

# Katelyn E. Sadler, PhD

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## Curriculum Vitae

### Employment

**Assistant Professor of Neuroscience**, School of Behavioral and Brain Sciences starting January 2023  
University of Texas at Dallas (UTD), Richardson, TX

### Education and Training

**Postdoctoral Fellowship**, Lab of Cheryl Stucky, PhD January 2017 – present  
Medical College of Wisconsin (MCW), Milwaukee, WI

- Identifying novel non-opioid based targets for acute and chronic sickle cell disease pain
- Investigating how non-neuronal epidermal cells are involved in somatosensation
- Funded by NINDS NRSA for Training of Postdoctoral Fellows and NHLBI K99 Career Transition Award
- Published eight manuscripts (seven first author)
- Received *Edward J Lennon, MD Award for an Outstanding Woman Postdoctoral Researcher* and *Excellence in Science Award*, the top two honors bestowed upon postdoctoral fellows at MCW

**Doctor of Philosophy (PhD) in Biology**, Lab of Benedict Kolber, PhD August 2011 – May 2017  
Duquesne University, Pittsburgh, PA

- Characterized the divergent roles of the left and right central amygdala in rodent models of visceral pain
- Funded by NIDDK F31 Ruth L. Kirchstein predoctoral fellowship
- Published eight manuscripts (five first author)
- Dissertation received university-wide *Distinguished Dissertation Award* in June 2017

**Bachelor of Science (BS) in Biology** August 2007 – April 2011  
University of Pittsburgh, Greensburg, PA

- Chemistry minor
- Graduated *summa cum laude* and *Senior of the Year 2011*
- Senior research project entitled “Heme binding capabilities of CLOCK and resulting role in regulation of circadian rhythm” supervised by Kristina Pazehoski, PhD

### Publications

\* co-first authors, <sup>UG</sup> undergraduate mentee, <sup>C</sup> corresponding author; find me on [Google Scholar](https://scholar.google.com/)

#### Peer-reviewed articles

1. Trask S, Mogil JS, Helmstetter FJ, Stucky CL, **Sadler KE**<sup>C</sup> (2022). Contextual control of conditioned pain tolerance and endogenous analgesic systems *eLife* 11:e75283.
2. Waltz TB, Burand AJ, **Sadler KE**, Stucky CL (2021). Sensory-specific peripheral nerve pathology in a rat model of Fabry disease. *Neurobiology of Pain* 10: 100074.
3. **Sadler KE**<sup>\*</sup>, Moehring F<sup>\*</sup>, Shiers SI, Laskowski LJ, Mikesell AR, Plautz ZR, Brezinski AN, Mecca CM, Dussor G, Price TJ, McCorvy JD, Stucky CL (2021). Transient receptor potential canonical 5 (TRPC5) mediates inflammatory mechanical and spontaneous pain in mice. *Science Translational Medicine* 13: eabd7702.
  - TRP Channels and Mechanical Pain: Starring TRPC5!; Pain Research Forum coverage
  - TRPC5 and the Path Towards Analgesic Drug Development; *Trends in Neuroscience* Spotlight
  - Pain Research Forum #3 Most Popular Paper of 2021
  - Pain Research Forum Editors’ Paper of the week, May 22-28, 2021

4. **Sadler KE\***, Moehring F\*, Stucky CL (2020). Keratinocytes contribute to normal cold and heat sensation. *eLife* 9: e58625.
  - Keratinocytes keep their cool; *Nature Reviews Neuroscience* In Brief
5. **Sadler KE**, Lewis TR, Waltz TB, Besharse JC, and Stucky CL (2019). Peripheral nerve pathology in sickle cell disease mice. *Pain Reports* 4(4): e765.
6. **Sadler KE**, Langer SN, Menzel AD, Moehring F, Erb AN, Brandow AM, and Stucky CL (2019). Gabapentin alleviates chronic spontaneous pain and acute hypoxia-related pain in a mouse model of sickle cell disease. *British Journal of Haematology* 187(2): 246-260.
7. **Sadler KE\***, Zappia KJ\*, Weyer AD, O'Hara C, Langer SN, Hillery CA, and Stucky CL (2018). Chemokine (c-c motif) receptor 2 mediates mechanical and cold hypersensitivity in sickle cell disease. *Pain* 159(8): 1652-1663.
8. **Sadler KE**, Gartland N<sup>UG</sup>, Cavanaugh JE, and Kolber BJ (2017). Central amygdala expression of metabotropic glutamate receptor 5 linked to age-dependent changes in pain sensitivity. *Neurobiol of Aging*. S0197-4580(17):30131-8.
9. **Sadler KE**, McQuaid NA, Cox AC<sup>UG</sup>, Behun MN, Trouten AM<sup>UG</sup>, and Kolber BJ (2017). Divergent functions of the left and right central amygdala in visceral nociception. *Pain*. 158(4): 747-759.
10. Wolz MJ<sup>UG</sup>, **Sadler KE**, Long CC, Brenner DS, Kim BS, Gereau RW IV, & Kolber BJ (2016). Post-inflammatory hyperpigmentation following human cold pain testing. *Pain Reports* 1: e569.
11. Long CC<sup>UG</sup>, **Sadler KE**, Kolber BJ. (2016) Hormonal and molecular effects of restraint stress on formalin-induced pain-like behavior in male and female mice. *Physiology and Behavior* 16: 278-285.
12. **Sadler KE**, Stratton JM, Kolber BJ (2014). Urinary bladder distension evoked visceromotor responses as a model for bladder pain. *Journal of Visual Experimentation*. (86), e51413.
13. **Sadler KE**, Stratton JM, DeBerry JJ, Kolber BJ (2013). Optimization of a pain model: effects of body temperature and anesthesia on bladder nociception in mice. *PLoS ONE* 8(11): e79617.
14. Crock LW, Kolber BJ, Morgan CD, **Sadler KE**, Vogt SK, Bruchas MR & Gereau RW IV (2012). Central amygdala mGluR5 in the modulation of visceral pain. *Journal of Neuroscience* 32(41): 14217-26.

#### Reviews and book chapters

15. **Sadler KE**, Mogil JS, Stucky CL (2022). Innovations and advances in modeling and measuring pain in animals. *Nature Reviews Neuroscience* 23:70-85.
16. **Sadler KE**, Patitucci TN and Stucky CL. *Ex vivo* skin-teased fiber recordings from tibial nerve. In: Seal R (ed) *Contemporary Approaches to the Study of Pain: from Molecules to Neural Networks*, Springer Nature, New York.
17. **Sadler KE**<sup>C</sup> and Stucky CL (2019). Neuronal transient receptor potential (TRP) channels and noxious sensory detection in sickle cell disease. *Neuroscience Letters* 694: 184-191.
18. **Sadler KE** and Kolber BJ (2016). Urine trouble: Alterations in brain function associated with bladder pain. *Journal of Urology* 196(1): 24-32.

#### Preprints and manuscripts in review

19. Moehring F\*, Mikesell AR\*, **Sadler KE**, Menzel AD, Stucky CL. Piezo1 mediates keratinocyte mechanotransduction. Posted to BioRxiv on July 19, 2020. In review at *eLife*.

#### Commentaries, journal club articles

1. Moehring F and **Sadler KE**<sup>C</sup> (2019) Female specific effects of CGRP suggest limited efficacy of new migraine treatments in males. *Journal of Neuroscience* 39(46): 9062-9064.
2. **Sadler KE** and Stucky CL (2019) Blocking COX-2 for sickle cell pain relief. *Blood* 133 (18): 1924-1925.

## Funding

<u>Current</u> 8/1/21 – present	<b>NIH Pathway to Independence Award (K99)</b> National Heart, Lung, and Blood Institute, #K99HL155791 “Sickle Cell Disease Gut Dysbiosis Effects on CNS Pain Processing”	\$115,128
<u>Completed</u> 2018 – 2019	<b>NINDS Ruth L. Kirchstein NRSA for Training of Postdoctoral Fellows (F32)</b> National Institute of Neuronal Diseases and Stroke, #F32NS106789 “Fibroblast-to-Neuron Communication in Muscle Pain”	\$104,201
2016 – 2017	<b>Duquesne University Aging Research and Teaching Consortium Stimulator Grant</b> “Age-Dependent Changes in Amygdala Signaling Responsible for Altered Pain Sensitivity”	\$2,250
2014 – 2017	<b>Ruth L. Kirchstein NRSA Predoctoral Fellowship (F31)</b> National Institute of Diabetes and Digestive and Kidney Diseases #F31DK104538 “Effects of Central Amygdala Lateralization on Descending Control of Bladder Pain”	\$115,269

## Awards

2020	<b>Warren Alpert Distinguished Scholar Nominee</b> , Medical College of Wisconsin (MCW)
2019	<b>Edward J Lennon, MD Award for an Outstanding Woman Postdoctoral Researcher</b> , MCW
2019	<b>Travel Award</b> , MCW Office of Postdoctoral Affairs
2018	<b>Excellence in Science Award</b> , MCW Office of Postdoctoral Affairs
2018	<b>Poster Award Winner</b> , 28 <sup>th</sup> Annual Research Day at MCW
2018, 2016	<b>Young Investigator Travel Award</b> , American Pain Society
2017	<b>Distinguished Dissertation Award</b> , Duquesne University
2017	<b>Max Mitchell Young Investigator Award Finalist</b> , 12 <sup>th</sup> Annual NIH Pain Consortium Symposium
2016	<b>Young Alumni Leadership Award</b> , University of Pittsburgh at Greensburg
2016	<b>New Frontiers of Pain Research Travel Award</b> , University of Alabama at Birmingham
2016	<b>Best Presentation</b> , Clinical and Basic Science Data Blitz, 35 <sup>th</sup> Annual American Pain Society Meeting
2016	<b>Outstanding Graduate Student Award</b> , Department of Biological Science, Duquesne University
2015	<b>Bayer School for Natural and Environmental Sciences Award for Graduate Research Excellence</b>
2015	<b>Best Poster</b> , Duquesne University Department of Biological Sciences Retreat
2011	<b>Senior of the Year</b> , University of Pittsburgh at Greensburg
2011	<b>Dr. and Mrs. Fred T. Campana Scholarship</b> (top Biology student), University of Pittsburgh at Greensburg
2009-11	<b>University Scholar (top 2.5% of class)</b> , University of Pittsburgh
2008-11	<b>Dean’s List</b> , University of Pittsburgh at Greensburg, 8 semesters

## Teaching

### Adjunct Instructor

Sep 2018 – Dec 2019

Carthage College, Kenosha, WI

- Taught “Introduction to Behavioral Neuroscience” (NEU 2100; 4 credit hours) to undergraduate neuroscience and psychology majors (~ 30 students per semester)
- Developed course syllabus, created course materials (*e.g.*, lectures, exams, assignments), held office hours, taught weekly night class

### Instructor and Guest Lecturer

February 2018 – present

Medical College of Wisconsin, Milwaukee, WI

- Co-directed the Neuroscience Doctoral Program Journal Club for second year PhD students (Fall 2020)
- Lectured in Medical Neuroscience course for M1 medical students (Spring 2019, 2020, 2021)
- Lectured in Fundamentals of Neuroscience course for first year PhD students (Spring 2019, 2020, 2021, 2022)
- Lectured in Graduate Neuroanatomy Lab course for first year PhD students (Spring 2019, 2020)
- Assisted with Foundations in Biomedical Science IV course for first year PhD students (Spring 2020)
- Assisted with Medical Neuroanatomy Lab for M1 medical students (Spring 2019, 2020)

## Adjunct Instructor

January 2018 – May 2018

Carroll University, Waukesha, WI

- Taught “General Cell Biology Lab” (BIO 120L) to undergraduate biology and health science majors (15 students)

## Advanced and Basic Certificates of University Teaching Awardee

March 2016

Duquesne University, Pittsburgh, PA

- Received certificates after attending teaching development workshops and developing a portfolio that contained faculty observations, teaching philosophy, example instruction materials, and curated list of professional teaching interactions.

## Guest Lecturer

February 2016

Carnegie Mellon University, Pittsburgh, PA

- Developed and presented “Pain and Itch” lecture in Systems Neuroscience (BSC 03-363) course.

## Teaching Assistant

August 2011 – December 2014

Duquesne University, Pittsburgh, PA

- Taught the following biology lab courses to undergraduate students in natural science programs:
  - Experimental Biology I (BIOL370W; Fall 2013, 2014; 16 students/semester)
  - Introductory Microbiology (BIOL204; Spring 2014; 48 students/semester)
  - Biology II Lab (BIOL112; Spring 2012, 2013; 64 students/semester)
  - Biology I Lab (BIOL111; Fall 2011, 2012; 64 students/semester)
- Prepared class materials, held office hours, graded assignments, and proctored exams for all courses.

## Mentoring

### Undergraduate students

Summer 2019 **Dianise Rodríguez-García** (Stucky Lab, U of Puerto Rico → PhD student at MCW)

Spring 2018 **Rachel Serio** (Stucky Lab, U Wisconsin Milwaukee)

Summer 2017 **Christina Mecca** (Stucky Lab, U of Scranton → PhD student at MCW)

Summer 2016 **Nathan Gartland** (Kolber + Cavanaugh Labs, Duquesne U → MD student at SUNY Buffalo)

2016 – 2017 **Abby Cox** (Kolber Lab, Duquesne U → MD student at Pitt)

Abby was awarded an American Physiological Society Summer Research Fellowship (2016), completed an honors thesis project (2017), and won the Outstanding Scholarship Award from the Office of the Provost (2016)

Summer 2015 **Kara Jones** (Kolber Lab, Duquesne U → MD student at West Virginia U)

2015 – 2017 **Youstina Seliman** (Kolber Lab, Duquesne U)

2014 – 2015 **Allison Trouten** (Kolber Lab, Duquesne U → MS from Case Western U → PhD student at U South Carolina)

2013 – 2015 **Rani Rajaram** (Kolber Lab, Duquesne U → MD from Temple U)

2013 – 2015 **Melissa Wolz** (Kolber Lab, Duquesne U → MD from West Virginia U)

Missy published a first author paper as an undergraduate (2016)

2013 – 2015 **Caela Long** (Kolber Lab, Duquesne U → PhD student at U Penn)

Caela published a first author paper as an undergraduate (2016) and was selected to give an oral presentation at the Duquesne University Undergraduate Research Symposium (2013)

2012 – 2013 **Devon Burkholder** (Kolber Lab, Duquesne U)

2011 – 2013 **Jared Stratton** (Kolber Lab, Duquesne U → MS from Thomas Jefferson U)

### Graduate students

2021 – present **Alex Mikesell** (Stucky Lab, MCW)

Fall 2021 **Emma Bonniwell** (Stucky Lab rotation, MCW)

Fall 2019 **Christina Mecca** (Stucky Lab rotation, MCW)

Spring 2019 **Kayla Schwartz** (Stucky Lab rotation, MCW → MS from MCW)

Fall 2018 **Sarah Timmler** (Stucky Lab rotation, MCW)

Spring 2018 **Ben O’Brien** (Stucky Lab rotation, MCW)

Spring 2018 **Ashley Erb** (Stucky Lab rotation, MCW)

Fall 2017 **Rebecca Slick** (Stucky Lab rotation, MCW)

Fall 2016 **Heather Allen** (Kolber Lab rotation, Duquesne U)

### National/International Talks

7 additional intramural talks given between 2010-2022. Talks grouped by topic:

#### ***Gut microbiome and pain***

1. "Gut feelings: How the microbiome modulates chronic pain." Seminar at the University of Texas at Dallas, Department of Neuroscience, December 17, 2021.

#### ***Neurobiology of sickle cell disease pain***

2. "Identification of novel chronic pain targets using sickle cell disease mice."
  - i. Seminar at University of Iowa, Department of Neuroscience and Pharmacology, January 27, 2022.
  - ii. Seminar at Penn State University, Department of Biology, December 2, 2021.
  - iii. Seminar at University of Minnesota, Department of Anesthesiology, October 6, 2021.
  - iv. Seminar at Cincinnati Children's Hospital, Department of Anesthesia, September 30, 2021.
  - v. Seminar at Saint Louis University, Department of Pharmacology and Physiology, September 16, 2021.
  - vi. Seminar at Medical College of Wisconsin, Department of Cell Biology, Neurobiology & Anatomy, September 2, 2021.
  - vii. Seminar at University of Texas at Dallas, Department of Neuroscience, August 26, 2021.
3. "Leveraging transgenic sickle cell disease mice to identify novel pain targets." Virtual talk at University of Kansas Medical Center, Department of Anatomy and Cell Biology, January 21, 2021.
4. "TRPC5 mediates inflammatory mechanical pain." Virtual talk at Pain 2020 meeting, November 13, 2020.
5. "Translational models for investigation of non-opioid based pain therapies for sickle cell disease." Presentation at the American Pain Society Annual Meeting, Milwaukee, WI, April 4, 2019. *Chaired session that included this talk.*
6. "Non-opioid based therapies for sickle cell disease pain: lessons from mouse models". Presentation at the Inaugural Pain Research Day, Medical College of Wisconsin, Milwaukee, WI, October 16, 2018.
7. "Go with the (sometimes blocked) flow: circulating metabolites drive chronic sickle cell disease pain." Presentation at the North American Pain School, Montebello, Quebec, June 25, 2018.
8. "Lipid signaling in sickle cell disease pain." Data blitz presentation at the Pain Mechanisms and Therapeutics Conference, Taormina, Sicily, June 3-8, 2018.
9. "Chemokine receptor 2 (CCR2) mediates mechanical and cold hypersensitivity in sickle cell disease pain" Selected as a Max Mitchell Junior Investigator Award Finalist at the 2017 NIH Pain Consortium Symposium, Bethesda, MD, May 31, 2017.

#### ***Role of keratinocytes in somatosensation***

10. "The role of keratinocytes in heat transduction, cold transduction, and mechanotransduction." Digital webinar hosted by the Pain Research Forum, August 17, 2020.
11. "Mammalian keratinocytes detect and relay environmental cold signals." Presentation at the Midwest Regional Pain Interest Group Meeting in Kansas City, KS, August 10, 2019.

#### ***Amygdala modulation of pain***

12. "Opposing roles of the left and right central amygdala in bladder pain modulation." Data blitz presentation at the American Pain Society Annual Meeting, Austin, TX, May 11, 2016. *Won top presentation award.*
13. "Cerebral Lateralization of Bladder Pain Processing." Presentation at Duquesne University Biological Sciences Retreat at Pymatuning Laboratory of Ecology, Linesville, PA, August 22, 2015. *Won top prize for oral presentation.*

### Select Poster Abstracts

48 abstracts accepted between 2010 and 2022; only listing presentations for which I was the presenting author:

1. Trask S, Mogil J, Helmstetter F, Stucky C, **Sadler K** (2021). Contextual control of conditioned pain tolerance and endogenous analgesic systems. Poster presented at the Annual Meeting of the Society for Neuroscience. November 13-17.
2. **Sadler K**, Moehring F, Stucky C (2019). TRPC5 is required for mechanical hypersensitivity in inflammatory pain models. Poster presented at the Annual Meeting of the Society for Neuroscience in Chicago, IL, October 19-23.

3. **Sadler K**, Zappia K, Weyer A, O'Hara C, Hillery C, Stucky C (2018, 2017). Chemokine receptor 2 (CCR2) mediates mechanical and cold hypersensitivity in sickle cell disease pain. Poster presented at:
  - i. American Pain Society Scientific Summit in Anaheim, CA
  - ii. 12th Annual NIH Pain Consortium Symposium in Bethesda, MD
  - iii. Annual Meeting of the Society for Neuroscience in Washington DC
  - iv. 27th Annual Graduate School Research Poster Session at the Medical College of Wisconsin
4. **Sadler K**, Kolber B (2016, 2015). Divergent roles of the left and right central amygdala in visceral pain modulation. Poster presented at:
  - i. New Frontiers of Pain Research in the 21st Century meeting at The University of Alabama at Birmingham
  - ii. 2016 American Pain Society Annual Meeting in Austin, TX
  - iii. Annual Meeting of Society for Neuroscience in Chicago, IL,
  - iv. Center for Neuroscience at the University of Pittsburgh (CNUP) Annual Retreat in Wheeling, WV
  - v. Duquesne University Department of Biological Sciences Annual Retreat in Linesville, PA
  - vi. Overcoming Barriers to the Translation of Pain Research Conference at University of Pittsburgh
5. **Sadler K**, Stratton J<sup>UG</sup>, Kolber B (2013). Effects of body temperature and isoflurane induction on urinary bladder distention. Poster presented at:
  - i. Society for Neuroscience Annual Meeting, San Diego, CA
  - ii. Midwest Regional Pain Interest Group Meeting, Cincinnati, OH

## Service

- 2021, 2020 **Moderator and organizer**, MCW Postdoctoral Research Symposium
- 2021 **Co-organizer**, Society for Neuroscience Somatosensation and Pain Pub Quiz social
- 2020 **Moderator and organizer**, US-ASP webinar series "Lost in Translation: Current state of preclinical pain manipulations and measures"
- 2020 – 2021 **Organizer**, Pain Journal Club at MCW
- 2020 **Panelist**, MCW Spotlight on Science: NIH Fellowship Writing
- 2019 – present **Ad hoc reviewer** for *Pain*, *Neurobiology of Pain*, *Pain Medicine*, *Current Opinion in Physiology*
- 2019 **Moderator**, Midwest Regional Pain Interest Group Meeting, U Kansas Med Center
- 2019 **Judge**, MCW SPUR/DSHREP Research Symposium
- 2019 **Social Media Champions Captain**, American Pain Society Annual Meeting
- 2018, 2019 **Planning committee**, Incoming Neuroscience PhD Student Bootcamp, MCW + Marquette U
- 2017 – present **Postdoctoral Representative**, MCW CBNA faculty meetings
- 2015 **Organizer**, Inaugural Department of Biological Sciences Annual Retreat at Duquesne
- 2014 – 2016 **Judge**, PA Junior Academy of Science Regional Competition, Pittsburgh, PA
- 2014 – 2016 **Graduate Student Representative**, Duquesne U. Biology Department faculty meetings
- 2014 **Moderator**, Duquesne University Undergraduate Research Ethics Forum
- 2012 – present **Ad hoc co-reviewer** with Dr. Cheryl Stucky or Dr. Benedict Kolber for *Nature*, *Nature Neuroscience*, *Pain*, *Nature Medicine*, *eLife*, *Journal of Neuroscience*, *Science Translational Medicine*, *Journal of Pain*, *Blood*, *Blood Advances*, *Journal of Neurophysiology*, *Current Urology*, *Current Drug Targets*, *European Journal of Pain*, *PLoS ONE*, and *Frontiers in Neuroscience*

## Affiliations

- 2020 – present **Member**, US-Association for the Study of Pain
- 2020 – 2021 **Member**, MCW Postdoctoral Advisory Committee
- 2018 – present **Member**, International Association for the Study of Pain
- 2018 – present **Associate Member**, MCW Neuroscience Research Center
- 2014 – 2019 **Member**, American Pain Society
- 2013 – 2014 **President**, Duquesne Graduate Student Organization of the Biological Sciences
- 2012 – 2013 **Historian**, Duquesne Graduate Student Organization of the Biological Sciences
- 2012 – present **Member**, Society for Neuroscience

## Media Coverage

1. Moderator of “The Pain Beat (Episode 8): Studying and Understanding Sex Difference in Pain”. Podcast produced by Pain Research Forum.
2. Featured in “A Translational Collaboration to Advance Understanding of Sickle Cell Pain: A Podcast with Amanda Brandow and Kate Sadler”. Podcast produced by Pain Research Forum.  
<https://www.painresearchforum.org/forums/interview/117861-translational-collaboration-advance-understanding-sickle-cell-pain-podcast>
3. “Best of Milwaukee” blog post for 2019 American Pain Society Annual Meeting.  
<http://americanpainsociety.org/post/301-best-of-milwaukee>
4. “No Pain, No Gain: Kate Sadler, PhD, Actual Living Scientist” Milwaukee Area Science Advocates blog post. (March 14, 2017) <http://milwaukeeescience.org/blog/no-pain-no-gain/>
5. “Hempfield grad making her mark in health research”. Tribune Review. (December 11, 2014)  
<http://triblive.com/neighborhoods/yourhempfield/yourhempfieldmore/7296609-74/research>