Curriculum Vitae

John M. Streicher, Ph.D.

University of Arizona College of Medicine
Department of Pharmacology
Phone: (520)-626-7495
Email - jstreicher@arizona.edu

Experience

- **Professor (Tenured);** University of Arizona; Tucson, AZ, 2023-Present.
- **Associate Professor (Tenured);** University of Arizona; Tucson, AZ, 2021-2023.
- **Assistant Professor (TT)**; University of Arizona (UA); Tucson, AZ, 2015-2021.
- **Assistant Professor (TT)**; University of New England (UNE); Biddeford, ME, 2013-2015
- **Research Assistant Professor (non-TT)**; University of New England; Biddeford, ME, 2012-2013.
- **Postdoctoral Fellowship**; The Scripps Research Institute – FL in the lab of Laura M. Bohn, Ph.D. 2009-2012.

Further Academic Affiliations

- **Research Health Science Specialist;** Southern Arizona Veterans Administration Health Care System (SAVAHCS); Tucson, AZ, 2026 – Present.
- **Affiliate Faculty;** Tucson Veterans Administration Intramural Program for Non-Clinician Scientists; Tucson, AZ, 2022-2024.
- **Faculty**; UA Neuroscience Graduate Interdisciplinary Program; Tucson, AZ, 2017-Present.
- **Graduate Faculty**; University of Maine Graduate School of Biomedical Sciences and Engineering (GSBSE); Orono, ME, 2012-2015.

Commercial Affiliations

- **Scientific Advisor;** Nápreva, Inc. 2024-2026. This company is focused on the development of terpene therapeutics for pain and other indications.
- **Equity Partner;** Botanical Results, LLC. 2020-Present. This company is focused on developing formulations of cannabidiol for pain, wound healing, and other indications.
- **Equity Partner and Co-Founder;** Teleport Pharmaceuticals, LLC. 2017-Present. This pharmaceutical startup is focused on developing glycosylated peptide drugs for pain and neurodegeneration.

Education

- **Doctor of Philosophy**; Molecular, Cellular and Integrative Physiology; University of California – Los Angeles (UCLA); Los Angeles, CA, 2009.
- **Master of Science;** Physiology and Pharmacology; Oregon Health and Science University (OHSU); Portland, OR, 2002.

- **Bachelor of Science**; Biology; George Fox University; Newberg, OR, 1999.

Academic Teaching & Service

Teaching – Mentorship

- Mentored research trainees 2012-Present: 1 faculty; 3 postdoctoral; 15 graduate; 5 medical; 45 undergraduate.
    - 1 postdoc obtained tenure track faculty position; 10 graduated PhD students (5 secured postdocs in a major lab, 1 continued their MD/PhD training, 2 in positions in pharma, 1 a lab director position, and 1 in patent law); numerous undergraduates in professional or graduate school.
- Served on 60 graduate student thesis/dissertation committees, 2012-Present.

Teaching - Classroom

Active

- Course Director for UA Graduate College ABBS696C "Arizona Biological and Biomedical Sciences Student Forum", 2022-Present
- Course Director for UA College of Medicine PHCL596C "Critical Literature Review and Research Seminar", 2022-Present.
- Course Co-Director and Instructor for UA College of Medicine PHCL595B "Scientific Writing, Presentation, and Bioethics", 2020-Present.
- Lecture sets (2) on pharmacodynamics and pharmacokinetics, UA College of Medicine PHCL412/512 "Introduction to Pharmacology", 2018-Present.
- Lecture sets (2) on molecular pharmacology and cell signaling, UA College of Medicine PHCL601A "Pharmacology: General Principles", 2016-Present
- Lecture sets (2) on GPCR signal transduction and molecular pharmacology, UA College of Medicine PHCL553 "Neuropharmacology", 2016-Present.

Completed

- Instructor for UA College of Medicine IMB521 "Scientific Grantsmanship", 2020-2023.
- Facilitator for the UA College of Medicine "Clinical Reasoning Course", 2016-2018.
- Lecture sets (4) on different systems pharmacology, UA College of Medicine PHCL601C "Pharmacology of Cardiovascular, Pulmonary, GI & CNS Drugs", 2015.
- Teaching duties and member of the Planning Committee, UNE College of Medicine Medical School Curriculum "Osteopathic Medical Knowledge", 2012-2015.
    - Includes ~4 weeks of instruction as well as small student group clinical case facilitation per year.
- Recurring guest lecture on opioid pharmacology, UNE College of Pharmacy PHS204 "Pharmacology", 2012-2014.
- Recurring guest lecture on opioid drug discovery, UNE Early College Program, 2012-2014.
- Recurring guest lecture on opioid research, UNE College of Arts and Sciences NEU210 "The Brain: Examination of the Nervous System", 2012-2013.
- Lecture sets (3) on molecular pharmacology, signal transduction, and drug discovery, UNE Summer Intern Program, 2012-2013.
- Teaching Assistant, UCLA "Foundations in Physiological Science", 2004-2005.

Service – Extramural

Active

- Reviewing Editor for the journal *eLife*, 2025 – Present.
- Standing Member, NIH Molecular and Cellular Neuropharmacology Study Section, 2024 - Present
- Associate Editor and Review Editor, Pharmacological Treatment of Pain section of the journal *Frontiers in Pain Research*, 2020-Present.
- Academic Editor, Neuroscience Section, for the journal *PLOS One.* 2018-Present.
- *Ad hoc* grant reviewer for 3 national (Veterans Administration, Department of Defense, National Institutes of Health) and 4 international (Saudi Arabia; Netherlands; Switzerland; Czech Republic) institutions, 2012-Present.
- *Ad hoc* journal reviewer for 40 journals, 2012-Present.

Completed

- Session Chair, International Narcotics Research Conference, July 2025.
- Guest Editor for the journal *eLife*, 2024-2025.
- Program Committee Member, International Narcotics Research Conference, 2024.
- Program Committee Member, International Narcotics Research Conference, 2021.
- Session Chair, United States Association for the Study of Pain (USASP) 2020, December 2020.
- STEM Mentor, Scientists in the Classroom program at Sinagua Middle School, 2019-2021.
- Reviewer for the Institute of International Education's Scholar Rescue Fund, 2019.
- Organizing Committee Member and Session Chair, Spring Pain Meeting 2019, 2018-2019.
- Guest Editor, special collection on novel targets in pain, for the journal *Frontiers in Molecular Neuroscience.* 2018-2020.
- Session Chair, Society for Neuroscience 2018, November 2018.
- Session Chair, Experimental Biology 2018, April 2018.
- Session Co-Chair, Spring Pain Meeting, May 2017.
- Member of the American Pain Society Website Committee, 2017-2019.
- Secretary and Treasurer of the Maine Chapter of the Society for Neuroscience, 2014-2015.

Service – Intramural

Active

- Vice Chair for Research of the UA Department of Pharmacology, 2025-Present.
- Chair of the UA Department of Pharmacology Research Committee, 2025-Present.
- Co-Director of the UA Arizona Biological and Biomedical Sciences Graduate Program, 2022-Present.
- Member of the VA Research and Development Committee, 2022-Present.
- Member of the UA Arizona Biological and Biomedical Sciences graduate program Executive Committee, 2018-Present.

- Member of the UA Arizona Biological and Biomedical Sciences graduate program Admissions Committee, 2015-Present.

Completed

- Member of a UA Department of Pharmacology Administrative Review Committee, 2024.
- Member of a UA College of Medicine Director of the Center for Education Search Committee, 2023.
- Member of a UA College of Medicine Associate Dean Search Committee, 2023.
- Member of the UA Perfusion Sciences Program Executive Committee, 2021-2024.
- Member of a UA Department of Pharmacology Search Committee, 2020-2021.
- Chair of the UA Department of Pharmacology Student Performance Committee, 2020-2024.
- Member of a UA College of Pharmacy Faculty Search Committee, 2019-2020.
- Member of the UA Department of Pharmacology Academic Program Review Committee, 2018-2019.
- Member of the UA Department of Pharmacology Executive Committee, 2018-2024.
- Chair of the UA Department of Pharmacology Graduate Admissions Committee, 2018-2024.
- Director of Graduate Studies for the UA Department of Pharmacology Graduate Program, 2018-2024.
- Member of the UA Undergraduate Biomedical Research Program Selection Committee, 2016.
- Member of the UA College of Medicine Nominating Committee, 2016-2022. Elected Chair for 2020-2022 term.
- Coordinator of the UNE College of Osteopathic Medicine Seminar Series, 2015.
- Member of the UNE College of Medicine Strategic Planning Research and Research Track Committees, 2014-2015.
- Member of the GSBSE Curriculum Committee, 2014-2015.
- Member of the Steering Committee for the UNE College of Medicine Curriculum, 2013-2014.
- Member of a Search Committee for a faculty position in the UNE College of Pharmacy, 2013.
- Student Representative to the OHSU Departmental Curriculum Committee, 2000.
- Member of the OHSU Cell Biology Course Committee, 2000.

Awards and Honors

- Gabriel and Streicher (2023) selected for the cover of the April 11, 2023 issue of Science Signaling.
- International Narcotics Research Conference (INRC) Young Investigator Award, 2022.
- UA Undergraduate Biology Research Program Outstanding Faculty Mentor Award, 2020-2021
- Duron *et al.* (2020) selected for the cover of the May 5, 2020 issue of Science Signaling.
- Cyagen Animal Model Award, August 2017
- Lei *et al.* (2017) (Journal of Biological Chemistry) featured in the July 21, 2017 issue of the trade journal Chemicals & Chemistry (pg. 1974-1975)

- Travel Award, International Narcotics Research Conference (INRC), July 2017.
- Travel Award, International Narcotics Research Conference (INRC), July 2016.
- Travel Award, International Narcotics Research Conference (INRC), June 2015.
- Travel Award, International Narcotics Research Conference (INRC), July 2014.
- Abstract (Moses-Fynn *et al.* 2014) selected for special publicity at the 30th Annual Meeting of the American Academy of Pain Medicine (http://www.newswise.com/articles/chronic-pain-researchers-first-to-link-regulatory-protein-to-mu-opioid-receptor-signaling)
- ASPET Young Scientist Travel Award, Experimental Biology Conference, April 2011.
- Streicher *et al.* (2010) (Circulation Research) featured on MDLinx.com, a research indexing site for physicians. http://www.mdlinx.com/heartlinx/news-article.cfm/3096007
- Department of Molecular Medicine (DMM) Excellence in Science Award for Best Poster Presentation, DMM Annual Retreat, March 2009.
- Best Poster Presentation Award, 4th Annual Molecular, Cellular and Integrative Physiology Retreat, March 2008.
- Graduate With Science Honors, *magna cum laude*, George Fox University, 1999.

Invited Seminars

- "The orphan receptors GPR63 and GPR153 enhance antinociception in pathological pain by suppressing microglial activation in the murine spinal cord." Invited by the University of California – San Francisco (UCSF) Pain and Addiction Research Center, January 2026.
- "The orphan receptors GPR63 and GPR153 suppress microglial activation in pathological pain." Invited by the UA Comprehensive Center for Pain and Addiction annual symposium, *Pain and Addiction: Mechanisms and Management*. November 2025.
- "*Cannabis* Terpenes Relieve Pathological Pain and Block Opioid Reward via the Adenosine A_{2a} Receptor." Invited by Maxwell Leung of the Arizona State University Cannabis Analytics, Safety and Health Initiative, November 2025.
- "GPR63 and GPR153 enhance antinociception in pathological but not nociceptive pain by suppressing microglial activation in spinal cord." Invited by the International Narcotics Research Conference, July 2025.
- "Terpenes from *Cannabis sativa* Relieve Pathological Pain and Modulate Reward via the Adenosine A2a Receptor." Invited by the United States Association for the Study of Pain Annual Conference, May 2025.
- "Terpenes from *Cannabis sativa* Relieve Pathological Pain and Modulate Reward via the Adenosine A2a Receptor." Invited by Amanda Fakira of Rowan University Department of Biomedical Sciences, March 2025.
- "Targeting the Signal Transduction Cascades of the Mu Opioid Receptor in Order to Improve Opioid Therapy." Invited by the 6th Annual ReImagine Health Conference, January 2024.
- "Heat Shock Protein 90 is a Novel Opioid Signaling Regulator that can be Targeted to Improve Opioid Therapy." Invited by Wei Lei of the Manchester University Department of Pharmaceutical Sciences and Pharmacogenomics, October 2023.

- "Terpenes from *Cannabis sativa* are Cannabimimetic and Selectively Enhance Cannabinoid Activity." Invited by the Center for Medical Cannabis Research Medicinal Cannabis & Cannabinoid Science Symposium, October 2023.
- "Terpenes from *Cannabis sativa* Produce Efficacious Pain Relief in Neuropathic Pain via the Adenosine A2a Receptor in Mouse Spinal Cord." Invited by Nam Lee of the University of Arizona Department of Chemistry and Biochemistry, September 2023.
- "Terpenes from *Cannabis sativa* Produce Efficacious Pain Relief in Neuropathic Pain via the Adenosine A2a Receptor in Mouse Spinal Cord." Invited by Ratan Banik at the University of Minnesota Pain Interest Group, February 2023.
- "Daily Intermittent Fasting in Mice Enhances Opioid Pain Relief and Reduces Side Effects" and "The Organization of Mu Opioid Receptor Signal Transduction Cascades in the Spinal Cord by Heat Shock Protein 90." Invited by the International Narcotics Research Conference, July 2022.
- "Development of a Mu-Delta Opioid Receptor Heterodimer Antagonist to Improve Opioid Therapy and Treat Withdrawal." Invited by the 7th Annual Arizona Biomedical Research Commission Research Conference, April 2022.
- "Opioid Signal Transduction and Alternative Pain Therapies." Invited by Karen Houseknecht at the University of New England, November 2021.
- "Heat Shock Protein 90 is a Novel Opioid Receptor Signaling Regulator that can be Targeted to Improve Opioid Therapy." Invited by Laura Stone at the University of Minnesota, September 2021.
- "Heat Shock Protein 90 is a Novel Opioid Receptor Signaling Regulator that can be Targeted to Improve Opioid Therapy." Invited by the Dr. GPCR Summit 2021, September 2021.
- "Manipulating the Signal Transduction Cascades of the Mu Opioid Receptor to Improve Opioid Treatment Outcomes." Invited by Elisa Gumm at the Tucson Veterans Administration Hospital, August 2021.
- "Manipulating the Signal Transduction Cascades of the Mu Opioid Receptor to Improve Opioid Treatment Outcomes." Invited by Douglas Wright at Kansas University Medical Center, June 2021.
- "Heat shock protein 90 is a Novel Opioid Receptor Signaling Regulator that can be Targeted to Improve Opioid Therapy." Invited by Daniela Salvemini at St. Louis University, May 2021.
- "Terpenes from *Cannabis sativa* are Cannabimimetic and Anti-Nociceptive in Acute and Chronic Pain." Invited by the United States Association for the Study of Pain Meeting, December 2020.
- "Heat Shock Protein 90 is a Novel Regulator of Opioid Signal Transduction in the Brain and Spinal Cord." Invited by the Dr. GPCR Summit 2020, September 2020.
- "Non-Cannabinoid Terpenes for Chronic Pain Treatment: Cannabimimetic Properties of *Cannabis sativa* Terpenes Illuminated by Mouse Behavior and Receptor Signaling Methods." Invited by Justin Luh of Azure Biosystems, September 2020. Webinar format.
- "Heat Shock Protein 90 is a Novel Opioid Receptor Signaling Regulator than can be Targeted to Improve Opioid Therapy." Invited by Brian Blagg at the University of Notre Dame, March 2020. *Cancelled due to COVID-19 outbreak.

- "Heat shock protein 90 Inhibitors Enhance Opioid Anti-Nociception in Acute and Chronic Pain while Reducing Side Effects." Invited by the 4th Annual Arizona Biomedical Research Commission Research Conference, April 2019.
- "Heat shock protein 90 Inhibition Uncovers a Novel Anti-Nociceptive Molecular Circuit in the Spinal Cord." Invited by the Spring Pain Meeting, April 2019.
- "Targeting the Mu-Delta Opioid Receptor Heterodimer to Enhance Opioid Therapy and Treat Opioid Use Disorders." Invited by the American Pain Society Annual Meeting 2019, April 2019.
- "Development of a Novel Selective Antagonist to Probe the In Vivo Biology of the Mu-Delta Opioid Receptor Heterodimer." Invited by Bradley Andresen at Western University of Health Sciences, March 2019.
- "Spinal Cord Heat Shock Protein 90 as a Novel Target to Enhance Opioid Analgesia and Reduce Side Effects." Invited by the Society for Neuroscience 2018 Annual Conference, November 2018.
- "Heat Shock Protein 90 Promotes Opioid Anti-Nociception in the Brain and Reduces Opioid Anti-Nociception in the Spinal Cord through Differential Regulation of ERK MAPK." Invited by the Experimental Biology 2018 Annual Conference, April 2018.
- "Heat Shock Protein 90 Promotes Opioid Anti-Nociception in the Brain and Represses it in the Spinal Cord through the Differential Regulation of ERK MAPK Signaling." Invited by the American Pain Society Annual Meeting 2018, March 2018
- "Beyond βarrestin2: Identifying New Signaling Regulators of the Mu Opioid Receptor for Functionally Selective Drug Discovery." Invited by the Spring Pain Meeting, May 2017.
- **"**The Kappa Opioid Receptor as a Therapeutic Target", invited by the Integrated Pain Management Conference at Mercy Hospital (Portland, ME), August 2015.
- "Heat Shock Protein 90 Regulates Mu Opioid Receptor Signaling In Vitro and in Mouse Periaqueductal Grey." Invited by the International Narcotics Research Conference, June 2015.
- "Novel Mu Opioid Receptor Regulators as New Targets for Pain Drug Discovery." Invited by the 4th Annual Meeting of the Maine Chapter of the Society for Neuroscience, November 2014.
- "Identification of Novel Signaling Regulators of the Mu Opioid Receptor." Invited by the 3rd Annual Meeting of the Maine Chapter of the Society for Neuroscience, November 2013.
- **"**Novel Strategies for Drug Discovery and Development", invited by Frank Porreca at the University of Arizona, January 2013.
- "Novel Strategies for Drug Discovery and Development." Invited by the Annual Meeting of the Quebec Pain Research Network, January 2013.
- "Novel Strategies for Drug Discovery and Development", invited by the Genetics Interest Group at The Jackson Laboratory, October 2012.
- "Drug Discovery and Functional Selectivity at the Kappa Opioid Receptor." Invited by the 2nd Annual Meeting of the Maine Chapter of the Society for Neuroscience, April 2012.

Research Support

Active

- NIH R01, NS137079. "Development of non-opioid, non-addictive analgesics for treating neuropathic pain." Co-Investigator (Subaward Principal Investigator). Total Budget: $3,103,165. Project Period: 3/18/2025 – 1/31/2030.
- NIH R01, DA052340. "Development of Hsp90 Isoform-Selective Inhibitors as a Novel Opioid Dose-Reduction Therapy." Principal Investigator. Total Budget: $3,182,270. Project Period: 7/15/2021 – 4/30/2026.
- NIH R01, AT011517. "Therapeutic and Mechanistic Evaluation of Cannabis sativa Terpenes in Neuropathic Pain." Principal Investigator. Total Budget: $1,599,090. Project Period: 7/1/2021 – 4/30/2026.
- UA Contract work with industry partners. $133,232 total. 2015-Present.
- UA Startup Funds for research support. $1,250,000. 2015-Present.

Mentored Student Fellowships

- UNE Peter Morgane Research Fellowship sponsoring a medical student to work on a research project during the summer. Mentor. $4,000. Summer 2015.
- UNE SURE Fellowship sponsoring an undergraduate student to work on a research project during the summer. Mentor. $4,040. Summer 2015.
- UNE Peter Morgane Research Fellowship sponsoring a medical student to work on a research project during the summer. Mentor. $4,000. Summer 2014.
- UNE Peter Morgane Research Fellowship sponsoring a medical student to work on a research project during the summer. Mentor. $4,000. Summer 2013.

Completed

- Arizona Biomedical Research Commission Investigator Grant. "Development of a Selective Mu-Delta Opioid Receptor Heterodimer Antagonist for Enhancing Opioid Analgesia while Reducing Side Effects." Principal Investigator. Total Budget: $750,000. Project Period: 7/1/2021 – 6/30/2024. NCE to 6/30/2025.
- Flinn Foundation Research Grant #23-06541. "Novel Approach to Eliminate Opioid Addiction in Pain Management." Principal Investigator. Total Budget: $100,000. Project Period: 5/15/2023 – 11/14/2024.
- UA RII Accelerate for Success Grant. "Development of Clinically Translatable 18F-Radiotracers for In Vivo Detection of TSPO in Age-Related Alzheimer's Disease by Positron Emission Tomography (PET) Imaging." Principal Investigator. Total Budget: $100,000. Project Period: 7/1/2022 – 7/31/2023.
- Flinn Foundation Research Grant #22-06452. "Oxytocin Analgesics Without Side Effects for Opioid Use Disorder." Co-Investigator. Total Budget: $100,000. Project Period: 4/15/2022 – 10/14/2023.
- NIH R01, DA052340-S1. Diversity Supplement to "Development of Hsp90 Isoform-Selective Inhibitors as a Novel Opioid Dose-Reduction Therapy." Principal Investigator. Total Budget: $203,784. Project Period: 5/1/2022 – 4/30/2025. Discontinued 2/2023.
- NIH UG3, DA047717. "MOR/DOR Heterodimer Antagonists: A Novel Treatment for Opioid Dependence." Subaward PI, Overall Project Co-Investigator. Total Budget: $1,820,549; Streicher Direct Budget: $510,542. Project period: 5/1/2019 – 4/30/2022.
- NIH R21, DA044509. "Development of a Selective Mu-Delta Opioid Receptor

Heterodimer Antagonist Using a Linked Bivalent Pharmacophore Approach." Principal Investigator. Total Budget: $422,125. Project period: 9/30/2018 – 8/31/2021.

- NIH R01, DA038635. "Development of Mu Agonist Delta Antagonist Opioids as Analgesics for Chronic Pain." Co-Investigator, Sam Ananthan PI. Streicher total budget: $556,154. Project period 8/1/2015 – 6/30/2021.
- NIH R01, NS091238. "Glycopeptide Agonists as Neuroprotective Therapies for Parkinson's Disease". Co-Investigator, Robin Polt PI. Streicher total budget: $457,190. Project period 9/30/2015 – 6/30/2021.
- Tech Launch Arizona Asset Development Award, UA15-023. "Drugs for L-DOPA-Induced Dyskinesia." Co-Principal Investigator. Total budget: $15,418. Project period: 12/7/2020 – 2/26/2021.
- Tech Launch Arizona Asset Development Award, UA19-043. "Glycosylated Oxytocin Analogues for Non-Opioid Pain Relief and/or Addiction Treatment." Co-Principal Investigator. Total budget: $72,685. Project period: 12/15/2020 – 6/15/2021.
- NIH R01DA038635-S1. "Opioid Ligands for the Treatment of Alzheimer's Disease (Administrative Supplement to Grant R01DA038635)." Subaward PI, overall Co-Investigator. Streicher total budget: $191,416. Project period: 7/1/2019 – 6/30/2021.
- Arizona Biomedical Research Commission New Investigator Award, ADHS18-198875. "Spinal Cord Heat Shock Protein 90: A New Target for Opioid Dose-Reduction." Principal Investigator. Total budget: $225,000. Project period 4/1/2018 – 3/31/2021.
- UA RDI International Research and Academic Program Development (IRPD) Grant. "Determining the Side Effect Profile and Chronic Pain Efficacy of the MACE Series of Fluorinated Cyclic Biphalin Analogs." Principal Investigator. Total budget: $49,968. Project period 7/1/2018 – 12/31/2019.
- UA Health Sciences Career Development Award. "The Role of Monoamine Transporter Activation by Buprenorphine in Pain and Reward." Principal Investigator. Total budget: $221,000. Project period 9/15/2017 – 12/31/2019.
- Tech Launch Arizona Asset Development Award, UA18-106. "Triazabutadienes With Drug-Like Properties." Co-Principal Investigator. Total budget: $39,294. Project period 5/21/2018 – 10/10/2019.
- UA RDI Accelerate for Success Grant. "Opioid Agonists with Reduced Kappa Activity." Co-Investigator, Robin Polt PI. Total budget: $99,745. Project period 1/1/2017 – 6/30/2018.
- UA Arizona Area Health Education Centers (AzAHEC) Research Grant. "Investigation of synergy between cannabinoid-induced cancer cell sensitization and cell death via the activation of DR4 and DR5 death receptors." Principal Investigator. Total budget: $10,000. Project period: 3/15/2017 – 9/15/2017.
- UA Faculty Seed Grant. "Identification of a Novel Target for Cannabinoid Anti-Cancer Effects." Principal Investigator. Total budget: $10,000. Project period 8/1/2016 – 7/31/2017.
- NIH R43 (SBIR), DA042634. "Long-Acting Peripherally-Restricted Peptidic Kappa Opioid Receptor Agonists for Pain." Co-Investigator, Peptide Logic (Pierre Riviere) PI. Streicher total budget: $22,532. Project period 8/1/2016 – 1/31/2017.
- UA Arizona Area Health Education Centers (AzAHEC) Research Grant. "Determining the Molecular Mechanism of Functionally Selective cAMP Signaling by Endomorphin

Peptides." Principal Investigator. Total budget: $10,000. Project period 2/22/2016 – 8/21/2016.

- UNE Mini-Grant (competitive) to investigate the molecular mechanism of functional selectivity of the endomorphin peptides at the mu opioid receptor. Principal Investigator. $10,000. 2015-2016 (declined).
- UNE Mini-Grant (competitive) to investigate the mechanism of a novel signaling regulator of the Mu Opioid Receptor. Principal Investigator. $8,000. 2014-2015.
- Maine Technology Institute Seed Grant to discover and develop novel TRPM8 agonists for the treatment of dry eye syndrome. Principal Investigator. $25,000. 2014-2015.
- COBRE Pilot Project Grant (competitive) to investigate the activated signaling complex of the Mu Opioid Receptor. Principal Investigator. $70,000. 2013-2015.
- Maine Cancer Foundation Pilot Grant to investigate the role of the Kappa Opioid Receptor in regulating cancer cell proliferation in vitro and in vivo. Principal Investigator. $50,000. 2013-2014.
- UNE Mini-Grant (competitive) to establish an initial drug discovery program for pain based on the natural product kaurenoic acid. Co-PI. $8,000. Summer 2013.
- UNE Contract and Core work from academic and industry partners. $33,849 total. 2012-2015.
- UNE Startup Funds for research support and for the creation of the In Vitro Drug Screening Core. $150,000. 2012-2015.

Refereed Publications

Journal Articles – First or Corresponding Authored – *h* index of 33

1. Bowden JL, Carr JE, Gabriel KA, and **Streicher JM**. 2025. Hsp90 inhibition in mouse spinal cord enhances Src kinase signaling in microglia to increase opioid antinociception. PAIN. **ePub.** PMID 41031962.
2. Tanguturi P, Mitchell S, Moukha-Chafiq O, Zhang S, Tillotson J, Ananthan S, Augelli-Szafran CE, and **Streicher JM**. 2025. Development of Delta Opioid Receptor Antagonists Which Prevent Alzheimer's Disease-Like Pathology in the 5X-Familial Alzheimer's Disease [5XFAD] Mouse Model. ACS Pharmacology & Translational Science. 8(9):3346-3370. PMID 40969869.
3. Schwarz AM, Seekins CA, El-Sissi O, and **Streicher JM**. 2025. Terpene blends from *Cannabis sativa* are cannabimimetic and antinociceptive in a mouse chronic neuropathic pain model via activation of adenosine A_{2a} receptors. Neuroscience Letters. 854:138205. PMID 40122228.
4. Seekins CA, Welborn AM, Schwarz AM, and **Streicher JM**. 2024. Select terpenes from *Cannabis sativa* are antinociceptive in mouse models of post-operative pain and fibromyalgia via adenosine A_{2a} receptors. Pharmacological Reports. 77(1):172-181. PMID 39663308.
5. Duron DI, Tanguturi P, Campbell CS, Chou K, Bejarano P, Gabriel KA, Bowden JL, Mishra S, Brackett C, Barlow D, Houseknecht KL, Blagg BSJ, and **Streicher JM**. 2024. Inhibiting Spinal Cord-Specific Hsp90 Isoforms Reveals a Novel Strategy to Improve the Therapeutic Index of Opioid Treatment. Scientific Reports. 14:14715. PMID 38926482.
6. Schwarz AM, Kobeci D, Mancuso J, Moreno-Rodriguez V, Seekins C, Bui T, Welborn A, Carr J, and **Streicher JM.** 2024. Select Minor Cannabinoids from *Cannabis sativa* are Cannabimimetic and Antinociceptive in a Mouse Model of Chronic Neuropathic Pain.

Journal of Pharmacology and Experimental Therapeutics. 391(2):214-221. PMID 38834356.
7. Schwarz AM, Keresztes A, Bui T, Hecksel R, Peña A, Lent B, Gao Z, Gamez-Rivera M, Seekins CA, Chou K, Appel TL, Jacobson KA, Al-Obeidi A, and **Streicher JM.** 2024. Terpenes from *Cannabis sativa* induce antinociception in a mouse model of chronic neuropathic pain via activation of adenosine A_{2A} receptors. PAIN. 165(11):e145-e161. PMID 38709489.
8. Gabriel KA and **Streicher JM.** 2023. HSP90 inhibition in the mouse spinal cord enhances opioid signaling by suppressing an AMPK-mediated negative feedback loop. Science Signaling. 16(780):eade2438. **Selected for the cover.**
9. Tanguturi P and **Streicher JM**. 2023. The role of opioid receptors in modulating Alzheimer's Disease. Frontiers in Pharmacology. 14:1056402.
10. Varga B, **Streicher JM (Co-Corresponding)**, and Majumdar S. 2021. Strategies towards safer opioid analgesics – a review of old and upcoming targets. British Journal of Pharmacology. 180(7):975-993. PMID 34826881.
11. Tanguturi P, Pathak V, Zhang S, Moukha-Chafiq O, Augelli-Szafran CE, and **Streicher JM**. 2021. Discovery of Novel Delta Opioid Receptor (DOR) Inverse Agonist and Irreversible (Non-Competitive) Antagonists. Molecules. 26(21):6693. **Correction published in 2022.**
12. Keresztes A, Olson K, Nguyen P, Lopez-Pier MA, Hecksel R, Barker NK, Liu Z, Hruby V, Konhilas J, Langlais PR, and **Streicher JM**. 2021. Antagonism of the Mu-Delta Opioid Receptor Heterodimer Enhances Opioid Anti-Nociception by Activating Src and CaMKII Signaling. PAIN. 163(1):146-158. PMID 34252907.
13. LaVigne JE, Hecksel R, Keresztes A, and **Streicher JM**. 2021. *Cannabis sativa* Terpenes are Cannabimimetic and Selectively Enhance Cannabinoid Activity. Scientific Reports. 11(1):8232.
14. Largent-Milnes TM, Canals M, and **Streicher JM**. 2020. Editorial: Novel Molecular Targets for the Treatment of Pain. Frontiers in Molecular Neuroscience. 13:625714.
15. Duron DI, Hanak F, and **Streicher JM**. 2020. Daily Intermittent Fasting in Mice Enhances Morphine-Induced Anti-Nociception while Mitigating Reward, Tolerance, and Constipation. PAIN. 161(10):2353-2363.
16. Duron DI, Lei W, Barker NK, Stine C, Mishra S, Blagg BSJ, Langlais PR, and **Streicher JM**. 2020. Inhibition of Hsp90 in the spinal cord enhances the antinociceptive effects of morphine by activating an ERK-RSK pathway. Science Signaling. 13(630):eaaz1854. **Selected for the cover**.
17. Stine C, Coleman DL, Flohrschutz AT, Thompson AL, Mishra S, Blagg BS, Largent-Milnes TM, Lei W, and **Streicher JM**. 2020. Heat Shock Protein 90 Inhibitors Block the Anti-Nociceptive Effects of Opioids in Mouse Chemotherapy-Induced Neuropathy and Cancer Bone Pain Models. PAIN. 161(8):1798-1807.
18. LaVigne J, Keresztes A, Chiem D, and **Streicher JM**. 2020. The Endomorphin-1/2 and Dynorphin-B Peptides Display Biased Agonism at the Mu Opioid Receptor. Pharmacological Reports. 72(2):465-471.
19. Lei W, Duron DI, Stine C, Mishra S, Blagg BSJ, and **Streicher JM**. 2019. The Alpha Isoform of Heat Shock Protein 90 and the Co-Chaperones p23 and Cdc37 Promote Opioid Anti-Nociception in the Brain. Frontiers in Molecular Neuroscience. 12:294.

20. Lei W, Vekariya RH, Ananthan S, and **Streicher JM.** 2019. A Novel Mu-Delta Opioid Agonist Demonstrates Enhanced Efficacy with Reduced Tolerance and Dependence in Mouse Neuropathic Pain Models. Journal of Pain. 21(1-2):146-160.
21. Olson KM, Duron DI, Womer D, Fell R, and **Streicher JM.** 2019. Comprehensive molecular pharmacology screening reveals potential new receptor interactions for clinically relevant opioids. PLOS ONE. 14(6):e0217371.
22. **Streicher JM.** 2019. The Role of Heat Shock Proteins in Regulating Receptor Signal Transduction. Molecular Pharmacology. 95(5):468-474.
23. Olson KM, Keresztes A, Tashiro JK, Daconta LV, Hruby VJ, and **Streicher JM**. 2018. Synthesis and Evaluation of a Novel Bivalent Selective Antagonist for the Mu-Delta Opioid Receptor Heterodimer that Reduces Morphine Withdrawal in Mice. Journal of Medicinal Chemistry. 61(14):6075-6086.
24. Edwards KA, Havelin JJ, Mcintosh MI, Ciccone HA, Pangilinan K, Imbert I, Largent-Milnes TM, King T, Vanderah TW, and **Streicher JM**. 2018. A Kappa Opioid Receptor Agonist Blocks Bone Cancer Pain Without Altering Bone Loss, Tumor Size, or Cancer Cell Proliferation in a Mouse Model of Cancer-Induced Bone Pain. Journal of Pain. 19(6):612-625.
25. Keresztes A and **Streicher JM.** 2017. Synergistic interaction of the cannabinoid and death receptor systems: A potential target for future cancer therapies? FEBS Letters. 591(20):3235-3251.
26. **Streicher JM** and Bilsky EJ. 2017. Peripherally Acting μ-Opioid Receptor Antagonists for the Treatment of Opioid-Related Side Effects: Mechanism of Action and Clinical Implications. Journal of Pharmacy Practice. 31(6):658-669.
27. Lei W, Mullen N, McCarthy S, Brann C, Richard P, Cormier J, Edwards K, Bilsky EJ, and **Streicher JM**. 2017. Heat Shock Protein 90 (Hsp90) Promotes Opioid-Induced Anti-Nociception by an ERK Mitogen Activated Protein Kinase (MAPK) Mechanism in Mouse Brain. Journal of Biological Chemistry. 292(25):10414-10428.
28. Olson KM, Lei W, Keresztes A, LaVigne J, and **Streicher JM**. 2017. Novel Molecular Strategies and Targets for Opioid Drug Discovery for the Treatment of Chronic Pain. Yale Journal of Biology and Medicine. 90(1):97-110.
29. Schmid CL, **Streicher JM (Co-First Author)**, Groer CE, Munro TA, Zhou L and Bohn LM. 2013. Functional Selectivity of 6'-guanidinonaltrindole (6'-GNTI) at Kappa Opioid Receptors in Striatal Neurons. Journal of Biological Chemistry. 288(31):22387-98.
30. **Streicher JM**, Ren S, Herschman H, Wang Y. 2010. MAPK-Activated Protein Kinase-2 in Cardiac Hypertrophy and Cyclooxygenase-2 Regulation in Heart. Circulation Research. 106(8):1434-43.
31. **Streicher JM**, Kamei K, Ishikawa TO, Herschman H, Wang Y. 2010. Compensatory hypertrophy induced by ventricular cardiomyocyte-specific COX-2 expression in mice. Journal of Molecular and Cellular Cardiology. 49(1):88-94.
32. **Streicher JM** and Wang Y. 2008. The Role of COX-2 in Heart Pathology. Cardiovascular and Hematological Agents in Medicinal Chemistry. 6:69-79.

Books and Book Chapters

1. **Streicher JM**. 2019. The role of heat shock protein 90 in regulating pain, opioid signaling, and opioid antinociception. *Opioid Hormones, Vol. 111*. Ed. Litwack G. Academic Press. Pp. 91-103. DOI 10.1016/bs.vh.2019.05.010.

2. Lei W, Duron D, Stine C, and **Streicher JM**. 2019. Role of Heat Shock Protein 90 in Regulating Downstream Signal Transduction Cascades. *Heat Shock Proteins in Signaling Pathways*. Eds. Asea A and Kaur P. Springer International Publishing. Pp. 161-182. DOI 10.1007/978-3-030-03952-3.

Lay Press Articles

1. **Streicher JM**. 2023. Your body naturally produces opioids without causing addiction or overdose – studying how this process works could help reduce the side effects of opioid drugs. The Conversation. https://theconversation.com/your-body-naturally-produces-opioids-without-causing-addiction-or-overdose-studying-how-this-process-works-could-help-reduce-the-side-effects-of-opioid-drugs-204522
   DOI: https://doi.org/10.64628/AAI.hspsk5tsr

Journal Articles – Co-Authored

1. Palomino SM, Levine AA, Liktor-Busa E, Tanguturi P, **Streicher JM**, and Largent-Milnes TM. 2025. Brain Hsp90 Inhibition Mitigates Facial Allodynia in a Rat Model of CSD Headache and Upregulates Endocannabinoid Signaling in the PAG. Pharmaceuticals. 18(10):1430.
2. Serwetnyk MA, Strunden T, Mersich I, Barlow D, D'Amico T, Mishra SJ, Houseknecht KL, **Streicher JM**, and Blagg BSJ. 2025. Optimization of an Hsp90β-selective Inhibitor *via* Exploration of the Hsp90 N-terminal ATP-binding Pocket. European Journal of Medicinal Chemistry. 297:117925. PMID 40633336.
3. Foster BK, Kliebe V, Elnaham HF, Thompson MK, Sagna SL, Patton JS, Brown SC, Chen X, Liu T, Bowden J, **Streicher J**, and Wei L. 2025. Compounds with dual glutaminase inhibition and Nrf2 activation activities enhance morphine analgesia and reduce pain sensitization in chemotherapy-induced peripheral neuropathy mouse model. Journal of Pharmacology and Experimental Therapeutics. 392(6):103583. PMID 40398288.
4. Stefanucci A, Marinaccio L, Pieretti S, Mancuso JA, Stine C, **Streicher JM**, and Mollica A. 2024. Elucidation on the *In Vivo* Activity of the Bivalent Opioid Peptide MACE2 against Several Types of Chronic Pain. ACS Omega. 9(45):45214-45220. PMID 39554412.
5. Banik RK, Sia T, Ibrahim MM, Sivanesan E, Uhelski M, Peña A, **Streicher JM**, and Simone DA. 2023. Increases in local skin temperature correlate with spontaneous foot lifting and heat hyperalgesia in both incisional and inflammatory models of pain. PAIN Reports. 8(5):e1097.
6. Ranaldi R, Timken P, Parasram D, Ali T, Zhang S, Moukha-Chafiq O, Augelli-Szafran C, and **Streicher JM**. 2023. The D3 receptor antagonist SR-21502 reduces cue-induced reinstatement of methamphetamine-seeking in rats. Neuroscience Letters. 806:137237.
7. Szabo LZ, Tanguturi P, Goodman HJ, Sprober S, Liu C, Al-Obeidi F, Bartlett MJ, Falk T, Kumirov VK, Heien ML, **Streicher JM**, and Polt R. 2023. Structure-Based Design of Glycosylated Oxytocin Analogues with Improved Selectivity and Antinociceptive Activity. ACS Medicinal Chemistry Letters. 14(2):163-170. PMID 36793431.
8. Stefanucci A, Minosi P, Pieretti S, Tanguturi P, Molnar G, Scioli G, Marinaccio L, Della Valle A, **Streicher JM**, and Mollica A. 2023. Design of Analgesic Trivalent Peptides with Low Withdrawal Symptoms: Probing the Antinociceptive Profile of Novel Linear

and Cyclic Peptides as Opioid Pan Ligands. ACS Chemical Neuroscience. 14(3):506-515. PMID 36651179.

9. Stefanucci A, Della Valle A, Scioli G, Marinaccio L, Pieretti S, Minosi P, Szucs E, Benyhe S, Masci D, Tanguturi P, Chou K, Barlow D, Houseknecht K, **Streicher JM**, and Mollica A. 2022. Discovery of κ Opioid Receptor (KOR)-Selective d-Tetrapeptides with Improved *In Vivo* Antinociceptive Effect after Peripheral Administration. ACS Medicinal Chemistry Letters. 13(11):1707-1714.
10. Duran P, Loya-Lopez S, Ran D, Tang C, Calderon-Rivera A, Gomez K, Stratton HJ, Huang S, Xu YM, Wijeratne EMK, Perez-Miller S, Shan Z, Cai S, Gabrielsen AT, Dorame A, Masterson KA, Alsbiei O, Madura CL, Luo G, Moutal A, **Streicher J**, Zamponi GW, Gunatilaka AAL, and Khanna R. 2022. The natural product Argentatin C attenuates postoperative pain via inhibition of voltage-gated sodium and T-type voltage-gated calcium channels. British Journal of Pharmacology. 180(9):1267-1285. PMID 36245395.
11. Palomino SM, Levine AA, Wahl J, Liktor-Busa E, **Streicher JM**, and Largent-Milnes TM. 2022. Inhibition of HSP90 Preserves Blood-Brain Barrier Integrity after Cortical Spreading Depression. Pharmaceutics. 14(8):1665.
12. Wahl J, Vivek A, Palomino SM, Almuslim M, Cottier KE, Langlais PR, **Streicher JM**, Vanderah TW, Liktor-Busa E, and Largent-Milnes T. 2022. Extracellular alterations in pH and K+ modify the murine brain endothelial cell total and phospho-proteome. Pharmaceutics. 14(7):1469.
13. Fullerton EF, Karom MC, **Streicher JM**, Young LJ, and Murphy AZ. 2022. Age-Induced Changes in Mu Opioid Receptor Signaling in the Midbrain Periaqueductal Gray of Male and Female Rats. Journal of Neuroscience. 42(32):6232-42.
14. Apostol CR, Bernard K, Tanguturi P, Molnar G, Bartlett MJ, Szabo L, Liu C, Ortiz JB, Saber M, Giordano KR, Green TRF, Melvin J, Morrison HW, Madhavan L, Rowe RK, **Streicher JM**, Heien ML, Falk T, and Polt R. 2022. Design and Synthesis of Brain Penetrant Glycopeptide Analogues of PACAP with Neuroprotective Potential for Traumatic Brain Injury and Parkinsonism. Frontiers in Drug Discovery. 1:818003.
15. Liktor-Busa E, Keresztes A, LaVigne J, **Streicher JM**, and Largent-Milnes TM. 2021. Analgesic Potential of Terpenes Derived from *Cannabis sativa*. Pharmacological Reviews. 73:98-126.
16. Apostol CR, Tanguturi P, Szabo LZ, Varela D, Gilmartin T, **Streicher JM**, and Polt R. 2021. Synthesis and In Vitro Characterization of Glycopeptide Drug Candidates Related to $PACAP_{1-23}$. Molecules. 26(16):4932.
17. Lee Y, Remesic M, Ramos-Colon C, Wu Z, LaVigne J, Molnar G, Tymecka D, Misicka A, **Streicher JM**, Hruby VJ, and Porreca F. 2021. Multifunctional Enkephalin Analogs with a New Biological Profile: MOR/DOR Agonism and KOR Antagonism. Biomedicines. 9(6):625.
18. Morgan MM, Peecher DL, and **Streicher JM**. 2021. Use of home cage wheel running to assess the behavioural effects of administering a mu/delta opioid receptor heterodimer antagonist for spontaneous morphine withdrawal in the rat. Behavioural Brain Research. 397:112953. PMID 33031872.
19. Faouzi A, Uprety R, Gomes I, Massaly N, Keresztes AI, Le Rouzic V, Gupta A, Zhang T, Yoon HJ, Ansonoff M, Allaoa A, Pan YX, Pintar J, Morón JA, **Streicher JM**, Devi LA, and Majumdar S. 2020. Synthesis and Pharmacology of a Novel μ-δ Opioid Receptor

Heteromer-Selective Agonist Based on the Carfentanyl Template. Journal of Medicinal Chemistry. 63(22):13618-13637. PMID 33170687.
20. Cai S, Tuohy P, Ma C, Kitamura N, Gomez K, Zhou Y, Ran D, Bellampalli SS, Yu J, Luo S, Dorame A, Pham NYN, Molnar G, **Streicher JM**, Patek M, Perez-Miller S, Moutal A, Wang J, and Khanna R. 2020. A modulator of the low-voltage activated T-type calcium channel that reverses HIV glycoprotein 120-, paclitaxel-, and spinal nerve ligation-induced peripheral neuropathies. PAIN. 161(11):2551-2570. PMID 32541387.
21. Vekariya RH, Lei W, Ray A, Sainai SK, Zhang S, Molnar G, Barlow D, Karlage KL, Bilsky E, Houseknecht K, Largent-Milnes TM, **Streicher JM**, and Ananthan S. 2020. Synthesis and Structure–Activity Relationships of 5′-Aryl-14-alkoxypyridomorphinans: Identification of a Mu Opioid Receptor Agonist/Delta Opioid Receptor Antagonist Ligand with Systemic Antinociceptive Activity and Diminished Opioid Side Effects. Journal of Medicinal Chemistry. 63(14):7663-7694.
22. Stefanucci A, Dimmito MP, Molnar G, **Streicher JM**, Novellino E, Zengin G, and Mollica A. 2020. Developing Cyclic Opioid Analogues: Fluorescently Labeled Bioconjugates of Biphalin. ACS Medicinal Chemistry Letters. 11(5):720-726.
23. Stefanucci A, Dimmito M, Macedonio G, Ciarlo L, Pieretti S, Novellino E, Lei W, Barlow D, Houseknecht KL, **Streicher JM**, and Mollica A. 2020. Potent, efficacious, and stable cyclic opioid peptides with long lasting antinociceptive effect after peripheral administration. Journal of Medicinal Chemistry. 63(5):2673-2687.
24. Shan Z, Song C, Yu J, Zhang Z, Vallecillo T, Serafini M, Thomas A, Pham N, Bellampalli S, Moutal A, Zhou Y, Xu G, Xu Y, Luo S, Patek M, **Streicher JM**, Gunatilaka A, Khanna R. 2019. Reversal of peripheral neuropathic pain by the small-molecule natural product physalin F via block of CaV2.3 (R-type) and CaV2.2 (N-type) voltage-gated calcium channels. ACS Chemical Neuroscience. 10(6):2939-2955.
25. Stefanucci A, Lei W, Pieretti S, Novellino E, Dimmito M, Marzoli F, **Streicher JM**, and Mollica A. 2019. On Resin Click-Chemistry-Mediated Synthesis of Novel Enkephalin Analogues with Potent Anti-Nociceptive Activity. Scientific Reports. 9(1):5771.
26. Stefanucci A, Lei W, Pieretti S, Dimmito M, Luisi G, Novellino E, Nowakowski M, Kozminski W, Mirzaie S, Zengin G, **Streicher JM**, and Mollica A. 2019. Novel Cyclic Biphalin Analogues by Ruthenium-Catalysed Ring Closing Metathesis: *In Vivo* and *In Vitro* Biological Profile. ACS Medicinal Chemistry Letters. 10(4):450-456.
27. Khanna R, Yu J, Yang X, Moutal A, Chefdeville A, Gokhale V, Shuja Z, Chew L, Bellampalli SS, Luo S, Francois-Moutal L, Serafini MJ, Ha T, Perez-Miller S, Park K, Patwardhan A, **Streicher JM**, Colecraft H, and Khanna M. 2019. Targeting the CaVα-β interaction yields an antagonist of the N-type CaV2.2 channel with broad antinociceptive efficacy. PAIN. 160(7):1644-1661.
28. Cai S, Bellampalli S, Yu J, Li W, Ji Y, Wijeratne K, Dorame A, Luo S, Zhiming S, Khanna M, Moutal A, **Streicher JM**, Gunatilaka L, and Khanna R. 2018. (-)-Hardwickiic acid and Hautriwaic acid induce antinociception via blockade of tetrodotoxin-sensitive voltage-dependent sodium channels. ACS Chemical Neuroscience. 10(3):1716-1728.
29. Bellampalli SS, Ji Y, Moutal A, Cai S, Wijeratne K, Gandini MA, Yu J, Chefdeville A, Dorame A, Chew LA, Madura CL, Luo S, Molnar G, Khanna M, **Streicher JM**, Zamponi GW, Gunatilaka L, and Khanna R. 2018. Betulinic acid, derived from the desert lavender *Hyptis emoryi*, attenuates paclitaxel-, HIV-, and nerve injury-associated

peripheral sensory neuropathy via block of N- and T-type calcium channels. PAIN. 160(1):117-135.
30. Shah N, Kumar S, Zaman N, Pan CC, Bloodworth JC, Lei W, **Streicher JM**, Hempel N, Mythreye K, and Lee NY. 2018. TAK1 activation of alpha-TAT1 and microtubule hyperacetylation control AKT signaling and cell growth. Nature Communications. 9(1):1696.
31. Starnowska J, Costante R, Guillemyn K, Popiolek-Barczyk K, Chung NN, Lemieux C, Keresztes A, Van Duppen J, Mollica A, **Streicher JM**, Vanden Broeck J, Schiller PW, Tourwe D, Mika J, Ballet S, and Przewlocka B. 2017. Analgesic properties of opioid/NK1 multitarget ligands with distinct *in vitro* profiles in naïve and chronic constriction injury (CCI)-mice. ACS Chemical Neuroscience. 8(10):2315-2324.
32. Stefanucci A, Lei W, Hruby VJ, Macedonio G, Luisi G, Carradori S, **Streicher JM**, and Mollica A. 2017. Fluorescent labeled bioconjugates of the opioid peptides Biphalin and DPDPE incorporating fluorescein-maleimide linkers. Future Medicinal Chemistry. 9(9):859-869.
33. Xie JY, De Felice M, Kopruszinski CM, Eyde N, LaVigne J, Remeniuk B, Hernandez P, Yue X, Goshima N, Ossipov M, King T, **Streicher JM**, Navratilova E, Dodick D, Rosen H, Roberts E, and Porreca F. 2017. Kappa opioid receptor antagonists: a possible new class of therapeutics for migraine prevention. Cephalalgia. 37(8):780-794.
34. Ramos-Colon CN, Lee YS, Remesic MV, Hall SM, LaVigne J, Davis P, Sandweiss AJ, McIntosh MI, Hanson J, Largent-Milnes TM, Vanderah TW, **Streicher JM**, Porreca F, and Hruby VJ. 2016. Structure Activity Relationships of [des-Arg7]-Dynorphin A Analogues at the Kappa Opioid Receptor. Journal of Medicinal Chemistry. 59(22):10291-10298.
35. Zhang Y, Williams DA, Zaidi SA, Yuan Y, Braithwaite A, Bilsky EJ, Dewey WL, Akbarali HI, **Streicher JM**, Selley DE. 2016. 17-Cyclopropylmethyl-3,14β-dihydroxy-4,5α-epoxy-6β-(4'-pyridylcarboxamido)morphinan (NAP) modulating the mu opioid receptor in a biased fashion. ACS Chemical Neuroscience. 7(3):297-304.
36. Stevenson GW, Luginbuhl A, Dunbar C, LaVigne J, Dutra J, Atherton P, Bell B, Cone K, Giuvelis D, Polt R, **Streicher JM**, Bilsky EJ. 2015. The mixed-action delta/mu opioid agonist MMP-2200 does not produce conditioned place preference, but does maintain drug self-administration in rats, and induces in vitro markers of tolerance and dependence. Pharmacology, Biochemistry and Behavior. 132:49-55.
37. Frankowski KJ, Slauson SR, Lovell KM, Phillips AM, **Streicher JM**, Zhou L, Whipple D, Schoenen FJ, Prisinzano TE, Bohn LM, Aube J. 2015. Potency enhancement of the κ-opioid receptor antagonist probe ML140 through sulfonamide constraint utilizing a tetrahydroisoquinoline motif. Bioorganic and Medicinal Chemistry. 23(14):3948-56.
38. Zhang Y, Braithwaite A, Yuan Y, **Streicher JM**, Bilsky EJ. 2014. Behavioral and Cellular Pharmacology Characterization of 17-cyclopropylmethyl-3,14β-dihydroxy-4,5α-epoxy-6α-(isoquinoline-3′-carboxamido)morphinan (NAQ) as a Mu Opioid Receptor Selective Ligand. European Journal of Pharmacology. 736:124-30.
39. Schmid CL, **Streicher JM**, Meltzer HY, Bohn LM. 2014. Clozapine acts as an agonist at serotonin 2A receptors to counter MK-801-induced behaviors through a βarrestin2-independent activation of Akt. Neuropsychopharmacology. 39(8):1902-13..
40. Zhou L, Lovell KM, Frankowski KJ, Slauson SR, Phillips AM, **Streicher JM**, Stahl E, Schmid CL, Hodder P, Madoux F, Cameron MD, Prisinzano TE, Aube J, Bohn LM.

2013. Development of functionally selective, small molecule agonists at kappa opioid receptors. Journal of Biological Chemistry. 288(51):36703-16.

41. Frankowski KJ, Hedrick MP, Gosalia P, Li K, Shi S, Whipple D, Ghosh P, Prisinzano TE, Schoenen F, Su Y, Vasile S, Sergienko E, Gray W, Hariharan S, Milan L, Heynen-Genel S, Mangravita-Novoc A, Vicchiarelli M, Smith L, **Streicher JM**, Caron MG, Barak LS, Bohn LM, Chung T, Aube J. 2012. Discovery of Small Molecule Kappa Opioid Receptor Agonist and Antagonist Chemotypes through a HTS and Hit Refinement Strategy. ACS Chemical Neuroscience. 3(3):221-236.
42. Beguin C, Potuzak J, Xu W, Liu-Chen L, **Streicher JM**, Groer CE, Bohn LM, Carlezon WA, Cohen BM. 2012. Differential signaling properties at the kappa opioid receptor of 12-epi-salvinorin A and its analogues. Bioorganic & Medicinal Chemistry Letters. 22(2):1023-6.
43. Tarselli MA**,** Raehal KM**,** Brasher AK, **Streicher JM**, Groer CE, Bohn LM and Micalizio GC. 2011. Synthesis of conolidine and discovery of a potent non-opioid analgesic for tonic and persistent pain. Nature Chemistry**.** 3(6):449-53.
44. Drews O, Tsukamoto O, Liem D, **Streicher J**, Wang Y, Ping P. 2010. Differential Regulation of Proteasome Function in Isoproterenol-Induced Cardiac Hypertrophy. Circulation Research. 107(9):1094-1101.
45. Papanicolaou KN, **Streicher JM**, Ishikawa TO, Herschman H, Wang Y, Walsh K. 2010. Preserved heart function and maintained response to cardiac stresses in a genetic model of cardiomyocyte-targeted deficiency of cyclooxygenase-2. Journal of Molecular and Cellular Cardiology. 49(2):196-209.
46. Bethea CL, **Streicher JM**, Mirkes SJ, Sanchez RL, Reddy AP and Cameron JL. 2005. Serotonin-Related Gene Expression in Female Monkeys with Individual Sensitivity to Stress. Neuroscience. 132(1):151-66.
47. Huan JY, **Streicher JM**, Bleyle LA and Koop DR. 2004. Proteasome-dependent degradation of cytochromes P450 2E1 and 2B1 expressed in tetracycline-regulated HeLa cells. Toxicology and Applied Pharmacology. 199(3):332-43.
48. Bethea CL, **Streicher JM**, Coleman K, Pau FK, Moessner R, and Cameron JL. 2003. Anxious behavior and fenfluramine-induced prolactin secretion in young rhesus macaques with different alleles of the serotonin reuptake transporter polymorphism (5HTTLPR). Behavior Genetics. 34(3):295-307.
49. Bethea CL, Lu NZ, Reddy A, Shlaes T, **Streicher JM** and Whittemore SR. 2003. Characterization of reproductive steroid receptors and response to estrogen in a rat serotonergic cell line. Journal of Neuroscience Methods. 127:31-41.
50. Bethea CL, Lu NZ, Gundlah C, **Streicher JM**. 2002. Diverse actions of ovarian steroids in the serotonin neural system. Frontiers in Neuroendocrinology. 23:41-100.

NIH Probe Reports

1. Hedrick MP, Gosalia P, Li K, Frankowski KJ, Shi S, Prisinzano TE, Schoenen F, Aubé J, Su Y, Stonich D, Vasile S, Sergienko E, Gray W, Hariharan S, Milan L, Heynen-Genel S, Vicchiarelli M, Mangravita-Novo A, **Streicher JM**, Smith LH, Chung TDY, Caron M, Bohn LM, Barak LS. 2011. Antagonist for the Kappa Opioid Receptor. NIH Molecular Libraries Program.