

CURRICULUM VITAE

Personal

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Education

Institution and Location	Degree	Dates	Field
St. Ambrose University Davenport, IA	B.S.	1980–1984	Biology/Philosophy
University of Iowa Iowa City, IA	M.S.	1987–1989	Plant Biochemistry
University of Iowa Iowa City, IA	Ph.D.	1991–1994	Anatomy and Cell Biology

Professional Experience

8/2014 -	Distinguished Professor of Cell Biology, Missouri State University
8/2008 - 7/2014	Professor of Cell Biology, Missouri State University
7/2006-	Director, Center for Biomedical & Life Sciences, Missouri State University
6/2005 - 7/2008	Associate Professor of Cell Biology, Missouri State University (formerly Southwest Missouri State University)
8/2004 - 6/2006	Executive Director - Center for Applied Science and Engineering, Missouri State University
8/2001 - 5/2005	Assistant Professor of Cell Biology, Southwest Missouri State University
4/1998 - 7/2001	Assistant Research Scientist, Department of Physiology, University of Iowa (Dr. Andrew Russo)
1/1995 - 3/1998	Postdoctoral Fellow, Department of Physiology, University of Iowa (Dr. Andrew Russo)
1/1990 - 7/1991	Research Asst. II, Department of Anatomy, University of Iowa (Dr. Jeanne Snyder)
6/1985 - 12/1986	Research Asst. II, Speech Pathology and Audiology, University of Iowa (Dr. Ingo Titze)
7/1984 - 5/1985	Research Asst. I, Speech Pathology and Audiology University of Iowa (Dr. Adrienne Perlman)

Teaching Experience (Primary Courses Only)

8/18–12/18	Course Director	BIO 320 Molecular Cell Biology (lecture)
8/18–12/18	Course Director	BIO 121 General Biology I (lecture)
1/18–5/18	Course Director	BIO 597/697 Epigenetics and Human Health
1/18–5/18	Course Director	B10121 General Biology I (lecture)
8/17–12/17	Course Director	BIO 320 Molecular Cell Biology (lecture)
8/17–12/17	Course Director	B10 121 General Biology I (lecture)
1/17–5/17	Course Director	BIO 597/697 Diabetes - A Global Epidemic
1/17–5/17	Course Director	BIO 121 General Biology I (lecture)
8/16–12/16	Course Director	BIO 320 Molecular Cell Biology (lecture)
8/16–12/16	Course Director	BIO 121 General Biology I (lecture)
1/16–5/16	Course Director	BIO 597/697 Epigenetics and Human Health
1/16–5/16	Course Director	BIO 121 General Biology I (lecture)
8/15–12/15	Course Director	BIO 320 Molecular Cell Biology (lecture)
8/15–12/15	Course Director	B10121 General Biology I (lecture)
1/15–5/15	Course Director	BIO 597/697 Diabetes (lecture)
1/15–5/15	Course Director	BIO 121 General Biology (lecture)
8/14–12/14	Course Director	BIO 320 Molecular Cell Biology (lecture)
8/14–12/14	Course Director	BIO 121 999 Honor General Biology (lecture)
8/14–12/14	Course Director	BIO 597/697 Cancer Biology (lecture)
1/13–5/14	Course Director	BIO 597/697 Medicinal Plant Biochemistry
1/13–5/14	Course Director	BIO 355/755 Developmental Biology (lecture & lab)

Honors and Awards

- Selected as Provost Fellow for 2020 Public Affairs Conference, October 2019
- Reviewer for Nfifi Grant Study Section - ZRGI MOSS-D (82) A - Musculoskeletal, Oral, Skin, Rheumatology and Rehab Sciences AREA (R.1S) Review, November 2018
- Reviewer for NJH Grant Study Section - Special Emphasis Panel, ZRGI MOSS-D10 Small Business Review, November 2018
- Foundation Award in Service Excellence, Missouri State University, May 2018
- Reviewer for NIH Grant Study Section -20U1/D5 ZRGI JFCN-B (D3) Member conflict: Pain Mechanisms, March 2018
- Reviewer for Nfifi Grant Study Section-2018/05 ZDEI MH (15) 1
- NIDCR Clinical Research, Clinical Trials, and Clinical Trials Planning Grants, February 2018
- Recipient of Missouri State University Bronze Bear Award, December 2017
- Invited panel member for Society for Women's Health Research Migraine Roundtable, Washington DC, October 2017
- Reviewer for NIH Grant Study Section - Member conflict: Pain and Chemosensory Mechanisms 2017/10 ZRGI JFCN-B (03)M, July 2017

- Reviewer for N1H Grant Study Section - RFA-DE-18-002 NIDCR Award for Sustaining Outstanding Achievement in Research (SOAR) (R35) 2017/10 ZDEI GZ (07) R, June 2017
- Reviewer for NIH Grant Study Section - NIH Special Emphasis Panel/Scientific Review Group 2017/08 ZRGI IFCN-T (50) R BRAIN Initiative: Targeted BRAIN Circuits Projects, May 2017
- Missouri Board of Governor's Excellence in Teaching Award, May 2017
- Foundation Award in Teaching Excellence, Missouri State University, May 2017
- Elected Member of Executive Council for American Academy of Orofacial Pain, February 2017
- Foundation Award in Research Excellence, Missouri State University, May 2016
- Reviewer for Nm Grant Study Section, NIDCR Special Emphasis Panel NZRG1-IFCN-B-03M (1AM), Small Business: Oral, dental and craniofacial sciences, March 2016.
- Reviewer for NIH Grant Study Section, NIDCR Special Emphasis Panel 2016/01 ZRG1 MOSS-K (11) B Small Business: Oral, dental and craniofacial sciences, November, 2015
- Reviewer for NIH Grant Study Section, NIDCR Special Emphasis Panel 2016/01 ZDE1 GZ (07) 1, RFA-DE-16-001 Pharmacogenomics of Orofacial Pain Management (RO1), September 2015. Atwood Research and Teaching Award, Missouri State University May 2015
- Service Award College of Natural and Applied Sciences, Missouri State University May 2015
- Promotion to Distinguished Professor, Missouri State University, August 2014
- Invited Co-Chair Headache: Basic Science, American Academy of Neurology, San Diego, March 2014

Invited Speaker

- American Academy of Orofacial Pain Plenary Talk, Orlando, April 2020
- 31st Annual Orofacial Pain Symposium Plenary Talk, Lexington, KY, April 2019
- American Academy of Craniofacial Pain, Three Plenary Lectures, Sydney Australia, April 2019
- School of Dentistry, University of Leeds, Leeds United Kingdom, June 2018
- British Society for Occlusal Studies Meeting, Orofacial Pain Workshop, York England, June 2018
- Blue Ribbon Seminars Club Educational Series, Orofacial Pain Workshop, Montana, May 2018
- American Academy of Craniofacial Pain, Two Day Workshop Epigenetics: Relevance to Orofacial Pain and Management, Los Angeles, May 2018
- American Academy of Oral Medicine 2018 Annual Conference, San Antonio, April 2018
- Mahan Orofacial Pain Alumni Association Annual Meeting, New Orleans, March 2018
- American Pain Society Scientific Summit, Symposium Anaheim, March 2018
- Annual Greater New York Dental Meeting, New York, November 2017
- Orofacial Pain Workshop for US Navy, Bethesda, October 2017
- Southern Headache Society/Southern Pain Society, New Orleans, September 2017

- Physical Therapy Program at the American Academy of Orofacial Pain Meeting, Phoenix, May 2017
- American Academy of Orofacial Pain Plenary Talk, Phoenix, May 2017
- Vollum Institute Dental College, Oregon, April 2017
- American Equilibration Society Meeting, Chicago, February 2017
- Trinity College Dublin Ireland, October 2016
- Orofacial Pain Workshop for US Navy, Bethesda, October 2016
- American Headache Society, San Diego, June 2016
- American Academy of Orofacial Pain, Orlando, April 2016
- MOCAN Conference, Springfield, MO, February 2016
- American Academy of Craniofacial Pain Two-day Workshop on Epigenetics, Sydney, April 2015
- American Academy of Craniofacial Pain, August, Denver 2014
- American Headache Society, June, Los Angeles 2014
- MOCAN Conference, Springfield, MO, February 2014

Professional Activities

- Perform on average more than 15 peer reviews per year for more than 10 journals including - *European Journal of Neuroscience*, *Neuroscience Letters*, *Brain Research*, *Headache*, *Annals of Neurology*, *Pain*, *Cephalalgia*, *Trends in Pharmacology*, *Journal of Neurochemistry*, *Neuroscience*, *Neuropeptides*, *European Journal of Pain*, *Journal of Pain*, *Molecular Pain*, *Archives of Oral Biology*
- Committee Member - Guidelines Textbook, Education, and E-campus for American Academy of Orofacial Pain

Professional Organizations (currently a member)

- Society for Neuroscience
- American Association for the Advancement of Science
- American Headache Society
- American Academy of Orofacial Pain (Advisory Board 2013-2016; Executive Council 2017–2023)
- Southern Pain Society

Areas of Research Interest

My long-term interest lies in understanding the cellular and molecular mechanisms involved in neuron- glia interactions that promote and sustain chronic peripheral and central sensitization. A primary goal of my research is to determine the signaling pathways by which inflammatory and anti-inflammatory agents control neuropeptide gene expression in disorders involving the trigeminal nerve. In addition, I am studying the effects of nutraceutical compounds on neuronal-glia interactions to identify novel biological compounds that inhibit inflammatory pathways, and I am investigating the mechanism of action of cannabidiol and noninvasive transdermal vagus nerve stimulation in clinically relevant models of episodic and chronic migraine, and TMD pathology. I also am studying the connection between a healthy brain and a healthy gut using next generation sequencing to determine changes in the bacteria residing in the digestive system

in response to prolonged inflammatory conditions (acute to chronic pain), early life stress, and alterations in diet and use of antibiotics.

Peer-reviewed Research Publications (since 2014 - italics indicated MSU students)

1. *Cacry, R, Turner, I., Dexter, K., Beach, M.E., Cady, R., **Durham, P.L.*** (2014) An Exploratory Study of Salivary Calcitonin Gene-Related Peptide Levels Relative to Acute Intervention and Preventative Treatment with Onabotulinumtoxin A in Chronic Migraine. *Headache* 54:269- 277. Epub 2013 Oct 22. doi: 10.1111/head.12250.
2. *Cacry, R.J., Densen, J.E., Sullivan, L.Q., **Durham, P.L.*** (2014) Dual Orexin Receptor Antagonist 12 Represses Expression of Proteins in Neurons and Glia Implicated in Peripheral and Central Sensitization. *Neuroscience* 6;269:79-92. doi: 10.1016/j.neuroscience. 2014. 03.043. Epub 2014 Mar28
3. *Hawkins, J.L., Denson, J.E., Miley, D.R., **Durham, P.L.*** (2015) Nicotine Stimulates Expression of Proteins Implicated in Peripheral and Central Sensitization. *Neuroscience*, Apr 2; 290:115-25. doi: 10.1016/j.neuroscience.2015.01.034. Epub 2015 Jan 28.
4. *Ruff, K.J., **Durham, P.L.**, O'Reilly, A, Long, F.D.* (2015) Eggshell membrane hydrolyzates activate NF-KB in vitro: possible implications for in vivo efficacy. *J Inflamm Res*, Feb 9;8:49-57. doi: 10.2147/JIR.S78118. eCollection
5. *Finley, P.J., Norton, R., Austin, C., Mitchell, A, Zank, S., **Durham, P.L.*** (2015) Unprecedented Silver-Resistance in Clinically Isolated Enterobacteriaceae: Major Implications for Bum and Wound Management, *Antimicrob Agents Chemother*. Aug;59(8):4734-41. doi: 10.1128/AAC.00026-15. Epub 2015 May 26.
6. *Gershan, L.A., **Durham, P.L.**, Skidmore, J., Shimizu, J., Cady, R.J., Sheng, X., Maloney, C.G.* (2015) The Role of Salivary Neuropeptides in Pediatrics: Potential Biomarkers for Complementary Therapies. *European Journal of Integrative Medicine*, *European Journal of Integrative Medicine*. 7(4):372-377.
7. *Hawkins, J.L., Durham, P.L.* (2016) Prolonged Jaw Opening Promotes Nociception and Enhanced Cytokine Expression. *J Oral Facial Pain Headache*. 2016 Winter; 30(1):34-41.
8. *Cornelison, L.E., Hawkins, J.L., **Durham, P.L.*** (2016) Elevated Levels of Calcitonin Gene-Related Peptide in Upper Spinal Cord Promotes Sensitization of Primary Trigeminal Nociceptive Neurons, *Neuroscience*. Oct 13;339:491-501. doi: 10.1016/j.neuroscience.2016.10.013.
9. ***Durham, P.L.*** (2016) Diverse Physiological Roles of Calcitonin Gene-Related Peptide in Migraine Pathology: Modulation of Neuron-Glial-Immune Cells to Promote Peripheral and Central Sensitization, *Curr Pain Headache Rep*. Aug;20(8):48. doi: 10.1007/s11916-016- 0578-4.
10. *Cady, R. K., **Durham, P.L.*** (2016) Emerging Role of Epigenetics in Understanding Migraine, *The Pain Practitioner*. December 2016:32-37. Selected for CME course.
11. *Durham, Z.L., **Durham, P.L.*** (2017) Tumor Necrosis Factor-Alpha Stimulates Cytokine Expression and Transient Peripheral Sensitization of Trigeminal Nociceptive Neurons, *Arch Oral Biol*. 75:100-106; Nov 4. pii: S0003-9969(16)30322-3. doi: 10.1016/j.archoralbio.2016.10.034.

12. Koop, L, Cornelison, L.E., Hawkins, J.L., **Durham, P.L.** (2017) Central Role of CGRP and Protein Kinase A in Promoting Trigeminal Sensitization in an In Vivo Model of Temporomandibular Joint Disorder, *J Oral Facial Pain Headache*. 2017 Summer;31(3):264-274. doi: 10.11607/ofph.1803.
13. Bowden, L., Rohrs, E., Omoto, K., **Durham, P.**, Holliday, L.S., Morris, A.D., Allen, K., Caudle, R.M., Neubert, J.K. (2017) Effects of cocoa-enriched diet on orofacial pain in a murine model. *Orthod Craniofac Res*. 20 (Suppl. 1):157-161.
14. *Hawkins, J.L.*, Cornelison, L.E., Blankenship, B.A., **Durham, P.L.** (2017) Vagus Nerve Stimulation Inhibits Trigeminal Nociception In A Rodent Model of Episodic Migraine. *PAIN Reports*: November/December 2017 - Volume 2 - Issue 6 - p e628.
15. *Hawkins, J.L.*, **Durham, P.L.** (2018) Inclusion of Enriched Chicken Bone Broth as a Dietary Supplement Reduces Nociception and Sensitization Associated with Joint Injury. *J of Oral & Facial Pain and Headache, J Oral Facial Pain Headache*. Mar 6;32(2):208-215. doi: 10.11607/ofph.1971.
16. *Hawkins, J.L.*, *Moore, N.J.*, *Miley, D.*, **Durham, P.L.** (2018) Secondary Traumatic Stress Increases Expression of Proteins Implicated in Peripheral and Central Sensitization of Trigeminal Neurons. *Brain Research* 1687:162-172.
17. Fan, Y., Sheckley, H., Cornelison, L.E., Woodman, S., **Durham, P.L.** (2018) Modulation of Inflammatory and Pain Pathways in Trigeminal Ganglion Neurons and Glial Cells by *Lycium barbarum* and Other Plant Extracts, *Chinese Journal of Natural Medicines*, submitted for publication.
18. Fulghum, K.L., Zimmerman, S.D., Timson, B.F., Mitchell, D.W., Durham, P.L., Koch, L.G., Britton, S.L., Morris, R.T. (2018) The metabolic phenotype of high aerobic capacity does not alter soleus muscle AKT phosphorylation (Ser473) in response to physiologic hyperinsulinemia, submitted for publication.
19. *Chelliboina, N.*, Cornelison, L. E., Hawkins, J.L., Durham, P.L. (2018) Neck Muscle Inflammation as a Risk Factor for Development of Chronic Orofacial Pain. *Journal of Oral & Facial Pain and Headache*, submitted for publication.

Published Book Chapters and Technical Reports

1. Cady, R.K., **Durham, P.L.** (2015) Chronic Migraine: Diagnosis and Management in Headache and Migraine Biology and Management, Edited by Diamond, S (Editor-in-Chief). Cady, R.K., Diamond, M.L., Green, M.W., Martin, V.
2. **Durham, P.L.** (2018) Introduction to Orofacial Pain in Orofacial Pain: Guidelines for Assessment, Diagnosis, and Management 6th Edition, Edited by de Leeuw, Rand Klasser, G.D.

Published Abstracts (MSU students indicated by italics)

1. **Durham, P.L.** (2014) Epigenetics: Exploring the Impact of Nutrition on the Regulation of our Genes. Missouri Council for Activity & Nutrition (MOCAN), Springfield, MO.
2. **Durham, P.L.**, *Hawkins, J.L.* (2014) Neck Muscle Inflammation Leads to Prolonged Sensitization of Trigeminal Neurons and Increased Nociceptive Behavioral Responses to a Pungent Odor. ICOT 2014 & AAOP 38th Scientific Meeting. Las Vegas.

3. *Cady, R., Cady, R., Martin, V., **Durham, P.L.*** (2014) Salivary Biomarkers and their Relationship to Menstrual Migraine Before and After Treatment with Sumatriptan-Naproxen or Placebo. American Headache Society 2014 Annual Scientific Meeting. Los Angeles, CA.
4. **Durham, P.L., Hawkins, J.L.** (2014) Trigeminal Sensitization in Migraine: Creation of the Perfect Storm. American Headache Society 2014 Annual Scientific Meeting. Los Angeles, CA.
5. *Masterson, C., **Durham, P.L.*** (2014) Human Parafollicular Cancer Cells: A Neuronal Model for Novel Drug Identification to Treat Neuropathic Pain to the American Academy of Otolaryngology-Head and Neck Surgery Foundation, Orlando, FL.
6. **Durham, P.L.** (2014) Why A Patient's Environment Matters: Role of Epigenetics in Disease Progression and Treatment Response. American Academy of Orofacial Pain Sumner Symposium. Denver, CO.
7. *O'Reily, A. and **Durham, P.L.*** (2014) Study of Proteins Associated with Epileptic Seizures in Primary Hippocampal Cultures Under Basal and Stimulated Conditions. 16th International Neuroscience Winter Conference, Solden, Austria, April 2014.
8. *Durham, Z.L., **Durham, P.L.*** (2014) Elevated TNF-Alpha Levels in the TMJ Promotes Transient Peripheral Sensitization of Trigeminal Nociceptive Neurons. Society for Neuroscience, Washington D.C.
9. **Durham, P.L., Miley, D., Moore, N., Hawkins, J.** (2015) Secondary Traumatic Stress Increases Trigeminal Nerves: Potential Role in Migraine Pathogenesis. Annual American Academy of Neurology Meeting, Washington DC.
10. *Hawkins, J.L., Norton, R, **Durham, P.L.*** (2015) Prolonged Trigeminal Sensitization Induces Gut Dysbiosis: Implications for Migraine Pathology. Annual American Academy of Neurology Meeting, Washington DC.
11. *Moore, N., Miley, D., **Durham, P.L.*** (2015) Prenatal or Postnatal Secondary Traumatic Stress Increases Expression of Proteins Implicated in Peripheral and Central Sensitization of Trigeminal Nerves, American Academy of Orofacial Pain Scientific Meeting, Denver, CO.
12. *Denson, J.E., **Durham, P.L.*** (2015) Investigation of the Nocifensive Behavioral and Cellular Effects of Dihydroergotamine and Sumatriptan in a Model of Sustained Trigeminal Activation. American Headache Society Meeting, Washington DC.
13. **Durham, P.L., Smith, K** (2015) Cannabis Extract from Cultivars Expressing Low Levels of THC Increases MAP Kinase Phosphatase Levels in Trigeminal Ganglion Neurons and Glia. American Headache Society Meeting, Washington DC. AHS

14. *Miley, D., Moore, N., Durham, P.L.* (2015) Prenatal and Postnatal Secondary Traumatic Stress: Implication for Migraine Pathogenesis by Promoting Peripheral and Central Sensitization of Trigeminal Nerves. American Headache Society Meeting, Washington DC. AHS
15. *Cornelison, L., Hawkins, J., Durham, P.L.* (2015) Elevated Intrathecal CGRP Levels Promote Trigeminal Nociception: Evidence of Bidirectional Signaling. American Headache Society Meeting, Washington DC. AHS
16. *Norton, R, Hawkins, J., Durham, P.L.* (2015) Prolonged Trigeminal Sensitization Induces Gut Dysbiosis, American Society for Microbiology, New Orleans, LA
17. *Hawkins, J., Durham, P.L.* (2015) Chicken Broth AACI as a Dietary Supplement Represses Nocifensive Behaviors and PKA Expression Caused by Prolonged Jaw Opening. Society for Neuroscience, Chicago, IL.
18. *Hawkins, J., Norton, R., Durham, P.L.* (2015) Persistent Sensitization of Trigeminal Neurons Promotes Gut Dysbiosis. Society for Neuroscience, Chicago, IL.
19. *Cornelison, L., Hawkins, J., Durham, P.L.* (2015) Central Role of Calcitonin Gene-Related Peptide in Promoting Peripheral Sensitization of Trigeminal Nociceptive Neurons. Society for Neuroscience, Chicago, IL
20. *Hawkins, J.L., Durham, P.L.* (2016) Biochemical Comparison of AACI Enriched Chicken Broth to Homemade Chicken Broth: Potential Benefits to Joint Health. American Society for Nutrition, San Diego, CA
21. *Norton, R, Hawkins, J.L., Durham, P.L.* (2016) Inclusion of Chicken Broth AACI as a Dietary Supplement Modulates the Gut Microbiome: Results of Next-Generation DNA Sequencing. American Society for Nutrition, San Diego, CA
22. *Hawkins, J.L., Cornelison, L.E., Durham, P.L.* (2016) Chicken Broth AACI as a Dietary Supplement Inhibits Pain Transmission and Decreases Serum C-Reactive Protein Levels In a Model of TMJ Disorder. American Society for Nutrition, San Diego, CA
23. *Hawkins, J.L., Durham, P.L.* (2016) Nocifensive Response and PKA Expression Caused by Prolonged Jaw Opening Are Suppressed by Inclusion of Chicken Broth AACI as a Dietary Supplement American Academy of Orofacial Pain, Orlando, FL.
24. *Hawkins, J.L., Cornelison, L.E., Durham, P.L.* (2016) Vagal Nerve Stimulation Inhibits Activation of Trigeminal Nociceptive Neurons in a Model of Trigeminal Sensitization. American Academy of Orofacial Pain, Orlando, FL.
25. *Hawkins, J.L., Durham, P.L.* (2016) Dietary Inclusion of Chicken Broth AACI Inhibits Mechanical Hyperalgesia and Increased PKA Expression: Evidence Blocking Peripheral and Central Sensitization in the Trigeminal System. American Headache Society, San Diego, CA

26. Hawkins, J.L., Hyde, C., Durham, P.L. (2016) Administration of a Cannabinoid Enriched Extract Expressing Low Levels of THC Stimulates Increased Expression of MAP Kinase Phosphatases in Trigeminal Ganglion Neurons and Glia: Implications for Migraine Therapy. American Headache Society, San Diego, CA
27. Koop, L., Hawkins, J.L., Cornelison, L.E., **Durham, P.L.** (2016) Temporomandibular Joint Inflammation Induces Changes in Protein Expression in VI and V2 Trigeminal Neurons Implicated in Peripheral Sensitization and Migraine Pathology: Central Role of CGRP. American Headache Society, San Diego, CA
28. Hawkins, J.L., Cornelison, L.E., **Durham, P.L.** (2016) Vagal Nerve Stimulation Suppresses Activation of Trigeminal Nociceptive Neurons in an Animal Model of Migraine Involving Trigeminal Sensitization. American Headache Society, San Diego, CA
29. Hawkins, J.L., Cornelison, L.E., **Durham, P.L.** (2016) Vagal Nerve Stimulation Inhibits Activation of Trigeminal Nociceptive Neurons in a Model of Trigeminal Sensitization. European Headache and Migraine Trust International Congress, Glasgow, UK
30. Hawkins, J.L., Cornelison, L.E., **Durham, P.L.** (2016) Vagal Nerve Stimulation Inhibits Expression of Proteins Implicated in Sensitization and Excitation of Trigeminal Nociceptive Neurons: Relevance to Migraine Therapy. European Headache and Migraine Trust International Congress, Glasgow, UK.
31. Chelliboina, N., Hawkins, J.L., **Durham, P.L.** (2017) Neck Muscle Inflammation Promotes Sensitization of Trigeminal Neurons: Risk Factor for Chronic Nociception In Response to Prolonged Jaw Opening. American Academy of Orofacial Pain, Phoenix, AZ.
32. Hawkins, J.L., Blankenship, B.A., Cornelison, L.E., **Durham, P.L.** (2017) Vagal Nerve Stimulation Suppresses Trigeminal Sensitization Induced by Neck Muscle Inflammation: Treating a Risk Factor of Migraine. American Academy of Orofacial Pain, Phoenix, AZ.
33. Hawkins, J.L., Blankenship, B.A., Cornelison, L.E., **Durham, P.L.** (2017) The Use of an Odorant Trigger to Induce Nociception in Animals with Trigeminal Sensitization Elicited by Neck Muscle Inflammation: A Novel Model of Migraine Pathology. American Headache Society, Boston.
34. Hawkins, J.L., Blankenship, B.A., Cornelison, L.E., **Durham, P.L.** (2017) Non-invasive Vagal Nerve Stimulation Suppresses Trigeminal Sensitization Induced by Neck Muscle Inflammation: Treating a Risk Factor of Migraine. American Headache Society, Boston.
35. Cornelison, L.E., Hawkins, J.L., Mohite, S., Allen, J., Chelliboina, N., **Durham, P.L.** (2017) Inhibition of Trigeminal Nociception by Cannabidiol In a Model of Migraine Pathology. American Headache Society, Boston.
36. Peterson, O., Hawkins, J.L., Cornelison, L.E., **Durham, P.L.** (2017) Early-Life Stress Causes a Heightened State of Trigeminal Nociception and Gut Dysbiosis: Evidence of Risk Factor for Development of Chronic Orofacial Pain Conditions. Society for Neuroscience, Washington, D.C.

37. *Hawkins, J.L., Blankenship, B.A., Durham, P.L.* (2017) Neck Muscle Inflammation Induces Trigeminal Central Sensitization: A Risk Factor for Episodic Migraine. Society for Neuroscience, Washington, D.C.
38. *Hawkins, J.L., Blankenship, B.A., Cornelison, L.E., Durham, P.L.* (2018) Evidence that Trapezius Inflammation Is a Risk Factor of Episodic Migraine by Promoting Trigeminal Central Sensitization. American Academy of Orofacial Pain, Chicago, IL.
39. *Peterson, O., Hawkins, J.L., Cornelison, L.E., Durham, P.L.* (2018) Early Life Stress is a Risk Factor for Development of Chronic Trigeminal Pain: Correlation with Dysbiosis of Gut Microbiota. American Academy of Orofacial Pain, Chicago, IL.
40. *Woodman, S.E., Hawkins, J.L., Cornelison, L.E., Childs, H.G., Durham, P.L.* (2018) Novel Model for Development of a Persistent Sensitized State of Trigeminal Nociceptors: Implications for Understanding Chronic Migraine. Society for Neuroscience, San Diego, CA.
41. *Cornelison, L.E., Woodman, S.E., Hawkins, L.E., Durham, P.L.* (2018) Vagus Nerve Stimulation Attenuates Trigeminal Nociception Similarly to Sumatriptan in Two Rat Models of Episodic Migraine. Society for Neuroscience, San Diego, CA
42. *Cornelison, L.E., Woodman, S.E., Hawkins, J.L., Simon, B., Durham, P.L.* (2019) Trigeminal Nociception is Similarly Attenuated by Vagus Nerve Stimulation and Sumatriptan in Episodic Migraine Models, NANS Annual Meeting, Las Vegas, NV.

Summary of Other Activities

Patents and Inventions:

Author on 16 patents (6 since 2014); designed a novel device for behavior testing sold by Ugo Basile http://www.ugobasile.com/catalogue/product/37100_durham_animal_holders.html). Recent patents on use of CBD for management of pain, wound healing, lotions.

Student Mentoring:

Provided research opportunities for 95 undergraduate students. Primary thesis advisor for 38 graduate students (completed). In addition, I have served on the thesis committee for 24 additional graduate students from the Departments of Biology, Chemistry, and Biomedical Sciences.

Service:

Faculty advisor for Tri-Beta Honor Society (since 2001), Ice Hockey team (2002-2018), and Roller Hockey team (2010-2018); Member of Public Affairs Committee (multiple years); Vision Committee (2014-2015); Steering Committee (2015-2016); Hearing Committee (2015-2016); Chair of CNAS Scholarship Committee (past 5 yrs); Sustainability Academic Subcommittee (currently); Sustainability Advisory Committee (currently); Provost Fellow for 2020 Public Affairs Conference; Church choir (weekly with my wife); Tai chi instructor for adults at our church in Nixa, MO.

Scholarship of Teaching:

My average mean evaluation for all courses taught at MSU is -1.3 (1 = outstanding, 5 pt. scale). I have consistently taught two full courses each semester (average of 6 contact hours per week). Typically, one course (BIO 121 General Biology, Gen Ed) is primarily for freshman biology majors while the other course I teach is taken by upper level undergraduate students and graduate students majoring in biology.