

Anna M.W. Taylor, Ph.D.

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9-47 MSB

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EDUCATION

2011 **Ph.D** (Pharmacology) McGill University, Montreal, Canada

2005 **Bachelor of Science** (Pharmacology) Queen's University, Kingston, Canada

WORK EXPERIENCE

Sept 2017- **Assistant Professor**, Department of Pharmacology, U Alberta

2016- 2017 **Research Associate**, Department of Psychiatry, UC Los Angeles

2011-2016 **Postdoctoral Scholar**, Hatos Center for Neuropharmacology, UC Los Angeles

PUBLICATIONS

* = corresponding author

Peer-Reviewed Articles

2019 Lu S, Pickens S, Burma N, Ibarra-Lecue I, Yang H, Xue L, Cook C, Hakimian J, Severino J, Severino A, Lueotow L, Komarek K, Taylor A, Olmstead MC, Carroll FI, Bass C, Andrews A, Walwyn W, Trang T, Evans E, Leslie F, Cahill CM. (2019) "Kappa opioid receptors drive a tonic aversive component of chronic pain". **J Neurosci In press**

2018 Lee K, Vuong H, Nusbaum D, Hsiao E, Evans C, Taylor AMW*. (2018) The gut microbiota mediates reward and sensory responses associated with regimen-selective morphine dependence. **Neuropsychopharmacology** 43(13):2606-2614.

Yu X, Taylor AMW, Lu T-Y, Diaz-Castro B, Golshani P, Evans CJ, Khakh BS. (2018) "Silencing striatal astrocyte calcium signaling alters neuron properties and mouse behavior" **Neuron**, 99(6):1170-1187.

Taylor AMW* (2017) Corticolimbic circuitry in the modulation of chronic pain and substance abuse. **Prog Neuropsychopharmacol Biol Psychiatry. Review.** 87B:159-332.

2017 Taylor AMW*, Mehrabani, S, Liu, S, Taylor AJ, Cahill, CM (2017) Topography of microglial activation in sensory and affect related brain regions in a mouse model of chronic pain. **J Neurosci Res.** 95(6):1330-1335.

- Cahill CM and Taylor AMW. (2017) Neuroinflammation – A co-occurring phenomenon linking chronic pain and opioid dependence. **Curr Opin Behav Sci** 13:171-177. *Review*.
- 2016 Cahill CM, Walwyn W, Taylor AMW, Pradhan AAA, Evans CJ. (2016) Allostatic mechanisms of opioid tolerance beyond desensitization and downregulation. **Trends Pharmacol Sci** 37(11):963-976. *Review*.
- Taylor AMW*, Becker S, Schweinhardt, P, Cahill CM. (2016) Mesolimbic dopamine signaling in acute and chronic pain: implications for motivation, analgesia and addiction. **Pain** 157(6):1194-1198. *Review*.
- Taylor AMW, Castonguay A, Ghogha A, Vayssiere P, Pradhan AAA, Xue L, Wu J, Levitt P, De Koninck Y, Evans CJ, Cahill CM. (2016) Neuroimmune regulation of GABAergic neurons within the ventral tegmental area during withdrawal from chronic morphine. **Neuropsychopharmacology** 41(4): 949-959.
- 2015 Taylor AM, Castonguay A, Taylor, AJ, Murphy NP, Ghogha A, Cook C, Xue L, Olmstead MC, De Koninck Y, Evans CJ, Cahill CM (2015). Microglia disrupt mesolimbic reward circuitry in chronic pain. **J Neurosci** 35(22):8442-8450
- Charrua A, Pinto R, Taylor A, Canelas A, Ribeiro-da-Silva A, Cruz CD, Birder LA, Cruz F (2015) Can the adrenergic system be implicated in the pathophysiology of bladder pain syndrome/interstitial cystitis? A clinical and experimental study. **Neurourol Urodyn**. 34(5): 489-496.
- 2014 Taylor AMW, Roberts KW, Pradhan AA, Walwyn W, Lutfy K, Carroll FI, Cahill CM, Evans CJ (2014). Kappa opioid receptor-mediated analgesia is blocked by a delta opioid receptor agonist. **Br J Pharmacol**, 172(2):e102334
- Taylor AMW, Murphy NP, Evans CJ, Cahill CM (2014) Correlation between ventral striatal catecholamine content and nociceptive thresholds in neuropathic mice. **J Pain** 15(8): 878-885.
- Cahill CM, Taylor AM, Cook C, Ong E, Moron JA, Evans CJ (2014). Does the kappa opioid receptor system contribute to pain aversion? **Front Pharmacol** 5:253. *Review*.
- 2013 Taylor, AMW*. (2013) Pain and reward: How the affective-motivational system is perturbed in chronic pain. **Postdoc Res J**. Vol 1, No.2. *Review*
- 2012 Taylor, AMW and Ribeiro-da-Silva A. (2012). Consequences of the ablation of non-peptidergic afferents in an animal model of trigeminal neuropathic pain. **Pain**. 153: 1311-1319.
- 2011 Farmer, MA, Taylor, AMW, Bailey, AL, McIntyre, LC, Milagrosa, ZE, Crissman, HP, Bennet, GJ, Ribeiro-da-Silva, A, Binik, TM, and Mogil, JS (2011) Recurrent

vulvovaginal candidiasis as an etiology of provoked vestibulodynia. **Science Transl Med** 101ra91.

Taylor, AMW and Ribeiro-da-Silva, A. (2011). GDNF levels in the lower lip skin in rat model of trigeminal neuropathic pain: Implications for non-peptidergic fiber re-innervation and parasympathetic sprouting. **Pain**. 52 (7): 1502-1510.

2009 Taylor, AMW, Peleshok, JC, and Ribeiro-da-Silva, A. (2009) Distribution of P2X3-immunoreactive fibers in hairy and glabrous skin of the rat. **J Comp Neurol**. (514):555-566.

Riedl, MS, Schnell, SA, Overland, AC, Chabot-Dore, AJ, Taylor, AMW, Ribeiro-da-Silva, A, Elde, RP, Wilcox, GL, and Stone, LS. (2009) Coexpression of alpha2a adrenergic and delta opioid receptors in substance P-Containing terminals in rat dorsal horn. **J Comp Neurol**. (513) 385-398.

2007 Holdridge, S.C., Armstrong, S.A., Taylor, AMW, and Cahill, C.M. (2007) Behavioral and morphological evidence for the involvement of glial cell activation of delta opioid receptor function: implications for the development of opioid tolerance. **Mol Pain**. 3:7.

Other Publications

2019 Dworsky-Fried Z* and Taylor AMW (2019). "Pain is but a memory" **Lab Animal in press**

2011 Cahill, CM and Taylor, AMW (2011) A piece of the puzzle is revealed for delta opioid analgesia. **Pain**. 152 (6): 1217-1218.

2008 Taylor, Anna. (March 2008) "Mirroring Minds" Le Panoptique.
<http://www.lepanoptique.com/sections/sciences/mirroring-minds/>

Submitted Peer-Reviewed Publications

Huang AY, Taylor AMW, Ghogha A, Pribadi M, Wang Q, Kim T, Coppola G, Evans CJ. Genetic and functional analysis of a Pacific Hagifsh opioid system.

GRANTS AND FELLOWSHIPS

2019 Canadian Foundation for Innovation JELF
2018-2022 National Science and Engineering Research Council Discovery Grant
2016-2018 American Pain Society Future Leaders in Pain Research Award
2016-2021 K99 NIH-NIDA Pathway to Independence Award
2013-2015 Canadian Institutes for Health Research Postdoctoral Fellowship
2008-2010 Banting and Best Canada Graduate Scholarship Doctoral Award

HONORS AND AWARDS

2016 Brain Research Institute Travel Award, UC Los Angeles

- 2015 Best Trainee Presentation, Drug Abuse Research Symposium, Charles Drew University
- 2014 International Association for the Study of Pain Travel Award
- 2012 Brain Research Institute Travel Award, UC Los Angeles
- Canadian Pain Society Trainee Travel Award
- International Narcotic Research Conference Trainee Travel Award
- Postdoctoral Travel Award, Queens University
- 2009 Interdepartmental Graduate Student Research Award, McGill University
- 2007 Melville Prize Research Award, Department of Pharmacology, McGill University
- 2005 Deans' Research Award, Department of Pharmacology, Queens University
- Research Award, Department of Anesthesiology, Queens University

INVITED GUEST LECTURES

- 2018 Tulane Brain Institute, Tulane University, New Orleans Louisiana, Feb 28 2017

- 2016 Department of Neuroscience, Carleton University, Ottawa Ontario, Jan 28 2016

- Department Physiologie-Pharmacologie, Sherbrooke University, Sherbrooke Quebec, Feb 21, 2016

- Division of Biomedical Sciences, Memorial University, St. John's Newfoundland, Sept 21 2016

- 2015 Center for Neuroscience and Behavior, Miami University, Miami Ohio, Nov 21 2015

- 2012 Department of Psychiatry and Neuroscience, Laval University, Quebec City, Quebec, December 12 2012

CONFERENCE ACTIVITY

Papers Presented

- 2019 Taylor AMW "Neuroimmune mechanisms in pain and opioid dependence", International Narcotic Research Conference, Jul 3-6

- Taylor AMW "Opioid-induced gut microbiota disruption induced via a gut motility mechanism", Spring Pain Meeting, April 2-3 ***session chair and organizer**

- 2018 Taylor AMW "Chronic opioids impact sensory and affective systems via alterations in the gut microbiome", Society for Neuroscience Annual Meeting, Nov 3-9 2018

- Taylor AMW "Chronic opioids impact sensory and affective systems via alterations in the gut microbiome", American Pain Society Summit, Mar 3-6 2018

- Taylor AMW "Influence of gut microbiome on opioid dependence" Winter Conference on Brain Research, Jan 14-19 2018

- 2016 Taylor AMW. “Neuroimmune regulation of motivational systems in chronic pain”, American Pain Society Annual Meeting, May 11-14 2016
- 2015 Taylor AMW, Arnold A, Cahill CM, Evans CJ. “Kappa-opioid mediated antinociception can be stress-mediated and some agonists show marked sex differences”, Kappa Therapeutic Conference, Apr 20-24.
- 2014 Taylor, AMW. “Neuropathic pain modulates midbrain dopamine release”, International Narcotic Research Conference, July 13-18
- 2012 Taylor, AMW, Evans, CJ, and Cahill, CM. “Activated glia in pain affect and opioid reward in chronic pain”, Winter Conference on Brain Research, Jan 21-26
- 2007 Taylor, AMW. “Non-Peptidergic and parasympathetic fibre plasticity in the lower lip skin following sensory nerve lesion”, Society for Neuroscience Annual Meeting, Nov 3-7

Posters

* trainees

- 2019 Taylor AMW, Lee K*, Vuong H, Nusbaum D, Hsiao E, Evans CJ. “Revealing microbiome-gut-brain interactions in opioid dependence”, American Pain Society Annual Meeting, April 4-6
- 2017 Taylor AMW, Lee K*, Nusbaum D, Hsiao E, Evans CJ. “Revealing microbiome-gut-brain interactions in opioid dependence” Canadian Neuroscience Annual Meeting, May 28-31
- Liu S, Pickens S, Taylor AMW, Xue L, Williams P, Wu J, Carroll FI, Levitt P, Leslie F, Cahill CM. “Kappa opioid receptor up-regulation contributes to mood and reward dysregulation in neuropathic pain” International Narcotic Research Conference, Jul 9-14.
- 2016 Taylor AMW, Mehrabani S, Liu S, Taylor A, Evans C, Cahill C. “Topography of microglial activation in pain and affect related brain regions in chronic pain” Society for Neuroscience Annual Meeting, Nov 5-8, 2016
- Lee K*, Bridges S, Cahill C, Evans C, Taylor AMW “Intermittent versus sustained morphine treatment regimens on molecular and behavioral markers of withdrawal” Society for Neuroscience Annual Meeting, Nov 5-8, 2016
- Evans C, Taylor AMW, Lee K*, Bridges S, Cahill C. “Intermittent versus sustained morphine treatment regimens on molecular and behavioral markers of withdrawal” International Narcotic Research Conference, July 10-14, 2016

- Pickens S, Chin J, Ong E, Mehrabani S, Taylor AMW, Cahill C. "No sexual dimorphism in gliosis-induced modulation of reward in opioid-dependent states", International Narcotic Research Conference, July 10-14 2016
- 2015 Taylor AMW. "(+) naloxone and microglia: implications for opioids tolerance, hyperalgesia and reward", Winter Conference on Brain Research, Jan 24-29 2015
- Taylor AMW, Ghogha A, Cook C, King C, Evans CJ, Cahill CM. "Opioids and microglia: a murine-derived microglia stable cell line study", American Pain Society Annual Meeting, May 13-16
- 2014 Taylor, AMW, Castonguay A, Ghogha A, De Koninck Y, Evans CJ, Cahill, CM. "Neuropathic pain modulates the mesolimbic dopamine system to interfere with opioid-stimulated dopamine release in the ventral striatum", International Association for the Study of Pain Annual Meeting, Oct 6-11
- Taylor, AMW, Castonguay A, Ghogha A, Vayssiere P, De Koninck Y, Evans CJ, Cahill, CM. "Opioid dependence disrupts cocaine reward by disrupting GABAergic chloride homeostasis mediated by activated microglia", World Congress of Neuropharmacology, June 22-26
- Taylor, AMW, Castonguay A, Ghogha A, Murphy NP, De Koninck Y, Evans CJ, Cahill CM. "Chronic pain leads to disruption of mesolimbic dopamine function in response to opioids", Keystone Symposia, June 15-20.
- 2013 Taylor, AMW. "Opioid reward switches to a dopamine dependent process in chronic pain", International Congress on Neuropathic Pain, May 23-26.
- Taylor, AMW, Castonguay A, Taylor AJ, Ghogha A, Murphy NP, De Koninck Y, Evans CJ, Cahill CM. "Chronic pain perturbs the mesolimbic dopamine system and interferes with opioid reward", Society for Neuroscience Annual Meeting, Nov 9-13
- Evans CJ, Taylor AMW, Roberts KW, Pradhan AA, Walwyn W, Lutfy K, Carroll FI, Cahill CM. "The kappa agonist, U50-488H, mediates analgesia via an anxiogenic effect", Society for Neuroscience Annual Meeting, Nov 9-13
- Cahill CM, Taylor AMW, Castonguay A, Ghogha A, Vayssiere P, Pradhan AA, De Koninck Y, Evans CJ. "Opioid dependence disrupts cocaine reward by disrupting GABA-ergic chloride homeostasis mediated by activated microglia", Society for Neuroscience Annual Meeting, Nov 9-13
- 2012 Taylor, AMW, Vayssiere, P, Evans, CJ, and Cahill, CM. "Opioid reward in switches to a dopamine dependent process in a chronic pain state". Society for Neuroscience Annual Meeting, Oct 13-17

Taylor, AMW, Vayssiere, P, Evans, CJ, and Cahill, CM. "Opioid reward switches to a dopamine dependent process in a chronic pain state", International Association for the Study of Pain International Meeting, Aug 27-31

Taylor, AMW, Vayssiere, P, Evans, CJ, and Cahill, CM. "Microglial activation is essential for opioid but not psychostimulant reward in drug dependent states", International Narcotic Research Conference, July 15-20

2010 Taylor, AMW and Ribeiro-da-Silva, A. "Exploring the mechanisms of trigeminal neuropathic pain using an IB4-Saporin model", International Association for the Study of Pain International Meeting, Aug 29- Sep 2

2009 Taylor, AMW and Ribeiro-da-Silva, A. "Changes in central and peripheral terminals of sensory fibers innervating the lower lip skin following sensory nerve lesion", Society for Neuroscience Annual Meeting, Oct 17-21

2008 Taylor, AMW, Longo, G., and Ribeiro-da-Silva, A. "Sensory and autonomic nerve fibre plasticity in skin of the rat lower lip: Implications for neuropathic pain", Society for Neuroscience Annual Meeting, Nov 15-19

Taylor, AMW, Longo, G. and Ribeiro-da-Silva, A. "Sensory and autonomic fibre plasticity in the rat lower lip skin following sensory nerve lesion", International Association for the Study of Pain Annual Meeting, Aug 17-22

Farmer, M, Binik, Y M, Taylor, AMW, MacIntyre, LC, Bennett, GW and Mogil, JS. "Behavioral and histological characterization of a mouse model of provoked vestibulodynia following recurrent vulvovaginal candidiasis", Canadian Sex Research Forum

Taylor, AMW, Longo, G, and Ribeiro-da-Silva, A. "Changes in sensory and autonomic fiber innervation in the rat lower lip skin following a sensory nerve lesion", Canadian Association for the Study of Neuroscience Annual Meeting, May 25-28

2007 Armstrong, SA, Holdridge, SV, Taylor, AMW, and Cahill, CM. "Enhanced delta opioid receptor-mediated antinociception following prolonged morphine treatment: The role of spinal glial activation", International Conference for Pain Research and Management

DEPARTMENTAL TALKS

2019 Anesthesiology Research Day, Department of Anesthesiology, University of Alberta, May 31

Grand Rounds, Department of Psychiatry, University of Alberta, Mar 15

2018 Research Symposium on Opioids and Addiction, Neurochemical Research Unit, University of Alberta, March 29 2018

- 2017 Neuroscience and Mental Health Institute Seminar Series, University of Alberta, Nov 8 2017
- Pain Interest Group Seminar Series, University of Alberta, Oct 28 2017
- Neuroscience and Mental Health Institute Welcome Seminar, University of Alberta, Oct 4 2017
- 2016 Hatos Center Donor Meeting, UC Los Angeles, May 24
- Cousins Center for Psychoneuroimmunology, UC Los Angeles, Mar 31
- 10th Drug Abuse Research Symposium, Charles Drew University, Los Angeles, California. Aug 7.
- 2015 Integrated Center for Addictions Seminar, UC Los Angeles, Nov 11
- Substance Abuse Research Consortium, UC Los Angeles, Oct 14
- Department of Anesthesiology and Perioperative Medicine Research Day, UC Irvine, June 3
- Hatos Center for Neuropharmacology, UC Los Angeles, Feb 3
- 2014 Center for Ulcer Research and Education Lecture Series, Digestive Diseases Research Center, UC Los Angeles, Nov 18
- Postdoc Seminar Series, UC Los Angeles, Mar 1
- Hatos Center for Neuropharmacology, UC Los Angeles, Feb 4
- 2013 Hatos Center Donor Meeting, UC Los Angeles, May 13
- 2012 Hatos Center for Neuropharmacology, UC Los Angeles, Apr 1
- 2011 Hatos Center for Neuropharmacology, UC Los Angeles, May 1
- 2010 Constance Lethbridge Rehabilitation Centre, Montreal, Quebec
- McGill Pain Day, McGill University, Jan 20
- 2009 Quebec Network for Junior Pain Investigators Annual Meeting, Université de Montréal, May 1
- McGill Pain Day. McGill University, Jan 21

2008 McGill Pain Day, McGill University, Jan 22

2007 Center for Research on Neuroscience, Neuroscience Seminar Series, McGill University, Montreal, Quebec

Quebec Network for Junior Pain Investigators Annual Meeting. McGill University, Oct 21

McGill Pain Day, McGill University, Jan 23

SUPERVISORY AND TEACHING EXPERIENCE

Classes

Pharmacology 200 Introduction to Pharmacology, 6 Lectures, 2019

Guest Lectures

“Plants and Pain”, Botany 380 Drug Plants, Undergraduate Level (Winter 2018 and 2019)

“Role of microglia in opioid dependence” Seminar in Addiction Psychiatry, Graduate Level UC Los Angeles (Spring 2014)

Mentorship

Graduate Students

Caylin Chadwick, MSc, Neuroscience and Mental Health Institute, September 2018-Present

- CIHR Canada Graduate Scholarship – Master’s

Zoe Dworsky-Fried, MSc, Department of Pharmacology (Co-mentor with Bradley Kerr), September 2018-Present

Undergraduate Students

Christian Faig, University of Alberta 2019-Present

Elizabeth Sugiarto, University of Alberta 2017-Present

Raj Bapuji, University of Alberta 2017-Present

Kevin Lee, UC Los Angeles 2016-2017

“Intermittent versus pellet morphine on microglial activation”

Pedagogical Training

Introductory Teaching Workshop (Nov 02 2017) Faculty of Medicine University of Alberta

Bioscience Postdoc Educational Leadership Program (January –March 2015) UC Los Angeles

An Introduction to Evidence-Based Undergraduate STEM Teaching (January-March 2017) The Center for Integration of Research, Teaching, and Learning MOOC

SERVICE TO PROFESSION

Journal Manuscript Reviewer

Journal of Pain
Pharmacology & Biological Psychiatry
ACS Chemical Neuroscience
Pain Research & Management
Psychopharmacology
Progress in Neuropsychopharmacology & Biological Psychiatry
Journal of Neuroscience Research
PLOS One
Frontiers in Psychiatry

Journal Editor

Frontiers in Psychiatry, Guest Editor (2016-2017)

UNIVERSITY SERVICE

University Organizations

Steward, Postdoctoral Union, UC Los Angeles	2016-Present
Board Member, Postdoctoral Research and Postdoctoral Affairs	2012-Present
Board Member, Quebec Network for Junior Pain Investigators	2009-2010

Research Day/Conference Organization

Astra-Zeneca McGill Pain Day, McGill University	2008-2010
M2C Pain Summer School, McGill University	2009-2010
IBRO Summer School, McGill University	2008
Pain Center Journal Club Organizer, McGill University	2007-2010
Pharmacology Research Day, McGill University	2007

PROFESSIONAL AFFILIATION/MEMBERSHIPS

Society for Neuroscience	2007-present
International Association for the Study of Pain	2009-present
American Pain Society	2014-present
Canadian Association for Neuroscience	2010-present
Canadian Pain Society	2010-2011

TECHNICAL SKILLS

Small animal (rodent) behavior (operant and evoked measures of pain, anxiety, motivated behavior)
Immunocytochemistry
Fluorescent microscopy
Pharmacology
Microdialysis

Immunoblot
Image analysis
Descriptive and inferential statistics
In situ hybridization

LANGUAGES SPOKEN

English (Native)
French (working proficiency)