**Chronology of Education**

Jan. 1996 – Dec. 1998 **B.S. in Biochemistry with a minor in Chemistry and Mathematics**

 University of Arizona

Tucson, AZ

Dec. 1998 –May 2002 **Interdisciplinary Graduate Program in Pharmacology and Toxicology (Masters)**

University of Arizona

 Tucson, AZ

May 2002 – May 2004 **Interdisciplinary Graduate Program in Pharmacology and Toxicology (PhD)**

University of Arizona

Tucson, AZ

June 2004 – May 2008 **Medical Student at the College of Medicine (MD)**

 University of Arizona

 Tucson, AZ

July 2008 – July 2009 **Surgical Internship Department of Surgery**

 University of Arizona

 Tucson, AZ

July 2009 – June 2012 **Resident, Brigham and Women’s Hospital**

Department of Anesthesiology, Perioperative & Pain Medicine

 Harvard Medical College

Boston, MA

July 2012 – June 30 2013 **Clinical Pain Fellow & Graduate Assistant**

Massachusetts General Hospital

 Department of Anesthesiology, Critical Care, and Pain Medicine

 Harvard Medical School

 Boston, MA

**Chronology of Employment**

December 1995 **Gallery Assistant** Art Gallery

 Pima Community College

 Tucson, AZ

December 1995 **Teaching Assistant**  Department of Mathematics

 Pima Community College

 Tucson, AZ

Jan. 1996 – May 1997 **Lab Assistant** Biochemistry and Insects Science

 University of Arizona

Tucson, AZ

May 2004 – July 2007 **Surgical and Lead Technician**

 Life Legacy Foundation

Tucson, AZ

May 2004 – July 2007 **Research Associate**

Department of Anesthesiology

University of Arizona

Tucson, AZ

Aug. 2013 – June 2014 **Interventional Pain Management Physician**

 Pain Center of Nevada

 Las Vegas, NV

July 2014 – July 2018 **Assistant Professor & Director of Chronic Pain**

 **Fellowship and Pain Clinic**

Departments of Anesthesiology and Pharmacology

College of Medicine

 University of Arizona

 Tucson, AZ

July 2018 – Present **Associate Professor & Director of Chronic Pain**

 **Fellowship and Pain Clinic**

 Departments of Anesthesiology and Pharmacology

College of Medicine

 University of Arizona

 Tucson, AZ

**Honors & Awards**

1997 Dean’s List with Distinction

1997 Highest Academic Distinction

1998 National Dean’s List

May, 2005 Western Anesthesia Resident Conference (1st Place)

 University of California at Irvine

 Irvine, CA

May, 2006 Western Anesthesia Resident Conference (Finalist)

 University of Utah

 Salt Lake City, UT

**Grants**

2018 - 2023 National Institute of Health

 Award Number - R01AT009716

$1,726,875

2018-2019 University of Arizona

 Pepper

 $30,000

**Board Certifications**

September 2013 American Board of Anesthesiology Subspecialty Certification in Pain Medicine

April 2013 American Board of Anesthesiology

 Specialty Certification in Anesthesiology

**Specialty Training/Certification**

 Radiation Safety, University of Arizona

 Laboratory Safety, University of Arizona

 Animal Treatment, University of Arizona

 Animal Surgery, University of Arizona

July 2015 Human Subjects, University of Arizona

**Professional Licensure**

June 2013 – Present Arizona State Medical Board

June 2013 – Present Nevada State Medical Board

**Professional Memberships & Societies**

August 1997 Golden Key National Honor Society

July 2014 Arizona Society of Anesthesiologists

January 2013 Spine Intervention Society

August 2014 American Society of Anesthesiologists

August 2014 Society for Neuroscience

**Service & Outreach**

**Local / State Outreach**

June 2015 – Present **Member**

 Dean’s Outreach Work Group

 College of Medicine

 University of Arizona

 Tucson, Arizona

Jan. 2016 – Present **Member**

Ambulatory Clinical Space Planning Committee

 Banner Health System Board of Director

 American Pain Association

 Tucson, Arizona

Jan. 2016 – Present **Member**

Medical College Applicant Interview Committee

 College of Medicine

 University of Arizona

 Tucson, Arizona

**Publications & Creative Activity (published or accepted)**

**Electronic Publications**

**Peer Review**

1. D. Bian, M. Ossipov, **M. Ibrahim**, R. Raffa, R. Tallarida, T.P. Malan, J. Lai, and F. Porreca., Loss of Antiallodynic and Antinociceptive Spinal/Supraspinal Morphine Synergy in Nerve-Injured Rats: Restoration by MK-801 or Dynorphin Antiserum, *Brain Research*. 1999; 831: 55-63.
2. Malan TP, Ossipov MH, **Ibrahim M**, Bian DI, Lai J, Porreca F. Extraterritorial Neuropathic Pain Correlates with Multisegmental Elevation Of Spinal Dynorphin in Nerve –Injured Rats. *Pain*, 86 (2000) 185-194
3. Vanderah TW, Gardell LR, Burgess SE, **Ibrahim M**, Dogrul A, Zhang ET, Malan TP, Ossipov MH, Lai J, Porreca F. Dynorphin promotes abnormal pain and spinal opiod antinociceptive tolerance. *J Neurosci*, 2000; 20(18): 7074-7079
4. Malan TP, **Ibrahim MM**, Deng H, Mata HP, Vanderah T, Porreca F, Makriyannis A. CB2 cannabinoid receptor–mediated peripheral antinociception. *Pain* 2001, 93:239-245.
5. **Ibrahim M**, Mata HP, Chawla M, Lai J, Porreca F, Malan TP. Specific inhibition of c-fos expression increases formalin-induced nociception: Lack of correlation with spinal dynorphin content. *Journal of Pain*, 2001, 2(4):241-249.
6. Rolf Ziegler and **Mohab M. Ibrahim**. Formation of lipid reserves in fat body and eggs of the yellow fever mosquito, *Aedes aegypti*. *Journal of Insect Physiology* 2001, 47: 623-627.
7. Malan TP**, Ibrahim MM**, Vanderah TW, Makriyannis A, Porreca F. Inhibition of pain responses by activation of CB2 cannabinoid receptors. *Chem Phys Lipids* 2003; 121: 191 – 200.
8. Malan TP, **Ibrahim MM**, Vanderah TW, Makriyannis A, Porreca F. CB2 cannabinoid receptor agonists: pain relief without psychoactive effects. *Curr Opin Pharmacol* 2003, 1: 62-67.
9. Quartilho A, Mata HP, **Ibrahim MM**, Vanderah TW, Porreca F, Makriyannis A, Malan TP. Inhibition of inflammatory hyperalgesia by activation of peripheral CB2 cannabinoid receptors. *Anesthesiology* *99(4):955-60, 2003 Oct*.
10. **Mohab M. Ibrahim**, Hongfeng Deng, Alex Zvonok,Debra A.Cockayne, Joyce Kwan, Heriberto P. Mata, Todd W. Vanderah, Josephine Lai, Frank Porreca, Alexandros Makriyannis, T. Philip Malan, Jr. Activation Of CB2 Cannabinoid Receptors By AM1241 Inhibits Experimental Neuropathic Pain: Pain Inhibition By *Receptors Not Present In The Central Nervous System. Proc Natl Acad Sci USA, 100(18):10529-33, 2003 Sep 2.*
11. Gardell LR, **Ibrahim M**, Wang R, Wang Z, Ossipov MH, Malan TP, Porreca F, Lai J. Mouse strains that lack spinal dynorphin upregulation after peripheral nerve injury do not develop neuropathic pain. *Neuroscience. 2004;123(1):43-52*.
12. Quartilho A, Mata HP, **Ibrahim MM,** Vanderah TW, Ossipov MH, Lai J, Porreca F, Malan TP Jr. Production of paradoxical sensory hyperalgesia by alpha 2-adrenoreceptor agonist. *Anesthesiology.* 2004; 123(1): 43-52.
13. **IbrahimMM**, Porreca F, Lai J, Albrecht PJ, Rice FL, Khodorova A, Davar G, Makriyannis A, Vanderah TW, Mata HP, Malan TP. CB2 cannabinoid receptor activation produces antinociception by stimulating peripheral release of endogenous opioids. *Proc Natl Acad Sci USA. 2005; 102: 3093-8*.
14. **Ibrahim MM**, Rude ML, Stagg NJ, Mata HP, Lai J, Vanderah TW, Porreca F, Buckley NE, Makriyannis A, Malan TP Jr. CB2 cannabinoid receptor-mediated nociception. Pain. 122(1-2):36-42, 2006 May.
15. Khanolkar AD, Lu D, Malan TP, Jr., **Ibrahim M**, Porreca F, Thakur GA, Veerappan V, Duclos RI, Jr., Tian X, George C, Parrish DA, Papahatjis DP, Makriyannis A. Cannabilactones: A Novel Class of CB2 Selective Agonists with Peripheral Analgesic Activity. *J Med Chem 50 (26):6493-500 2007 Dec 27.*
16. Beatriz Fioravanti, Milena De Felice, Cheryl L. Stucky, Karen A. Medler, Miaw-Chyi Luo, Luis R. Gardell, **Mohab Ibrahim**, T. Phil Malan, Jr, Henry I. Yamamura, Michael H. Ossipov, Tamara King, Josephine Lai, Frank Porreca, and Todd W. Vanderah. Constitutive Activity At The Cannabinoid CB1 Receptor Is Required For Behavioral Response To Noxious Chemical Stimulation Of TRPV1: Antnociceptive Actions Of CB1 Inverse Agonists. *J Neurosci. 28(45): 11593-11602, 2008 November 5.*
17. Rivat C, Vera-Portocarrero LP, **Ibrahim MM,** Mata HP, Stagg NJ, De Felice M, Porreca F, Malan TP. Spinal NK-1 Receptor-expressing Neurons and Descending Pathways Support Fentanyl-induced Pain Hypersensitivity in a Rat Model of Postoperative Pain. *Eur J Neurosci. 29(4): 727-37. 2009 Feb 29*
18. Nicola J. Stagg, Heriberto P. Mata, **Mohab M. Ibrahim,** Erik J. Henriksen, Frank Porreca, Todd W. Vanderah, T. Philip Malan. Regular Exercise Reverses Sensory Hypersensitivity In A Rat Neuropathic Pain Model: Role Of Endogenous Opioids. *Anesthesiology. 114 (4): 940-8. 2011 April.*
19. Ryan Matika, **Mohab Ibrahim,** Amol Patwardhan. The Importance of Body Temperature: An Anesthesiologist perspective. *Temperature,* 4 (1): 1-4. 2016
20. **Mohab M Ibrahim**, Amol Patwardhan, Kerry Gilbraith, Aubin Moutal, Xiaofang Yang, Lindsey A. Chew, Tally Largent-Milnes, T. Philip Malan, Todd W. Vanderah, Frank Porreca, Rajesh Khanna. Long-Lasting Antinociception Effects of Green light in Acute and Chronic Pain in Rats. *Pain*. Published, *158(2):347-360. Feb 2017* (cited by F-1000)
21. Shaness A. Grenald, Madison A. Young, YueWang, Michael H. Ossipov, **Mohab M. Ibrahim**,Tally M. Largent-Milnes, Todd W. Vanderah “Synergistic attenuation of chronic pain using mu opioid and cannabinoid receptor 2 agonists”, Neuropharmacology 116 (2017) 59e70 2016
22. Garami A, **Ibrahim M**, Gilbraith K, Pakai E, Miko A, Pinter E, Romanovsky A, Porreca F, Patwardhan A. Perioperative Use of TRPV1 Antagonist for Pharmacological Reversal of Anesthesia-Induced Hypothermia and opioid Sparing Effects in Post-Surgical Pain in Rodents. *Anesthesiology*. 127, 813-823. (2017)
23. Aubin Moutal, Xiaofang Yang, Wennan Li, Kerry B. Gilbraith, Shizhen Luo, Song Cai, Liberty Fran, ois-Moutal, Lindsey A. Chew, Seul Ki Yeon, Shreya S. Bellampalli, Chaoling Qu, Jennifer Y. Xie**, Mohab M. Ibrahim**, May Khanna, Ki Duk Park, Frank Porreca, Rajesh Khanna “CRISPR/Cas9 editing of Nf1 gene identifies CRMP2 as a therapeutic target in neurofibromatosis type 1-related pain that is reversed by (S)-Lacosamide”, *Accepted Pain (2017)*
24. Hong Zhang, Dominique M. Lund, Haley A. Ciccone, William D. Staatz, **Mohab M. Ibrahim**, Tally M. Largent-Miles, Herbert H. Seltzman, Igor Spigelman, Todd W. Vanderah. Peripherally Restricted Cannabinoids 1 Receptor Agonist as a Novel Analgesic in Cancer-Induced Bone Pain. *Pain*. 159(9):1814-1823, (2018 Sep.)
25. Amol Patwardhan, Ryan Matike, Janalee Gordon, Brian Singer, Michelle Salloum, **Mohab Ibrahim**. Exploring the Role of Chronic Pain Clinics: Potential for Opioid Reduction. *Pain Physician*. 21:E 603-E610, (2018).

**Published Abstracts**

1. Malan TP, **Ibrahim M**, Ossipov MH, Bian D, Chawla M, Porreca F. Peripheral Nerve Injury Causes Multisegmental Allodynia and a Multisegmental Increase in Spinal Dynorphin Content. *Anesthesiology* 1998; 89: A753.
2. **Ibrahim M**, Chawla M, Chengmin Z, Lai J, Porreca F, Malan TP. Spatial and temporal correlation of spinal dynorphin content with behavioral signs of nerve injury. *Society for Neuroscience Abstracts*, 1998.
3. Gardell LR, Vanderah TW, Burgess SF, **Ibrahim M**, Zhong CM, Ossipov MH, Lai J, Malan TP, and Porreca F. Repeated spinal opioid administration produces abnormal pain and antinociceptive tolerance which is reversed by dynorphin antiserum*. Society for Neuroscience Abstracts***.** 1999.
4. **Ibrahim M**, Vanderah TW, Gardell LR, Zhong CM, Malan TP, Lai J, and Porreca F. Repeated spinal opioid administration or peripheral nerve injury elicits abnormal pain in ICR, but not in PKCγKO or 129SvEv mice. *Society for Neuroscience Abstracts*, 1999.
5. **Ibrahim M,** Deng H, Mata H, Vanderah T, Porreca F, Makriyannis A, Malan TP. CB2 cannabinoid peripheral analgesia. *Journal of Pain*, 2001; 2: 661.
6. **Ibrahim MM,** Mata HP, Deng H, Vanderah TW, Porreca F, Makriyannis A, Malan TP. 2001. AM1241, a selective cannabinoid CB2 receptor agonist, relieves neuropathic pain. *Society for Neuroscience Annual Meeting Abstracts* 2001; 716.16.
7. **Ibrahim MM,** Mata HP, Deng H, Liu Q, Vanderah TW, Porreca F, Lai J, Makriyannis A, Malan TP. Relief of neuropathic pain by activation of peripheral CB2 cannabinoid receptors. Abstracts of the Tenth World Congress on Pain, International Association for the Study of Pain. 2002; 1169.
8. Joshua Garza, MD1, Andras Garami, MD, PhD2, **Mohab Ibrahim, MD, PhD1,** Frank Porreca, PhD1, Andrej Romanovsky, MD, PhD3, Amol Patwardhan, MD, PhD1 Transient Receptor Channel Vanilloid-1 Antagonist as a Pharmacological Treatment for Preemptive Analgesia and Reducing Anesthesia-Induced Hypothermia**.** Western Anesthesia Resident’s Conference, San Francisco, CA May 2016
9. Zhang H, Lund DM, Ciccone HA, Staatz WD, **Ibrahim MM**, Largent-Milnes TM, Seltzman HH, Spigelman I, Vanderah TW. A peripherally restricted cannabinoid 1 receptor agonist as a novel analgesic in cancer-induced bone pain Pain. 2018 May 16. doi: 10.1097/j.pain.0000000000001278. [Epub ahead of print] PMID: 29781960

**Book Chapters**

1. **Ibrahim, Mohab**, Aglio, Linda: “Abdominal aneurysm” book chapter in “Essential Clinical Anesthesia Review: Keywords, Questions and Answers for Boards”, Cambridge University Press, United Kingdom, April 2015

2. Siranni, Justin, **Ibrahim, Mohab**, Patwardhan, Amol: Chapter 19, “Chronic Pain Syndromes, Mechanisms, and Current Treatments” book chapter in “Progress in Molecular Biology and Translational Science, Vol 131 (2015), Academic Press (Elsevier)

**Invited Presentations & Lectures at Seminars & Symposia**

April 2014 Chronic Pain Management: The Dark Side of the Moon

St. Rose Hospital – Martin Campus

Las Vegas, NV

Sept. 2014 Looking Beyond the Smoke of Cannabis

Arizona Pain Society

Phoenix, Arizona

Sept. 2014 Moving Past the THC – The Future of Cannabidiol and its

Effects on Pain and the Nervous System

Arizona Pain Society

Scottsdale, AZ

May 2015 Neurosurgery GR – The Role of Cannabinoids in Chronic Pain

 University of Arizona, College of Medicine

 Tucson, Arizona

Sept. 2015 Chronic Pain Management

 University of Arizona, College of Medicine

 Tucson, Arizona

Sept. 2015 Interventional Pain Medicine

 University of Arizona, College of Medicine

 Tucson, Arizona

Aug. 2016 Pelvic Pain Management

 OB / GYN Grand Rounds

 University of Arizona

 Tucson, Arizona

March 2017 Tame Your Pain – Conventional and Alternative

 Therapies for Pain Management

 University of Arizona, Arthritis Center

 Tucson, Arizona

March 2017 Possible Interactions and Consequences of Medical Marijuana

 Arizona Medical Board

 Phoenix, Arizona

June 2017 Pain Medicine in a Glance

 University of Arizona

 Family Medicine

 Tucson, Arizona

June 2017 The Most Common Procedure in Pain Medicine

 University of Arizona

 Neurosurgery Grand Rounds

 Tucson, Arizona

August 2017 The Most Common Diagnosed and Managements in Chronic Pain

 University of Arizona

 Family Medicine

 Tucson, Arizona

Sept. 2017 The Opioid Epidemic, Chronic Pain and Alternatives to

 Traditional Pain Management

 University of Arizona

 Alumni Association

 Tucson, Arizona

Jan. 2018 Shedding (Green) Light on Alternative Pain Management

 University of Arizona

 Undergraduate Biology Research Program (UBRP)

 Tucson, Arizona

March 2018 Walk with Docs

 Pima County Medical Society

 Tucson, Arizona

March 2018 Conquering Pain?

 University of Arizona

 Book Festival

 Tucson, Arizona

April 2018 Complementary Methods to Manage Chronic

 Pain: The Green Story

 The Science of Consciousness Conference

 Tucson, Arizona

May 2018 Battling the Opioid Epidemic

 UA Arthritis Center

 Tucson, Arizona

June 2018 Tailoring Pain Medicine to Address Individual Needs

 CareParteners

 Tucson Interfaith HIV/AIDS Network

 Tucson, Arizona

**Media Appearance**

May 2017 ABC (KGUN-Tucson)

 Green Light Therapy and Chronic Pain

April 2017 The List TV

 Green Light Therapy and Chronic Pain

Feb. 2017 CBS (KOLD-Tucson)

 Xanax Abuse

April 2017 CBS (KOLD-Tucson)

 Green Light Therapy and Chronic Pain

March 2017 NPR (KJZZ-Phoenix)

 Green Light Therapy and Chronic Pain

May 2017 PBS (KUAT-TV- Tucson)

 Green Light Therapy and Chronic Pain

May 2017 Ivanhoe Broadcast News

 Green Light Therapy and Chronic Pain

**Mentor**

May 2015Elizabeth Mata

Undergraduate

University of Arizona

Tucson, Arizona

April 2016 Lindsey Chew

Undergraduate

University of Arizona

Tucson, Arizona

May 2016 Ryan W. Schmoll

Medical Student

University of Arizona

Tucson, Arizona

June 2016 Brian M. Singer

Medical Student

University of Arizona

Tucson, Arizona

May 2016 Michelle Salloum

Medical Student

University of Arizona

Tucson, Arizona