUROSCIENCE*
Lacroix-Fralish, M. L., Tawfik, V. L., Nutile-McMenemy, N., DeLeo, J. A.
2006; 138 (2): 601-608
 - **Sex differences in lumbar spinal cord gene expression following experimental lumbar radiculopathy** *JOURNAL OF MOLECULAR NEUROSCIENCE*
LaCroix-Fralish, M. L., Tawfik, V. L., Spratt, K. F., DeLeo, J. A.
2006; 30 (3): 283-295
 - **Differential regulation of neuregulin 1 expression by progesterone in astrocytes and neurons** *NEURON GLIA BIOLOGY*
LaCroix-Fralish, M. L., Tawfik, V. L., Nutile-McMenemy, N., Harris, B. T., DeLeo, J. A.
2006; 2: 227-234
 - **Safety issues concerning the medical use of cannabis and cannabinoids.** *Pain research & management*
Ware, M. A., Tawfik, V. L.
2005; 10: 31A-7A
 - **Transcriptional and translational regulation of glial activation by morphine in a rodent model of neuropathic pain** *JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS*
Tawfik, V. L., Lacroix-Fralish, M. L., Nutile-McMenemy, N., DeLeo, J. A.
2005; 313 (3): 1239-1247
 - **The organizational and activational effects of sex hormones on tactile and thermal hypersensitivity following lumbar nerve root injury in male and female rats** *PAIN*
Lacroix-Fralish, M. L., Tawfik, V. L., DeLeo, J. A.
2005; 114 (1-2): 71-80
 - **Neuroimmune activation and neuroinflammation in chronic pain and opioid tolerance/hyperalgesia.** *Neuroscientist*
DeLeo, J. A., Tanga, F. Y., Tawfik, V. L.
2004; 10 (1): 40-52