

Curriculum Vitae

Jeffrey G. Edwards

Work:

Brigham Young University
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ACADEMIC EMPLOYMENT

- Aug. 2018- Present **Brigham Young University**
 Full Professor; Department of Physiology and Developmental Biology.
- Aug. 2013- 2018 **Brigham Young University**
 Associate Professor; Department of Physiology and Developmental Biology
- Jan. 2007- Aug. 2013 **Brigham Young University**
 Assistant Professor; Department of Physiology and Developmental Biology
- Aug. 2005- Dec. 2006 **Brigham Young University-Idaho**
 Faculty; Department of Biology
- Aug. 2003- Aug. 2005 **Rhode Island College**
 Adjunct Faculty; Department of Biology
- Spring 2002 **Salt Lake Community College**
 Adjunct Faculty; Department of Biology

ACADEMIC AFFILIATIONS

- July 2021- Present **Brigham Young University**
 Director of the Neuroscience Center
- May 2015- July 2021 **Brigham Young University**
 Associate Director of the Neuroscience Center
- May 2007- Present **Brigham Young University**
 Member of the Neuroscience Center

Feb. 2017- Present **Brigham Young University**
 Member of the Gerontology Program

EDUCATION

Mar. 2003 **University of Utah**
 Ph.D.
 School of Medicine, Department of Physiology.

Dec. 1994 **Brigham Young University**
 Bachelor of Science
 Department of Zoology (Human Biology).

RESEARCH EXPERIENCE

Postdoctoral Fellowship:
Brown University

Apr. 2003- Aug. 2005 Dr. Julie Kauer lab, Department of Molecular Pharmacology, Physiology and Biotechnology. Using the hippocampus I investigated mechanisms of synaptic plasticity. Plasticity is thought to be the primary cellular mechanism mediating learning and memory in the brain. Specifically, I helped determine the location from which newly inserted AMPA glutamate receptors arrive at the synapse during long-term potentiation in hippocampal CA1 pyramidal cells. I simultaneously characterized endocannabinoid-mediated LTD, initiated by metabotropic glutamate receptors and induced by transient receptor potential vanilloid 1 in hippocampal CA1 inhibitory interneurons. These interneurons are extremely important in controlling activity levels of the output pyramidal cells. Both projects incorporated electrophysiology, pharmacology (Kauer lab) and molecular biology techniques (collaboration with Michel Ehlers lab at Duke University).

Graduate Research:
University of Utah

Feb. 1998- Mar. 2003 Dr. William C. Michel lab, Department of Physiology.
Dissertation research included mapping ionotropic glutamate receptor distribution within olfactory bulb neurons and demonstrating their activation following *in vivo* odor stimulation within distinct chemotopic regions based on the class of odorant applied. Acetylcholine was also shown for the first time in any species to modulate glutamate release at the primary synaptic input

of the bulb. This work demonstrates that odor processes within the olfactory bulb are more regional specific than previously thought.

Aug. 2000-
Dec. 2000

Dr. Karen Wilcox lab, Department of Pharmacology and Toxicology. Lab Rotation. Electrophysiological studies of N-Methyl-D-Aspartate receptor activation within hippocampal CA3 and entorhinal cortex neurons.

Sept. 1995-
Feb. 1998

Dr. William D. Odell lab (retired 1998), Departments of Physiology and Internal Medicine. Characterization of an hCG-like receptor protein in the bacteria, *Xanthomonas maltophilia*, which regulated bacterial growth.

TEACHING EXPERIENCE

Faculty:

Brigham Young University

Fall 2021-
Present

Neuroscience 205: Neurobiology.

This is a introductory neuroscience course for neuroscience majors. I teach the entire 3 credit hour lecture course. The course covers topics ranging from action potentials, neuroanatomy, chem senses, brain/motor function, etc.

Fall 2020-

PDBio 550R: Synaptic Physiology: Memory and Addiction. This course employs lecture, journal/club format, lab demonstrations, among others to teach the cellular mechanisms of memory and addiction including Alzheimer's, etc. The heavy involvement in student presentation of articles allowed for a flexible course that enhanced student communication skills and writing.

Winter 2014-
Present

PDBio 362: Advanced Human Physiology.

This is a human physiology course for science majors who are mostly pre-professionals including nursing, pre-medicine, pre-dentistry, etc. I conduct the entire lecture portion of this entire course.

Winter 2008-
Present

PDBio 305: Human Physiology.

This is a human physiology course for non-majors who are pre-professionals including nursing, pre-medicine, pre-dentistry, etc. I conduct the lecture portion of this entire course.

Fall 2007-
Present

Neuroscience 480: Advanced Neuroscience.

Team taught course directed and mainly taught by Mike Brown, covering advanced topics in neuroscience. I teach two lectures of this course every fall and winter semester to neuroscience and PDBio majors covering receptors, synaptic transmission, plasticity and second messengers.

- Fall 2007-
Present **PDBio 601: Cell and Molecular Physiology.**
Team taught graduate level physiology course. I teach a one week segment of this course covering synaptic transmission and integration.
- Fall 2007-
Present **PDBio 568: Cellular Electrophysiology and Biophysics.**
Team taught graduate level biophysics course. I teach one fourth of this course covering electrophysiology as well as trafficking, movement and stabilization of different types of receptor at the synapse.
- Winter 2007-
Present **PDBio 349R, PDBio 494R, PDBio 495R, PDBio 550R, PDBio 649R, PDBio 650R, PDBio 669R, PDBio 779R, Neuro 449R, Neuro 649R, Neuro 699R, etc.**
Various repeatable courses for graduate and undergraduate students involved in my research and teaching.

Brigham Young University-Idaho

- Fall 2006 **Biology 240: Neurobiology.** This course was an in depth introduction to the neurosciences for undergraduates that included both lecture and lab.
- Fall 2006 **Biology 475: Evolution.** This is the capstone course for biology majors at BYU-Idaho and included both lecture and dry lab.
- Fall 2005-
2006 **Biology 264 & 265: Human Anatomy and Physiology parts I & II.**
This course was for pre-professional students. Class management included preparing lectures, exams, laboratory, etc. These courses were part of a year-long series. I taught all the lectures and labs of both courses.
- Fall 2005-
2006 **Biology 100: Introduction to Biology.**
GE course required for non-biology major students. I taught and managed the entire course.

Adjunct Faculty:

Rhode Island College

- Fall 2003-
Sum. 2005 **Biology 335: Human Physiology;** upper division human physiology lecture and lab for science majors and nursing undergraduates.
I taught both the lecture and lab portions of the course. Student and Biology Department faculty evaluations are available upon request from myself or the Biology Department Chair (Edythe Anthony).

Salt Lake Community College

- Spring 2002 **Biology 1110: Anatomy and Physiology.** Prepared and taught lectures

for the undergraduate human anatomy and physiology course. Class management included preparing lectures and administering and grading tests and quizzes.

Tutor:

University of Utah

Aug. 2001- **Medical Students: Physiology Curriculum**. Tutored individuals on
Mar. 2003 particular details of physiology as needed for individual improvement
or general reviews for those taking the medical board exam.

Lab Instructor:

University of Utah

Oct. 1998 **Neuroscience Blk 2: Medical student neuroscience**; Properties of
evoked potentials.

May 1997 **Physiology 771: Physiology proseminar**; Taught two-week course on
bioassays, radioimmunoassays and dose response curves.

Sept. 1995- **Physiology 691: Clinical neurophysiology lab**; Taught medical students
2002 principles of EEG, EOG, and EMG (taught yearly for four weeks).

Teacher development:

Rhode Island College

Jan. 2004 **Adjunct Faculty workshop: "Using students' life experiences to
enhance learning"**.

FUNDED GRANTS

NIH

NIDA: 1R15DA049260-01A1 (Edwards, Jeff- PI). Ventral Tegmental Area
GABA Neurons: Plasticity & Opiate Receptors at Inhibitory inputs. 09/30/2020-
08/31/2023. \$450,000 total funds.

NIDA: 1R15DA038092-01A1 (Edwards, Jeff- PI). Ventral Tegmental Area
GABA Neurons: A novel target of marijuana drug abuse. 09/15/2016-08/17/2020.
\$450,000 total funds.

NIDA: 1R01DA035958-01A1 (Steffensen, Scott- PI; Edwards, Jeff- Co-
Investigator) Nicotine and alcohol co-dependence. 06/01/**2014**-05/31/2019.
\$2,100,000 total funds.

NINDS: 1R15NS078645-01 (Edwards, Jeff-PI). Identification of GPR55 cellular expression within hippocampal cells and its physiology. 02/01/**2012**- 01/31/2016. \$362,500 total funds.

NIAAA: 1R01AA020919-01A1 (Steffensen, Scott- PI; Edwards, Jeff- Co-Investigator) Neuroplasticity with alcohol dependence. 08/01/**2012**- 07/31/2017. \$1,500,000 total funds.

NIAAA: 5R01AA013666-06 (Steffensen, Scott- PI; Edwards, Jeff- Faculty) Neuropharmacological substrates of alcohol addiction. I received supply money and 1-month summer salary from this grant. Aug. 2006-Jul. 2011.

NINDS: 1F32NS049779-01A1. (Edwards, Jeff- PI) Grant was renewable for up to 3 years starting Jan. 1, 2005.

Society for Neuroscience

2015- Chapter Grant (\$900). This grant was used to host our SfN chapter branch chapter meeting at Snowbird, Utah in October 2015, and to provide for a poster session and prizes.

2014- Chapter Grant (\$1,200). This grant will be used to host our SfN branch chapter meeting at Snowbird, Utah in October 2014, and to provide for a poster session and prizes.

2013- Chapter Grant (\$2,000). This grant was used to organize and carry out a “Utah Brain Education Alliance” where undergraduate and graduate students along with faculty from around the state of Utah came together for a day retreat focusing on enhancing instruction, education, creating resources, sharing lesson plans and community outreach for neuroscience.

BYU

Grants on the Edge. June 2020. College Award to fund faculty who have grants close to being funded from an external funding agency and need money to push the grant to the funding level. \$12,000.

Grants on the Edge. July 2019. College Award to fund faculty who have grants close to being funded from an external funding agency and need money to push the grant to the funding level. \$10,000.

Life Science CEMENT Award. November, 2022, 2021, 2020, 2019, 2018. College Award to facilitate undergraduate research for in external funded labs. Total funding \$5,000 each. They are for two years each.

MEG: Mentored Environment Grants. These grants are competitive awards that can be applied for yearly by faculty through the university in order to mentor undergraduate and graduate students in research. Each award was \$20,000.

2016- Cocaine and Marijuana-induced synaptic modifications of excitatory inputs to ventral tegmental area GABA neurons: A novel mechanism mediating addiction.

2015- Synaptic Modification of Inhibitory Inputs to GABA Neurons in the Ventral Tegmental Area: A novel potential target mediating reward and addiction in the brain

2014- The Neuroprotective Effect of Exercise on Memory Impairment Induced by Stress

2014- Co-PI with Scott Steffensen (PI). Alcohol and Nicotine Co-Dependence II

2013- Long-term Depression of Excitatory Inputs to GABAergic Neurons in the Ventral Tegmental Area: A novel potential target of Marijuana drug abuse in the reward pathway of the brain

2012- A study of a novel G-protein coupled receptor and its role in hippocampal function.

2009- TRPV1 involvement in febrile seizure induction.

2008- TRPV1 mediated alteration of hippocampal synaptic plasticity.

2007- A study on hippocampal synaptic plasticity and endocannabinoids using electrophysiology and RT-PCR.

Life Science Mentoring Grant. January 2018-2020. College Award to fund undergraduate research. Total funding \$10,000 for two years.

Grants on the Edge. August 2016. College Award to fund faculty who have grants close to being funded from an external funding agency and need money to push the grant to the funding level. \$16,500. (Most of this money I returned to the college after I received my NIH funding).

James Bobbitt Alzheimer's Research Award. 2014. This award was for a faculty member conducting research in the area of Alzheimer's disease. \$10,000.

Course Development Project Grant. This grant was awarded to enhance teaching and learning in my PDBio 305 physiology course. June 4, 2007.

BYU undergraduate CURA competitive grant Awards

2022- CURA award: Daniel Isenmonger and Zach Ward. Investigation of dopamine and GABAergic neuron connections within the VTA using modified rabies virus mediated monosynaptic tracing.

2022- CURA award: Darien Reed and Nicholas Bever. The Impact of the Ketogenic Diet on Hippocampal Long-Term Potentiation.

2022- CURA award: Addison Beaslin and Isaac Cress. Epigenetic Mechanisms of Morphine Addiction in the VTA

2022- CURA award: Logan Garr. Examination of orexin receptor expression in the ventral tegmental area neurons.

2022- ELA award (CELL dept): Cami Staker.

2021- CURA award: Anna Everett, Matt Holdaway, Parker Skousen, Noah Valentine. Exploring the Mechanism of “Forgetting” with Electrophysiology.

2021- CURA award: Calvin Smith and Isaac Cress. Ventral Tegmental Area Gene expression in Delta-9-tetrahydrocannabinol treated Mice.

2020- CURA award: Devin Bird, Abe Coomer, Tyler Haskings. Understanding Drug Addiction through Optogenetics.

2020- CURA award: Tanner Blaylock, Anna Everett, Adam Brantley. Ketogenic diet effect on learning and memory.

2019- CURA award: Eric Winzenried, Eliza Neal, Taylor Johnson et al. Prophylactic Treatment with Propranolol and Mifepristone in a Rat PTSD Model Caused Changes in LTP and mRNA.

2019- CURA award: Devin Moffat and Gabriel Melendez. Prophylactic Drug Treatment to Reduce PTSD Behavioral Symptoms in Rats.

BYU undergraduate ORCA competitive grant Awards

2017- ORCA award: James Kranewitter-Call and Brandon Anderson. Examining the Potential Role of GPR18 and GPR119 in Learning and Memory

2016- ORCA award: Paul Baker. Role of Exercise and Stress in Memory and Learning of the Hippocampus

- 2015- ORCA award: Tyler Hammond. The Effects of Stress on Learning and Memory in the Hippocampus
- 2015- ORCA award: Michael Christensen. Novel G-protein Coupled Receptor Expression and Modulation of Synaptic Plasticity
- 2014- ORCA award: Zachary Hopkins. Endocannabinoid Biosynthetic Enzyme mRNA Expression in Ventral Tegmental Area Dopaminergic and GABAergic Cells.
- 2014- ORCA award: Bradley Prince. The Role of Endocannabinoid Receptor GPR55 on Learning and Memory.
- 2014- ORCA award: Jacob Trotter. The Countering Effects of Exercise on Stress Reduced Long-term Potentiation in Mouse Hippocampi
- 2014- ORCA award: Teresa Nufer. The Effects of Exercise and Stress on Learning and Memory
- 2013- ORCA award: Spencer Bell. Role of GPR55 in hippocampal LTD.
- 2013- ORCA award: Ryan Williamson. Endocannabinoid biosynthetic enzymes in hippocampal neurons.
- 2013- ORCA award: Rachel Schneider. GPR55 function in the hippocampus
- 2012- ORCA award: David Marriot. Neuroprotective effects of exercise on stress induced decreases in LTP.
- 2012- ORCA award: Ryan Williamson. Endocannabinoid biosynthetic enzymes in hippocampal neurons.
- 2012- ORCA award: Spencer Bell. Cellular mechanism behind memory formation. Does TRPV1 induced LTD in young hippocampus.
- 2012- ORCA award: Adam Field. Neuroprotective effects of exercise on stress induced decreases in LTD.
- 2011- ORCA award: Michael McNeil. Using immunocytochemistry to confirm the presence of endocannabinoid enzymes in hippocampal interneurons.
- 2011- ORCA award: Andrew Wallmann. TRPV1 plasticity in the hippocampus
- 2011- ORCA award: Jared Weed. Effect of TRPV1 on LTD
- 2011- ORCA award: Ryan Williamson. Molecular expression profiles of stratum

oriens interneurons

2009- ORCA award: Jacob Blickenstaff. Studying voltage changes mediated by GAP junctions

2009- ORCA award: Douglas Bennion. Studying TRPV1 mediated increases in LTP.

2008- ORCA award: Tyron Jensen. Studying interneuron plasticity.

2008- ORCA award: Douglas Bennion. Studying postsynaptic involvement in LTD.

BYU-Idaho

Thomas E. Ricks grant. This grant was awarded in order to travel to the Neuroscience conference in Atlanta, 2006 and using the experience there to develop curriculum for a new advanced neuroscience course and laboratory. March 2006.

ACADEMIC AWARDS

- 2019 **BYU Phi Kappa Phi Award:** University award for excellence in scholarly and creative endeavors, and contributions to BYU through citizenship and service. (\$1,000 cash award).
- 2018 **Graduate Mentoring Award:** Competitive award from BYU graduate school supporting mentoring of my graduate students, Teresa Nufer and Isaac Ostlund. \$15,000.
- 2016 **Dept. of Physiology and Developmental Biology; Outstanding Achievement and Service Award.** (\$1,000 cash award)
- 2013 **Faculty for Undergraduate Neuroscience (San Diego, CA):Honors Award**
- 2012 **Faculty for Undergraduate Neuroscience Research (New Orleans, LA): Honors Award** “For dedication and commitment to undergraduate education in neuroscience.”
- 2011 **Graduate Mentoring Award:**
This award was given to me from the BYU graduate school to support mentoring of my graduate student, Corinne Badgley. \$4,000
- 2011 **Faculty for Undergraduate Neuroscience research (Washington, DC): Honors Award**

- 2010 **Graduate Mentoring Award:**
This award was given to me from the BYU graduate school to support mentoring two of my graduate students, Tyron Jensen and Collin Merrill. \$4,000
- 2002 & **Association for Chemoreception Sciences:**
2001 Don Tucker Memorial Award Nominee; best graduate student presentation.
- 2001 **Intermountain Chapter Society for Neuroscience (UT, ID, WY):**
Awarded first place for most outstanding presentation.
- 1999- **Association for Chemoreception Sciences student travel/housing award**
2002 (1999, 2000, 2001, 2002).

PEER-REVIEWED PUBLICATIONS

Roxanne M. Miller, Eric Winzenried^b, Erin Saito, Chloe Edwards, Zachary Boyce^b, Calvin Smith^b, Taylor Johnson^b, Anna Everett^b, Spencer Kimball, Eliza Neal, Adam Brantley, Gabriel Melendez^b, Devin Moffat, Zach Cowen, Bryson Dabney, Sean Pickard^b?, Lyndsey Aponik^b, Tyler Crofts, & Jeffrey G. Edwards^{a,b}. Prophylactic Treatment Effect on Ventral Hippocampal, Lateral Amygdala Synaptic Plasticity and Gene Targets in Rat PTSD Models. **Submitted**. Int. Journal of Molecular Science.

T. M. Nufer^a, B. J. Wu^a, Zachary Boyce^b, S. C. Steffensen^a, and J. G. Edwards. 2023. Ethanol Blocks a Novel Form of LTD, but not LTP of Inhibitory Inputs to VTA GABA Neurons. **Neuropsychopharmacology**. DOI: [10.1038/s41386-023-01554-y](https://doi.org/10.1038/s41386-023-01554-y) PMID: **36899030** (Impact Factor: 8.3)

Isaac Ostlund^a, Michael Von Gunten, Calvin Smith^b, & Jeffrey G. Edwards^{a,b,*}. 2023. Differential Activation and $\Delta 9$ -tetrahydrocannabinol Effect on CB1-Dependent Long-Term Depression in Ventral Tegmental Area GABA Neurons in Adult versus Adolescent Mice. **Frontiers in Neuroscience**. DOI: [10.3389/fnins.2022.1067493](https://doi.org/10.3389/fnins.2022.1067493) PMID: **36699526** (Impact Factor: 5.15)

Erin R. Saito, Cali E. Warren, Cameron M. Hanegan, John G. Larsen, Johannes D. du Randt, Mio Cannon, Jeremy Y. Saito, Rachel J. Campbell, Colin M. Kemberling, Gavin S. Miller, Jeffrey G. Edwards and Benjamin T. Bikman. 2022. A Novel Ketone-Supplemented Diet Improves Recognition Memory and Hippocampal Mitochondrial Efficiency in Healthy Adult Mice. **Metabolites**. DOI: [10.3390/metabo12111019](https://doi.org/10.3390/metabo12111019) PMID: **36355101** (Impact Factor: 5.58)

Jeffrey G. Edwards, Luigia Cristino, Dan P Covey. 2022. The Emerging Role of Endocannabinoids in Synaptic Plasticity, Reward, and Addiction. Editorial. **Frontiers in Synaptic Neuroscience**. DOI: [10.3389/fnsyn.2022.898090](https://doi.org/10.3389/fnsyn.2022.898090) PMID: **35615441** (Impact factor: 4.5).

L.N. Friend, B. Wu, and J.G. Edwards. 2021. Acute Cocaine Exposure Reversibly Occludes LTD in Ventral Tegmental Area GABA Neurons. **Neurochemistry International**. Feb 19:105002. doi: 10.1016/j.neuint.2021.105002. (Impact factor: 4.0). PMID: 33617930.

Teresa M. Nufer, Collin Merrill, Lindsey Friend, Michael Jake Petersen, Zach Hopkins, Zach Boyce, and Jeffrey G. Edwards. 2019 Expression of mGluR5 Predicts Plasticity Type in Hippocampal Stratum Radiatum Interneurons. **Neuroscience Letters**. Sep 6;712:134472. doi: 10.1016/j.neulet.2019.134472. PMID:31499135. (Impact factor: 3.0)

L.N. Friend, R.C. Williamson, C.B. Merrill, S.T. Newton, M.T. Christensen, B. Wu, I. Ostlund, and J.G. Edwards. 2019. Hippocampal Stratum Oriens Interneurons Undergo CB1-Dependent Long-Term Potentiation and Express Endocannabinoid Biosynthetic Enzymes. **Molecules**. Special Issue: Emerging Topics in (Endo)Cannabinoid Signaling. [https://www.mdpi.com/journal/molecules/special_issues/\(Endo\)Cannabinoid_Signalling](https://www.mdpi.com/journal/molecules/special_issues/(Endo)Cannabinoid_Signalling) <https://www.mdpi.com/1420-3049/24/7/1306> (Impact factor: 4.9). PMID:30987110.

Stephanie B. Williams, Jordan T. Yorgason, Ashley C. Nelson, N Lewis, Teresa M. Nufer, Jeff G. Edwards, and Scott C. Steffensen. 2018. Glutamate Transmission on Ventral Tegmental Area GABA Neurons Is Altered by Acute and Chronic Ethanol. **Alcohol Clin Exp Res** (2018) Sep 11. doi: 10.1111/acer.13883. [Epub ahead of print] PMID: 30204234. (Impact Factor: 3.2).

Roxanne M. Miller, David Marriott, Tyler Hammond, Jacob Trotter, Dane Lyman, Tim Call, Ryan De Roque, Jacob Welch, Bethany Walker, Nathaniel Christensen, Deson Haynie, Zoie Badura, Myriah Lewis, and Jeffrey G. Edwards. 2018. Running Exercise Mitigates the Negative Consequences of Increased Corticosterone on Hippocampal Long-Term Potentiation due to Stress. **Neurobiology of Learning and Memory**. doi: 10.1016/j.nlm.2018.01.008. PMID: 29408274. (Impact Factor: 3.6). Highlighted in The New York Times.

Lindsey Friend, Jared Weed, Philip Sandoval, Teresa Nufer, Isaac Ostlund, Jeffrey G. Edwards. 2017. CB1-dependent LTD in Ventral Tegmental Area GABA Neurons: a Novel Target for Marijuana. **Journal of Neuroscience**. 37(45):10943-10954. doi: 10.1523/JNEUROSCI.0190-17.2017. PMID: 29038246 (Impact factor: ~7-8). Highlighted by Newsweek, KSL TV, BYUradio, etc.

Steffensen, S.C., Shin, S.I., Nelson, A.C., Pistorius, S.S., Williams, S.B., Woodward, T.J., Park, H.J., Friend, L., Gao, M., Gao, F., Taylor, D.H., Olive, M.F., Edwards, J.G., Sudweeks, S.N., Buhlman, L.M., McIntosh, J.M., and Wu, J. 2017. $\alpha 6$ subunit-containing nicotinic receptors mediate low-dose ethanol effects on ventral tegmental area neurons and ethanol reward. **Addiction Biology** (2017) doi: 10.1111/adb.12559: PMID: 28901722. (Impact Factor: ~5.58).

Katrina Hurst, Corinne Badgley, Tanner Ellsworth, Spencer Bell, Lindsey Friend, Brad Prince, Jacob Welch, Zack Cowan, Brandon Anderson, Ryan Williamson, Chris Lyon, Brian Poole, Michael Christensen, Jarrod Call, Michael McNeil and Jeffrey G. Edwards. 2017. The Putative Cannabinoid Receptor GPR55 Modulates Hippocampal Synaptic Plasticity. **Hippocampus. Cover Article**. DOI:10.1002/hipo.22747 PMID: 28653801. (Impact Factor: 4.1).

Cordner D, Friend L, Mayo J, Ventura J, Badgley C, Wallmann A, Ventura JS, Chidsey BA, Rogers A, Edwards JG, Bridgewater LC. 2017. The nuclear variant of BMP2, nBMP2, affects hippocampal function in a mouse model. **Scientific Reports**. Apr 18;7:46464. doi: 10.1038/srep46464. PMID: 28418030 (Impact Factor: 5.58).

Merrill CB, Friend LN, Newton ST, Hopkins ZH, Edwards JG. 2015. Ventral tegmental area dopamine and GABA neurons: Physiological properties and expression of mRNA for endocannabinoid biosynthetic enzymes and type I metabotropic glutamate receptors. **Scientific Reports**. Nov 10;5:16176. doi: 10.1038/srep16176. PMID: 26553597. (Impact Factor: 5.58).

Taylor D., Burman PN, Hansen MD, Wilcox R., Larsen BR, Blanchard JK, Merrill CB, Edwards JG, Sudweeks, SN, Wu J, Arias HR, and Steffensen SC. 2013. Nicotine Enhances the Excitability of Gaba Neurons in the Ventral Tegmental Area via Activation of Alpha 7 Nicotinic Receptors on Glutamate Terminals. **Biochemistry and Pharmacology**. S1.ISSN: 2167-0501. (Impact factor: 3.72).

Merrill C, McNeil M, Williamson R, Poole B, Nelson B, Sudweeks S and Edwards JG. 2012. Identification of mRNA for endocannabinoid biosynthetic enzymes within hippocampal pyramidal cells and CA1 stratum radiatum interneuron subtypes using quantitative real-time PCR. **Neuroscience**. 218:89-99. Epub 2012 May 17. DOI: 10.1016/j.neuroscience.2012.05.012. NIHMS 387707. PMID 22609938. (impact factor: 3.380)

Jensen T and Edwards JG. 2012. Calcineurin is required for TRPV1-induced long-term depression of hippocampal interneurons. **Neuroscience Letters**. 510:82-87. PMID: 22260796. (impact factor: 3.0)

Bennion D, Jensen T, Walther C, Hamblin J, Wallmann A, Couch J, Blickenstaff J, Castle M, Dean L, Beckstead S, Merrill C, Muir C, St. Pierre T, Williams B, Daniel S, and Edwards JG. 2011. Transient Receptor Potential Vanilloid 1 agonists modulate hippocampal CA1 LTP via the GABAergic system. **Neuropharmacology**. 61(4):730-8. PMID: 21069781. (impact factor: 4.677).

Steffensen SC, Bradley KD, Hansen DM, Wilcox JD, Wilcox RS, Allison DW, Merrill CB and Edwards JG. 2010. The role of Connexin-36 GAP junctions in alcohol intoxication and reward. **Synapse**. 65(8):695-707. (impact factor: 2.925)

Edwards JG*, Gibson HE, Jensen T, Nugent F, Walther C, Blickenstaff J, Kauer JA. 2010. A novel non-CB1/TRPV1 endocannabinoid-mediated mechanism depresses

excitatory synapses on hippocampal CA1 interneurons. **Hippocampus**. DOI: 10.1002/hipo.20884. 22(2):209-21 ***corresponding author** (impact factor: 5.745)

Wang Z, Edwards JG, Riley N, Provance DW, Karcher R, Li X, Davison IG, Ikebe M, Mercer JA, Kauer JA, Ehlers MD. 2008. Myosin Vb mobilizes recycling endosomes and AMPA receptors for postsynaptic plasticity. **Cell**. 135(3):535-48. (impact factor: 32.401). Highlighted nationally, CBS/Channel 5, etc.

Gibson HE*, Edwards JG*, Page RS, Van Hook MJ, Kauer JK. 2008. TRPV1 channels mediate long-term depression at synapses on hippocampal interneurons. **Neuron**. 57(5): 746-59. ***co-first authors**. (impact factor: 14.926). Highlighted in USA Today, etc.

Edwards JG, Greig A, Sakata Y, Elkin D, Michel WC. 2007. Cholinergic innervation of the zebrafish olfactory bulb. **Journal of Comparative Neurology**. 504(6): 631-45. (impact factor: 3.774)

Park M, Penick EC, Edwards JG, Kauer JA, and Ehlers MD. 2004. Recycling endosomes supply AMPA receptors for LTP. **Science**. 305(5692): 1972-5 (impact factor: 30.927)

Edwards JG and Michel WC. 2003. Pharmacological characterization of ionotropic glutamate receptors within the zebrafish olfactory bulb. **Neuroscience**. 122(4): 1037-47. (impact factor: 3.41)

Edwards JG* and Odell WD. 2003. Partial characterization of chorionic gonadotropin-like binding sites from the bacteria *Xanthomonas maltophilia*. **Experimental Biology & Medicine**. 28(8):926-934. (impact factor: 2.954) ***corresponding author**

Edwards JG and Michel WC. 2002. Odor-stimulated glutamatergic neurotransmission in the zebrafish olfactory bulb. **Journal of Comparative Neurology**. 454(3): 294-309. (impact factor: 3.774)

Citations: >1,500 (Web of Science as of 18-07-24). H index: 14. Impact Factor Ave: 7.05

PUBLISHED BOOKS/CHAPTERS

Edwards JG. 2014. TRPV1 in the Central Nervous System: Synaptic Plasticity, Function, and Pharmacological Implications. In: Omar M.E., editor. Progress in Drug Research: Capsaicin as a Therapeutic Molecule. VIIIth ed. vol. 68 p. 321. **Springer**.

ACKNOWLEDGEMENTS

Jason Paxman, Brady Hunt, David Hallan, Samuel R. Zarbock and Dixon J. Woodbury. Drunken Membranes: Short-Chain Alcohols Alter Fusion of Liposomes to Planar Lipid Bilayers. 2017. **Biophysical Journal**. 112: 121-132.

Sakata Y, Olson JK, Michel WC. 2003. Assessment of neuronal maturation and acquisition of functional competence in the developing zebrafish olfactory system. **Methods Cell Sci.** 25(1-2):39-48.

Lipschitz DL and Michel WC. 1999. Physiological Evidence for the Discrimination of L-arginine from Structural Analogues by the Zebrafish Olfactory System. **J. Neurophysiol.** 82, 3160-3167.

PUBLISHED ABSTRACTS:

- 2022: 13 abstracts with oral/poster presentations from seven different conferences, 5 international, 4 national, 2 regional, and 2 state. For full list see the end of the CV.
- 2021: 7 abstracts from three conferences, 1 international, 1 state and 1 local. For full list see the end of the CV.

CHIASM PUBLICATIONS- BYU Undergraduate Journal of Neurosciences

James Kranewitter-Call. Examining the Potential Role of GPR18 and GPR119 in Learning and Memory. **2017.** Page 3, Volume 9.

Doug Bennion. Learning and Memory Modulation by Activation of the Hot Pepper Receptor: TRVP1 Modulation of Synaptic Plasticity in the Hippocampus. **2009.** Page 18. Volume 1

GRADUATE STUDENTS THESIS/DISSERTATION IN MY LAB

2022- Isaac Ostlund. PhD in PDBio. The Influence of THC, Opioids, and Age on the Plasticity of Excitatory Inputs to Ventral Tegmental Area GABA Neurons.

2018- Teresa Nufer. PhD in Neuroscience. Variable Modulation of Inputs to GABA Cell in the Ventral Tegmental Area and Hippocampus.

2017- Roxanne Miller. PhD in PDBio. Pharmaceutical and Natural (Exercise) Mechanisms to Mitigate the Negative Impact of PTSD and Chronic stress on Synaptic Plasticity and Memory.

2017- Katrina Hurst. PhD in PDBio. Modulation of Synaptic Plasticity: Endocannabinoids and Novel G-Protein Coupled receptors Expression and Translational Effects in Interneurons.

2016- Lindsey Friend. PhD in Neuroscience. Endocannabinoid-Mediated Synaptic Plasticity in the Ventral Tegmental Area and Hippocampus.

2014- Collin Merrill. PhD in PDBio. Endocannabinoid Biosynthetic Enzyme mRNA: Patterns of expression in Hippocampus and Ventral Tegmental Area and Effects on Synaptic Plasticity.

2013- Jared Weed. MS in PDBio. Endocannabinoid-Dependent Long-Term Depression of Ventral Tegmental Area GABA Neurons.

2012- Philip Sandoval. MS in PDBio. Long-Term Depression of Excitatory Inputs to GABAergic Neurons in the Ventral Tegmental Area.

2012- Corinne Badgley. MS in PDBio. The Putative Cannabinoid Receptor GPR55 Modulates Synaptic Plasticity in the Hippocampus.

2011- Tyron Jensen. MS in PDBio. Calcineurin is Required for TRPV1-Induced LTD of CA1 Stratum Radiatum Interneurons.

HONORS UNDERGRADUATE THESIS OF STUDENTS MENTORED IN MY LAB

2017- James Kranewitter-Call. Undergraduate Honors Thesis.

2017- Morgan Homan. Undergraduate Honors Thesis.

2013- David Marriott. Undergraduate Honors Thesis. The effects of exercise on synaptic plasticity in the CA1 region of the hippocampus in mice who experience acute stress.

2009- Douglas Bennion. Undergraduate Honors Thesis.

INVITED LECTURES/PRESENTATIONS/SEMINARS (ORAL)

Nov. 2022 International Society for Neuroscience Meeting; Chicago, Nanosymposium. Oral Presentation.

Jun. 2022 International Cannabis Research Society; Galway Ireland. Oral Presentation.

Oct. 2019 International Society for Neuroscience Meeting; Chicago, Nanosymposium. Oral Presentation.

Sept. 2019 Universitat Autònoma de Barcelona; Barcelona, Spain. Oral Presentation.

Aug. 2019 National Research Council (CNR) of Italy; Naples, Italy. Oral Presentation

Jul. 2019 Gordon Conference; Casteldefels, Spain.

- Jun. 2019 International Conference on Neurology and Brain Disorders; Paris, France. Oral Presentation.
- Apr. 2019 University of South Dakota; Seminar. Oral Presentation.
- Nov. 2018 BYU; Psychology Department. Graduate/Faculty Seminar.
- Sep. 2017 Brigham Young University, PDBio Seminar (Full Professor review)
- May 2017 MMBio, BYU; Research Presentation.
- 2015, 2016, 2017 Spring Faculty Development Seminar. Presented on attaining NIH external funding.
- Nov. 2014 Uniformed Services University Health Sciences; Neuroscience; Maryland. Oral Presentation
- Mar. 2014 Spring Brain Conference; Sedona, Arizona. Oral Presentation
- Mar. 2014 Physiology and Developmental Biology Seminar
- Jul. 2013 LDSLSR Symposium. Plenary Session. Oral Presentation.
- Feb. 2012 Brigham Young University, PDBio Seminar (CFS review)
- Feb. 2010 Brigham Young University, PDBio Seminar (3rd year review)
- Feb. 2009 Brigham Young University, Neuroscience Program.
- Jan. 2009 Southern Utah University; Department of Biology
- Jan. 2009 Utah Science Fair; Presented to High School Teachers
- Dec. 2005 Brigham Young University; Department of Physiology and Developmental Biology.
- Aug. 2004 Brown University; Department of Molecular Pharmacology, Physiology and Biotechnology.
- June 2002 Yale University; Department of Neurobiology.
- June 2002 University of Baltimore; Department of Anatomy and Neurobiology.
- April 2002 University of Kentucky; Department of Neuroscience.

Feb. 2001 Jackson Hole, Wyoming; Intermountain Chemosensory Conference.

CONFERENCES ATTENDED/PRESENTED AT (Including Grads/Undergrads)

Since arriving at BYU

Spring Brain Conference: *National*

- 2018, 2017, 2016 and 2015 co-chair of program, 2014 (oral presentation).

Society for Neuroscience (SfN): *International*

- 2022 (2 oral and 2 poster presentations), 2021 (4 poster presentations-virtual), 2019 (2 oral presentations, 1 poster), 2018 (1 oral nanosymposium presentation, 2 posters), 2017 (3 posters), 2016 (4 posters), 2015 (4 posters), 2014 (4 posters), 2013 (4 posters), 2012 (3 posters), 2011 (4 posters), 2010 (4 posters), 2009 (2 posters), 2008 (1 poster)

Gordon Conference- Cannabinoids: *International*

- 2019 (1 poster), 2013 (1 poster)

Gordon Conference- Excitatory Synapses: *International*

- 2017 (presentation)

Faculty for Undergraduate Neuroscience (FUN): *International*

- 2022 (1 poster), 2019 (1 poster), 2018 (1 poster), 2017 (1 poster), 2016 (1 poster), 2015 (1 poster), 2014 (1 poster), 2013 (1 poster), 2012 (1 poster), 2011 (1 poster), 2010 (1 poster), 2009 (1 poster), 2008 (1 poster)

International Cannabinoid Research Society (ICRS): *International*

- 2022 (1 oral presentation my me), 2017 (1 presentation), 2012 (1 presentation)

Alzheimer's Association International Conference (AAIC): *International*

- 2012

LDS Life Science Research Symposium (LDSLSRS): *National*

- 2013 (1 oral presentation)

National Conference on Undergraduate Education (NCUR): *National*

- 2012 (2 undergraduate oral presentations)

Intermountain Graduate Research Symposium (IGRS): *Regional*

- 2012 (2 graduate student oral presentations), 2011 (2 graduate student oral presentations), 2010 (2 graduate student oral presentations)

Intermountain Chapter Society for Neuroscience: *Regional*

- 2022 (3 posters), 2019 (1 poster), 2018 (2 posters), 2017 (3 posters), 2016 (2 posters) 2015 (1 poster), 2014 (3 posters), 2013 (1 poster), 2012 (1 poster), 2011 (1 poster), 2010 (3 posters),

Utah Conference on Undergraduate Research (UCUR): *State*

- 2022 (3 oral presentations), 2021 (2 oral presentations- 4 students), 2020 (5 oral presentations- 5 students); 2019 (3 oral presentations – 6 students), 2018 (4 oral presentations), 2017 (3 oral undergrad presentations), 2016 (2 oral undergrad presentations), 2015 (2 oral undergraduate presentations), 2014 (2 oral undergraduate presentations), 2013 (4 oral undergraduate presentations), 2011 (1 oral undergraduate presentation), 2009 (1 oral undergraduate presentation).

Roseman Symposium: *State*

- 2019 (2 posters)

Utah Academy of Sciences: *State*

- 2019 (1 poster)

Mary Lou Fulton Conference: *Local*

- 2020 (1 poster), 2019 (2 posters), 2018 (2 posters), 2011 (2 posters), 2010 (2 posters), 2009 (2 posters)

Life Science Poster Session: *Local*

- 2021 (1 poster), 2020 (1 poster), 2019 (1 poster), 2018 (1 poster), 2011 (2 posters), 2010 (2 posters)

BYU Library Poster Competition: *Local*

- 2021 (2 posters), 2020 (1 poster), 2019 (2 posters), 2018 (1 poster), 2017 (1 poster)

BYU Grad Expo: *Local*

- 2018 (1 poster)

CURA: *Local*

- 2022 (4 posters), 2021 (3 posters), 2020 (2 posters), 2019 (2 posters)

Before arriving at BYU

Society for Neuroscience:

2007, 2006, 2005, 2004

Gordon Research Conference: Excitatory Amino Acids and Brain Function.

2003

Association for Chemoreception Sciences (AChemS):

2002, 2001, 2000, 1999

Intermountain Chapter Society for Neuroscience
2002, 2001

Intermountain Chemosensory Conference:
2001

Neuronal Information Processing System
1998

GRANT STUDY SECTIONS

- 2022 (Jan-Feb) Tobacco-Related Disease Research Program (**TRDRP**) grant review study section for California. Apporved by NIH
- 2020-2021 Tobacco-Related Disease Research Program (**TRDRP**) grant review study section for California. Apporved by NIH
- 2020- Apr. Tobacco-Related Disease Research Program (**TRDRP**) grant review study section for California. Apporved by NIH.
- 2019- Mar. National Science Centre (Poland’s National Research Funding Agency).
- 2018- Dec. Tobacco-Related Disease Research Program (**TRDRP**) grant review study section for California.
- 2018- July **NIH** Study Section, NBM; Ad-Hoc Reviewer
- 2018- Mar. Tobacco-Related Disease Research Program (**TRDRP**) grant review study section for California.
- 2016 **Medical Research Council**; Ad-Hoc Reviewer (Great Britain’s leading funding organization- similar to NIH in the US.).
- 2015 **NIH** Study Section, MNPS; Ad-Hoc Reviewer

PROFESSIONAL SOCIETY AND JOURNAL LEADERSHIP/EXPERIENCE

- 2022-Present Associate Editor; *Frontiers in Synaptic Neuroscience*.
- 2020- 2022 Topic Editor; *Frontiers in Synatpic Neuroscience*. **Special Issue:** I was a lead editor for a special issue in the journal entitlted “The Emerging Role of Endocannabinoids in Synaptic Plasticity,

Reward, and Addiction”. This was done in collaboration with Dr. Luigia Cristino and Dr. Dan Covey.

- 2015-Present Organizing Committee; *Spring Brain Conference* annual meeting (annual meeting not held from 2020-2021).
- 2017- Present Associate Editor; *BMC Neuroscience*.
- 2015-Present Associate Editor; *Scientific Reports*, a Nature Publishing Group journal.
- 2019- Present Reviewing Editor; *Frontiers in Synaptic Neuroscience*.
- 2012- 2015 President- *Society for Neuroscience Intermountain Chapter*

PROFESSIONAL CONFERENCES/EVENTS THAT I ORGANIZED

- 2017- Spring Brain Conference. Sedona, Arizona. Co-chair. Assist planning meeting.
- 2016- Spring Brain Conference. Sedona, Arizona. Co-chair. Assist planning meeting.
- 2014- Snowbird, Utah. Organized Intermountain Society for Neuroscience Branch Poster Session.
- 2013- Snowbird, Utah. Organized Intermountain Society for Neuroscience Branch Poster Session.
- 2013- Salt Lake City Utah, Brain Awareness Week- Utah Brain Education Alliance. Consisted of members from several local universities to coordinate BAW activities.
- 2012- Snowbird, Utah. Organized Intermountain Society for Neuroscience Branch Poster Session.

PROFESSIONAL SOCIETY MEMBERSHIPS

- 2004-Current Society for Neuroscience
- 2007-Current Association for the Advancement of Science.
- 2012-Current International Cannabinoid Research Society
- 2020- 2022 Sigma Xi- Scientific Research Honor Society.
- 2000-2003 & 2007-Current Intermountain Chapter- Society for Neuroscience.
- 1998-2007 & 2018-Current American Physiological Society.
- 2005-2006 Idaho Academy of Science.
- 1999-2004 Association for Chemoreception Sciences (AChemS).

PROFESSIONAL PEER-REVIEWS

Journals

- 1) Journal of Neuroscience
- 2) Journal of Neurophysiology
- 3) Neuroscience
- 4) Frontiers in Synaptic Neuroscience
- 5) Frontiers in Neuroscience
- 6) British Journal of Pharmacology
- 7) Neuroscience Letters
- 8) Neurochemistry International
- 9) Proceedings of the National Conference on Undergraduate Research (NCUR)
- 10) Pharmacological Reports
- 11) Pharmacological Research
- 12) Pharmacological Reviews
- 13) Behavior Brain Research
- 14) Brain Research
- 15) Brain Research Bulletin
- 16) Scientific Reports
- 17) Molecular Metabolism
- 18) Planta Medica
- 19) Etc.

Textbooks

- 1) McGraw Hill-Fox Physiology
- 2) McGraw Hill- Sealey Anatomy and Physiology

BYU UNIVERSITY SERVICE

- Director; Neuroscience Center (University), 2021-Present
- LS Dean Search Committee Member: Fall 2021-Winter 2022
- PDBio Rank and Status Committee (Professional Development): 2020-Present
- Neuroscience Administrative Oversight Committee: 2020. This committee was charged to determine the best long-term solution for the Neuroscience Center
- Associate Director; Neuroscience Center (University), 2015-2021
- Graduate Fellowship Review Committee (College): 2017
- Honors Program Coordinator (Depart.), 2015-2018
- PDBio Search Committee Chair (Depart.): 2015-2016
- Mentoring Environment Grant (MEG) Review Committee Chair (College)- 2013
- Mentoring Environment Grant (MEG) Review Committee Member (College)- 2011, 2012
- Committee assignment for Academic Unit Review- Unit Strategic Plan (Depart.); 2011-2012

- Learning Objective Categories Coordinator for PDBio 305 (Depart.): Fall 2010- Present
- PDBio Search Committees (Dept.): 1) 2010-2011, 2) 2011-2012, 3) 2014
- College Computer Committee (College): 2008- 2013
- College Scholarship Committee (College): 2007- 2014

COMMUNITY SERVICE/OUTREACH

- 2021 PodCast- Sprinkled with Hope- Discuss of drug addiction.
- 2019 **Judge for LS College CURA Awards.** CURA LS Research symposium
- 2018 **Interviewed by the Canadian Broadcast Corporation (CBC):** *Quirks & Quarks*. This interview was regarding the addictive potential of marijuana use in a broadcast coinciding with the legalization of medicinal and recreational use of marijuana in Canada. Links: cbc.ca/1.4860201 or cbc.ca/1.4860221
- 2018 **Interviewed for KSL TV** regarding my recent research on exercise and its ability to mitigate the negative impact of stress on memory. This research was highlighted on KSL TV and radio, as well as KUTV.
- 2018 **Interviewed for New York Times** regarding my recent research on exercise and its ability to mitigate the negative impact of stress on memory, which was included in their online and print version of the paper.
- 2018 **Interviewed for BYU-Idaho radio** regarding my recent research on exercise and its ability to mitigate the negative impact of stress on memory.
- 2017 **Interviewed for KBYU TV** regarding my recent research on marijuana and potential effects on adolescents.
- 2017 **Top of Mind, BYU Radio.** Participated in a live interview broadcast at BYU broadcasting regarding our research on Marijuana.
- 2017 **Food for Thought.** BYU Neuroscience Club. I was discussed research and careers in the Neuroscience Field to BYU undergraduates.
- 2017 **Presented** at BYU Neuroscience Club FHE Opening Social.
- 2012-2017 **Judge** (yearly) for the Intermountain Society for Neuroscience Poster Session

- 2015 **Top of Mind, BYU Radio.** Participated in a live interview broadcast on BYU campus during Education Week regarding learning and memory and dementia. September.
- 2015 **WatchDOGS.** Volunteer mentoring experience of males being a presence in Utah County Elementary Schools. December.
- 2013 **“Utah Brain Education Alliance”.** A day retreat for faculty and students across Utah focusing on enhancing instruction, education, creating resources, sharing lesson plans and community outreach for neuroscience.
- 2012 **Interview for Chiasm.** Gave an interview for BYU’s undergraduate Neuroscience publication, Chiasm.
- 2012-2013 **Judge** for Annual Intermountain Society for Neuroscience Poster Session.
- Feb. 2012 **Presented** a question and answer session for the BYU Women in Science Club. The purpose was to inspire women in science majors and discuss how to be successful.
- 2012-2013 **Utah County Delegate**
- 2010 & 2012 **Judge** for Intermountain Graduate Research Symposium oral presentations.
- 2010-2011 **Outreach** to congress to enhance NIH budget and increase awareness of science. This was done by email and in a visit to Washington DC in 2011.
- 2010 & 2011 **Judge** for College of Life Science Poster Presentation
- Dec. 2011 **Interviewed for Channel 11 news** for a program regarding stress effects on students.
- Mar. 2010 **Brain Awareness week:** Demonstration and discussion of human brain/ Timpview High School
- Mar. 2009 Presentation for Utah Science Fair; given to high school teachers regarding learning and memory techniques.
- Aug. 2009 **Wrote an article for BYU Wellness** Newsletter regarding important steps to maintain and sharpen memory.
- Nov. 2008 **Interviewed for KBYU TV** regarding my research and life as a scientist.
- Oct. 2008 **Interviewed for KSL channel 5** news and the newspaper Deseret News regarding my research.

Mar. 2002 **Brain Awareness week:** Demonstration and discussion of human brain

PUBLISHED ABSTRACTS

Published abstracts since arriving at BYU

[Effects of the Ketogenic Diet on Hippocampal CA1 Long Term Potentiation in Young Rodents](#) J. R. CHRISTENSEN¹, M. P. DEW², E. SAITO³, A. EVERETT², J. WEIGHT², N. VALENTINE³, C. KEMBERLING³, B. BIKMAN³, ***J. G. EDWARDS**³. Society for Neuroscience Meeting planner

[A novel ketone-supplemented ketogenic diet improves recognition memory and hippocampal mitochondrial efficiency](#) ***E. R. SAITO**¹, C. E. WARREN¹, C. M. HANEGAN¹, J. LARSEN¹, J. D. DU RANDT¹, M. CANNON¹, R. J. CAMPBELL¹, J. Y. SAITO¹, C. M. KEMBERLING¹, G. S. MILLER¹, J. G. EDWARDS², B. T. BIKMAN¹. Society for Neuroscience Meeting planner

[Differential Activation of CB1-Dependent Long-Term Depression in Ventral Tegmental Area GABA Neurons in Adult versus Adolescent Mice](#) ***M. VON GUNTEN**¹, I. OSTLUND², S. HOFFMAN¹, J. G. EDWARDS³. Society for Neuroscience Meeting planner

[Ethanol Blocks a Novel Form of LTD, but not LTP of Inhibitory Inputs to VTA GABA Neurons](#) **J. G. EDWARDS**¹, T. M. NUFER⁵, Z. BOYCE², S. STEFFENSEN³, ***B. WU**⁴. Society for Neuroscience Meeting planner

Michael Dew, Jed Christensen, 5 others, JG Edwards. Impact of Keto diet on cognition. Faculty for Undergraduate Neuroscience. 2022. Abstract book.

Michael Von Gunten, Seth Hoffman, Issac Ostlund, JG Edwards. THC impact on plasticity impairment and differential plasticity in adult versus adolescent VTA. 2022. Snowbird Snowbird Symposium. Abstract book.

Jed Christensen, Michael Dew, several others, JG Edwards. Impact of Ketogenetic diet on hippocampal cognition. 2022. Snowbird Snowbird Symposium. Abstract book.

Payne, A.J., Obray, J.D., Williams, B.M., Small, S.A., Yorgason, J.T., Edwards, J.G., Weber, K.S., and Steffensen, S.C CD5 knockout modulates effects of alcohol consumption in mouse models. American Academy of Neurology. 2022. Online.

Payne, A.J., Obray, J.D., Williams, B.M., Small, S.A., Yorgason, J.T., Edwards, J.G., Weber, K.S., and **Steffensen, S.C.** Changes in measures of alcohol sedation and consumption in CD5 knockout mice. *Alcoholism: Clin. Exp. Res.* (2022) 46(S1) 78A (040).

Reed, Darien; Bever, Nicholas; Edwards, JG. 2022. The Impact of the Ketogenic Diet on Hippocampal Long-Term Potentiation. UCUR abstract

Isenmonger, Daniel; Ward, Zach; Edwards, JG. 2022. Investigation of dopamine and GABAergic neuron connections within the VTA using modified rabies virus mediated monosynaptic tracing. UCUR abstract.

Christensen, Jed; Dew, Michael; Stake, Cami; Edwards, JG. 2022. Identifying the Culprits of "Forgetting" in Neurodegenerative Diseases. UCUR abstract #364.

Erin Saito, Jeff Edwards, Ben Bikman. 2022. A Low-carbohydrate, Ketogenic Diet Enhances Hippocampal Mitochondrial Bioenergetics and Efficiency. Experimental Biology.

Anna Everett, Darien Reed, Jeff Edwards. 2021. Ketogenic impact on Learning and Memory Mechanisms. Oral Presentation. Utah Conference on Undergraduate Research, Abstract book.

Austin Stewart and Jeff Edwards. 2021 Synaptic Plasticity: Learning and Unlearning. Oral Presentation. Utah Conference on Undergraduate Research, Abstract book.

P112.05 - Differential activation of CB1-dependent long-term depression in ventral tegmental area GABA neurons in adult versus adolescent mice 2021. ***I. OSTLUND**, M. VON GUNTEN, J. G. EDWARDS; Society for Neuroscience.

P112.01 - The modulation of inhibitory inputs onto vta gaba neurons 2021. ***B. WU**¹, T. M. NUFER², J. G. EDWARDS¹; Society for Neuroscience.

P080.04 - Ventral tegmental area mRNA expression changes in delta-9-tetrahydrocannabinol exposed young mice 2021. **C. SMITH**, I. CRESS, ***J. EDWARDS**; Society for Neuroscience.

P111.09 - Effects of prophylactic treatment on hippocampal and amygdalar synaptic plasticity and gene expression in a rodent model of PTSD 2021. ***A. C. EVERETT**, R. MILLER, E. SAITO, E. WINZENRIED, C. SMITH, Z. BOYCE, J. G. EDWARDS. Society for Neuroscience.

P736.01 - Cd5 knockout mice exhibit alterations in measures of ethanol sedation and consumption. 2021 ***A. J. PAYNE**, J. D. OBRAY, B. M. WILLIAMS, C. A. SMALL, S. M. BAUSERMAN, J. T. YORGASON, J. G. EDWARDS, K. S. WEBER, S. C. STEFFENSEN; Noorda Col. of Osteo. Med., Pleasant Grove, UT; Brigham Young Univ., Provo, UT; Med. Univ. of South Carolina, Charleston, SC. Society for Neuroscience.

Moore, Zachary; Kemberling, Colin; Barlow, Spencer; Saito, Erin; and Edwards, Jeffrey PhD, "Effects of the Ketogenic Diet on Learning and Memory" (2021). *Library/Life Sciences Undergraduate Poster Competition 2021*. 25. https://scholarsarchive.byu.edu/library_studentposters_2021/25

Holdaway, Matt; Bever, Nick; Valentine, Noah; and Edwards, Jeff, "Exploring the Mechanism of "Forgetting" with Electrophysiology" (2021). *Library/Life Sciences Undergraduate Poster Competition 2021*. 21. https://scholarsarchive.byu.edu/library_studentposters_2021/21

Zachary Boyce. Prophylactic Treatment of Post-Traumatic Stress Disorder with Mifepristone and Propranolol. 2020. Utah Conference of Undergraduate Research Abstract Book.

Landon Pasket. The Effects of Cannabis on the Brain's Reward System. 2020. Utah Conference of Undergraduate Research Abstract Book.

Tanner Blaylock. The Effects of the Ketogenic Diet on Learning and Memory. 2020. Utah Conference of Undergraduate Research Abstract Book.

Eric Winzenried. True Prophylactic Treatment effect in a Rat PTSD Model on Synaptic Plasticity in Ventral Hippocampal and Lateral Amygdala. 2020. Utah Conference of Undergraduate Research Abstract Book.

Devin Bird. Understanding Drug Addiction Pathways Through Optogenetics. 2020. Utah Conference of Undergraduate Research Abstract Book.

Bird, D.; Brown, Scott Kent III; Hastings, T.; and Edwards, J., "Understanding Drug Addiction Through Optogenetics" (2020). *Library/Life Sciences Undergraduate Poster Competition 2020*. 6. https://scholarsarchive.byu.edu/library_studentposters_2020/6

E. Neal, E. Winzenried, E. Saito, T. Johnson, Z. Boyce. A Prophylactic Treatment in a Rat PTSD Model Examining Plasticity of Brain Regions Altered in this Disorder. 2019. Utah Conference of Undergraduate Research Abstract Book.

Jacob Robinson, Erin Saito, Spencer Kimball, Jeff G. Edwards. The Effect of Ketogenic Diet Mimicking Conditions on Brain Learning and Memory Mechanisms. 2019. Utah Conference of Undergraduate Research Abstract Book.

Devin Moffat, Gabriel Malendez, Erin Davis, Jeff G. Edwards. Prophylactic drug treatment to reduce PTSD-like synaptic plasticity and behavior in a rat model. 2019. Utah Conference of Undergraduate Research Abstract Book.

T. Johnson. E. Winzenried, C. Jensen, G. Melendez, R. Miller, J.G. Edwards. 2019. Prophylactic treatment for PTSD. Snowbird symposium abstract book.

R. M. MILLER, E. T. WINZENRIED, E. SAITO, T. JOHNSON, Z. BOYCE, A. MARTIN . J EDWARDS. 2019. True Prophylactic Treatment effect in a Rat PTSD Model on Synaptic Plasticity in Ventral Hippocampal and Lateral Amygdala along with Potential Molecular Targets. Faculty for Undergraduate Neuroscience Agenda and Abstract Book.

L. N. FRIEND¹, *B. WU², J. G. EDWARDS²; ¹NIH, North Bethesda, MD; ²Brigham Young Univ., Provo, UT. Acute & chronic cocaine exposure occludes long-term depression in ventral tegmental area GABA neurons. Program No. 012.16. 2019 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2019. Online.

*J. G. EDWARDS, R. M. MILLER, E. T. WINZENRIED, E. SAITO, T. JOHNSON, Z. BOYCE, A. MARTIN; Brigham Young Univ., Provo, UT. True prophylactic treatment effect in a

rat PTSD model on synaptic plasticity in ventral hippocampal and lateral amygdala along with potential molecular targets. Program No. 012.02. 2019 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2019. Online.

E. Winzenried, C. Jensen, G. Melendez, R. Miller, J.G. Edwards. 2018. Prophylactic treatment for PTSD effect on hippocampal physiology. Faculty for Undergraduate Neuroscience Agenda and Abstract Book. #30

Acute and chronic cocaine exposure occludes long-term depression in ventral tegmental area GABA neurons. 2018. **B. WU**¹, L. N. FRIEND³, J. G. EDWARDS. Program No. 036.11. 2018 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2018. Online.

Hippocampal stratum oriens interneurons express endocannabinoid biosynthetic enzymes and undergo CB1 and anandamide-dependent potentiation. 2018. **I. OSTLUND**¹, L. N. FRIEND³, C. B. MERRILL⁴, M. B. CHRISTENSEN⁵, S. NEWTON⁶, R. WILLIAMSON⁷, J. G. EDWARDS². Program No. 444.07. 2018 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2018. Online.

True prophylactic treatment effect in a rat PTSD model on plasticity in ventral hippocampal, lateral amygdala, and medial prefrontal cortex and molecular target. 2018. **R. M. MILLER**¹, E. SAITO², B. DABNEY², R. HANSEN², G. MELENDEZ², S. M. PICKARD², C. EDWARDS², L. APONIK², T. CROFTS², S. MANGUM², J. G. EDWARDS. Program No. 682.26. 2018 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2018. Online.

Developing a Stress Technique that Induces PTSD-like Symptoms in Rats and Preventing Those Symptoms with Pharmaceuticals that Could be Used as Prophylactics. 2018. E. Wizenried, C. Jensen, G. Melendez, R. Miller, JG. Edwards. Snowbird Abstract Book.

Acute and chronic cocaine exposure occludes long-term depression in ventral tegmental area GABA neurons. 2018. B. Wu, L. Friend, J.G. Edwards. Snowbird Abstract Book.

S. Pickard, RM. Miller, C. Jensen, J. Peterson, S. Mangum, JG. Edwards. Post-Traumatic Stress Disorder in the Ventral Hippocampus and Prophylactic Treatment: Physiology memory considerations. 2018. Utah Conference of Undergraduate Research Abstract Book.

E. Saito, G. Melendez, D. Moffet, RM. Miller, JG. Edwards. Post-Traumatic Stress Disorder in the Ventral Hippocampus and Prophylactic Treatment: Behavioral stress considerations. 2018. Utah Conference of Undergraduate Research Abstract Book.

T. Jarmon, C. Jensen. Expression location of GPR18/GPR119 in the hippocampus and potential role in synaptic plasticity. 2018. Utah Conference of Undergraduate Research Abstract Book.

A. Markham, L. Friend, J.G. Edwards. Hippocampal oriens interneurons express endocannabinoid enzymes and undergo CB1 and anandamide-dependent potentiation. 2018. Utah Conference of Undergraduate Research Abstract Book.

THE ORPHAN G PROTEIN-COUPLED RECEPTOR, GPR18 IS EXPRESSED IN HIPPOCAMPAL PYRAMIDAL CELLS. 2017. Kranewitter-Call, J, Anderson, B, Jarmon, T, Call, T, Hurst, K, Edwards, J. Faculty for Undergraduate Neuroscience Agenda and Abstract Book. Page 32

The orphan G protein-coupled receptor, GPR18 is expressed in hippocampal pyramidal cells. 2017. J. G. EDWARDS, J. KRANEWITTER-CALL, B. ANDERSON, T. JARMON, T. CALL, K. HURST. 38.04. Society for Neuroscience Meeting Planner. Online.

CB1-dependent LTD in ventral tegmental area GABA neurons: A novel target for marijuana. 2017. I. OSTLUND¹, L. N. FRIEND², J. WEED², P. SANDOVAL³, J. G. EDWARDS. 41.01. Society for Neuroscience Meeting Planner. Online.

Long-term potentiation of inhibitory inputs onto VTA GABA neurons. 2017. T. M. NUFER¹, J. G. EDWARDS. 290.12. Society for Neuroscience Meeting Planner. Online.

The orphan G protein-coupled receptor, GPR18 is expressed in hippocampal pyramidal cells. 2017. B. Anderson, JG. Edwards. Snowbird Abstract Book. Page 2.

Developing a Stress Technique that Induces PTSD-like Symptoms in Rats and Preventing Those Symptoms with Pharmaceuticals that Could be Used as Prophylactics. 2017. R. Miller, JG. Edwards. Snowbird Abstract Book. Page 15.

CB1-Dependent LTD in Ventral Tegmental Area GABA Neurons: a Novel Target for Marijuana. 2017. Snowbird Abstract Book. Page 17.

L. Friend, J Weed, P. Sandoval, J.G. Edwards. 2017. CB1-dependent LTD in Ventral Tegmental Area GABA Neurons: A Novel Target for Marijuana. ICRS 27th Symposium Abstract Book. Page, P3-4.

Gremillion M, Homan M, Badura Z, Miller R, Hammond T, Lewis M, Welch J. Edwards JG. Exercise Can Mitigate the Negative Effects of Increased Corticosterone due to Stress on Hippocampal LTP. 2017. Utah Conference of Undergraduate Research Abstract Book.

M. Homan, R.M. Miller, Z. Badura, J. Peterson, Z. Cowan, T. Ellsworth, JG. Edwards. Post-Traumatic Stress Disorder in the Ventral Hippocampus and Prophylactic Treatment. 2017. Utah Conference of Undergraduate Research Abstract Book.

J. Kranewitter-Call, B. Anderson, K. Hurst, T. Jarman, N. Feil, L. Friend, & J. Edwards. 2017. Examining the Potential Role of GPR18 and GPR119 in Learning and Memory. Utah Conference of Undergraduate Research Abstract Book.

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