

ANDY HUDMON, PH.D., M.S.

EDUCATION

UNDERGRADUATE

Auburn University, Auburn, Alabama B.S., Marine Biology 1988

GRADUATE

Auburn University College of Veterinary Medicine M.S., Interdepartmental Physiology 1991
Auburn, Alabama

The University of Texas School of Medicine Ph.D., Neuroscience 1997
Houston, Texas

POSTDOCTORAL TRAINING

Stanford University School of Medicine Postdoctoral Fellow, Neurobiology 2003
Stanford, California

ACADEMIC APPOINTMENTS

Yale University, Department of Neurology Associate Research 2003 – 2006
New Haven, Connecticut Scientist (faculty)

Indiana University School of Medicine, Assistant Professor 2006 – 2013
Department of Biochemistry and Molecular Biology,
and Stark Neuroscience Research Institute
Indianapolis, Indiana

Indiana University School of Medicine IBMG Member 2006 – present
University Graduate School, Indianapolis
Indiana

Indiana University School of Medicine Secondary Appointment 2007 – 2017
Department of Pharmacology and Toxicology
Indianapolis, Indiana

Indiana University School of Medicine Associate Professor 2013 – 2017
Department of Biochemistry and Molecular Biology (with tenure)
Indianapolis, Indiana

Indiana University School of Medicine Co-Director of Graduate 2013 – 2017
Stark Neuroscience Research Institute Studies
Indianapolis, Indiana

Medical Neuroscience IPREP IUPUI Post-Graduate 2014 – 2016
Neuroscience Liaison Studies

Purdue University College of Pharmacy Associate Professor 2017 – present
Medicinal Chemistry and Molecular Pharmacology (with tenure)

Indiana University School of Medicine Department of Biochemistry and Molecular Biology Indianapolis, Indiana	Adjunct Faculty	2017 – present
Indiana University School of Medicine Stark Neuroscience Research Institute Indianapolis, Indiana	Adjunct Faculty	2017 – present

NON-ACADEMIC APPOINTMENTS

Chapter President	Sigma Xi	2008 – 2013
Chapter Secretary	Sigma Xi	2013 – 2017

PROFESSIONAL ORGANIZATION MEMBERSHIP

Society for Neuroscience		1995 – present
Biophysical Society		2001 – present
Biochemical Society		2003 – present
Sigma Xi		2008 – present
ASBMB		2012 – present

PROFESSIONAL HONORS AND AWARDS

Life Science Scholarship Award	Gibco	1994
Student Scholarship Award	Cold Spring Harbor Laboratory	1995
NIH Student Training Fellowship	NIH, via The University of Texas	1995 – 1997
Ruth L. Kirschstein Fellowship	Stanford University	1998 – 2001
Postdoctoral Fellowship Award	American Heart Association	2001 – 2003
Trustee's Teaching Award	Indiana University School of Medicine	2015

PROFESSIONAL DEVELOPMENT

Leadership in Academic Medicine	IUSM Faculty Affairs/Professional Development	2006 – 2007
Scientific Writing from the Reader's Perspective (George Gopen)	IUSM Faculty Affairs/Professional Development	2007, 2008
Writing Winning Grants	IUSM Faculty Affairs/Professional Development	2006, 2009
Mentoring Workshop	EMPOWER	2013
NSF workshop	IUPUI Research Development	2014

TEACHING

GRADUATE TEACHING ASSIGNMENTS

- 2007 Fall: N612 "Neurotransmitter Dynamics and Synaptic Plasticity." Shadowed Dr. Oxford in preparation for co-directing this course in 2008.
- Fall: B890 "Biochemistry Student Seminar". Course co-director with Anna DePaoli-Roach. This class met every week for one hour during the semester. Every student is individually evaluated after their seminar in order to improve their public speaking skills. Each student also receives personalized instruction on organizing and writing a scientific abstract for their presentation.
- 2008 Fall: N612 "Neurotransmitter Dynamics and Synaptic Plasticity". In co-directing this course with Dr. Gerry Oxford, I taught 6 lectures, assisted in preparing course handouts, and developed and graded exam questions.
- Fall: B890 "Biochemistry Student Seminar". Co-course director with Anna DePaoli-Roach. This class met every week for one hour during the semester. Every student is individually evaluated after their seminar in order to improve their public speaking skills. Each student also receives personalized instruction on organizing and writing a scientific abstract for their presentation.
- 2009 Fall: N612 "Neurotransmitter Dynamics and Synaptic Plasticity". Functioned as course director and instructed 6 lectures. I recruited faculty to assist with teaching, prepared course handouts, and participated in developing and grading exam questions.
- Fall: B500 "Biochemistry". In this course, directed by David Skalnik, I provided 7 lectures (Amino Acids and Proteins, Exploring Proteins, Hemoglobin and Myoglobin, Enzymes: Kinetics, Enzymes: Catalytic Strategies, Enzymes: Regulatory Strategies, and Drug Development based on the *Biochemistry textbook Berg/Tymoczko/Stryer* (6th edition). I led three review sessions and developed and graded exam questions.
- Spring: G823 "Methods in Cell Biology". In this team-taught course, directed by Sonal Sanghani, I provided a one-hour lecture on "Protein-Protein Interactions," developed a 3-hour laboratory to explore these concepts, and developed and graded exam questions.
- 2010 Fall: N612 "Neurotransmitter Dynamics and Synaptic Plasticity". Functioned as Course Director and provided 9 lectures (Glial Cells I: Uptake of ions and neurotransmitters, Glial Cells II: Release of neurotransmitters from glia and neuron-glia signaling dynamics, Synaptic Plasticity I: Hippocampal LTP, Synaptic Plasticity II: Cerebellar LTD, Synaptic Plasticity III: Molecular mechanisms of synaptic plasticity, Synaptic Plasticity IV: Action potentials in reverse). I recruited faculty to assist with teaching, prepared course handouts, and participated in developing and grading exam questions.
- Fall: B500 "Biochemistry". In this course, directed by Lawrence Quilliam, I provided 7 lectures (Amino Acids and Proteins, Exploring Proteins, Hemoglobin and Myoglobin, Enzymes: Kinetics, Enzymes: Catalytic Strategies, Enzymes: Regulatory Strategies, and Drug Development based on the *Biochemistry text Berg/Tymoczko/Stryer* (6th edition). I led three 60-minute review sessions and developed and graded exam questions.

- Spring: G823 "Methods in Cell Biology". In this team-taught course, directed by Tom Hurley, I provided a one-hour lecture on "Protein-Protein Interactions," developed a 3-hour laboratory to explore these concepts, and developed and graded exam questions.
- 2011 Fall: N612 "Neurotransmitter Dynamics and Synaptic Plasticity". Functioned as course director and gave 12 lectures. I recruited faculty to assist with teaching, prepared course handouts, and participated in developing and grading exam questions.
- Fall: B500 "Biochemistry". In this course directed by Lawrence Quilliam, I gave 3 lectures (Amino Acids and Proteins, Chp 2; Exploring Proteins, Chp 3; Hemoglobin and Myoglobin, Chp 7) based on the *Biochemistry textbook Berg/Tymoczko/Stryer 7th edition*. I led 1 review session and constructed and graded test questions.
- 2012 Fall: N612 "Neurotransmitter Dynamics and Synaptic Plasticity". Functioned as course director and gave 12 lectures. Recruited faculty to assist with teaching, prepared course handouts, and participated in developing and grading exam questions.
- Fall: B500 "Biochemistry". In this course, directed by Lawrence Quilliam, I provided 7 lectures (Amino Acids and Proteins, Exploring Proteins, Hemoglobin and Myoglobin, Enzymes: Kinetics, Enzymes: Catalytic Strategies, Enzymes: Regulatory Strategies, and Drug Development based on the *Biochemistry text Berg/Tymoczko/Stryer (7th edition)*). I led three 60-minute review sessions and developed and graded exam questions.
- 2013 Summer: Undergraduate Summer Research Program. Developed a 9-week program that exposes undergraduate students to basic neuroscience research within the Stark Neuroscience Institute. In this program, the students attend weekly 2-hour sessions to explore important topics in basic research, including research ethics, animals in research, environmental and biosafety, alternative careers for biomedical post-graduates and research presentations.
- Fall: N612 "Neurotransmitter Dynamics and Synaptic Plasticity". Functioned as course director and gave 12 lectures. Recruited faculty to assist with teaching, prepared course handouts, and participated in developing and grading exam questions.
- Fall: B500 "Biochemistry". In this course, directed by Lawrence Quilliam, I provided 7 lectures (Amino Acids and Proteins, Exploring Proteins, Hemoglobin and Myoglobin, Enzymes: Kinetics, Enzymes: Catalytic Strategies, Enzymes: Regulatory Strategies, and Drug Development based on the *Biochemistry text Berg/Tymoczko/Stryer (7th edition)*). I led three 60-minute review sessions and developed and graded exam questions.
- Fall: B890 "Biochemistry Student Seminar". Co-course director with Millie Georgiadis. This class met every week for one hour during the semester. Every student is individually evaluated after their seminar in order to improve their public speaking skills. Each student also receives personalized instruction on organizing and writing a scientific abstract for their presentation.
- 2014 Summer: Undergraduate Summer Research Program (5 students). Direct a 9-week program that exposes undergraduate students to basic neuroscience research within the Stark Neuroscience Institute. In this program, the students attend weekly 2-hour sessions to explore important

topics in basic research, including research ethics, animals in research, environmental and biosafety, alternative careers for biomedical post-graduates and research presentations.

Fall: N612 "Neurotransmitter Dynamics and Synaptic Plasticity". Functioned as course director and participated in 12 lectures. Recruited faculty to assist with teaching, prepared course handouts, and participated in developing and grading exam questions.

Fall: B500 "Biochemistry". In this course, directed by Mark Goebel, I provided 7 lectures (Amino Acids and Proteins, Exploring Proteins, Hemoglobin and Myoglobin, Enzymes: Kinetics, Enzymes: Catalytic Strategies, Enzymes: Regulatory Strategies, and Drug Development based on the *Biochemistry text Berg/Tymoczko/Stryer* (7th edition). I led three 60-minute review sessions and developed and graded exam questions.

Spring: B890 "Biochemistry Student Seminar". Co-course director with Millie Georgiadis. This class met every week for one hour during the semester. Every student is individually evaluated after their seminar in order to improve their public speaking skills. Each student also receives personalized instruction on organizing and writing a scientific abstract for their presentation.

2015 Summer: Undergraduate Summer Research Program (5 students). Direct a 9-week program that exposes undergraduate students to basic neuroscience research within the Stark Neuroscience Institute.

Fall: N612 "Neurotransmitter Dynamics and Synaptic Plasticity". Functioned as course director and participated in 12 lectures. Recruited faculty to assist with teaching, prepared course handouts, and participated in developing and grading exam questions.

Fall: B500 "Biochemistry". In this course, directed by Mark Goebel, I provided 7 lectures (Amino Acids and Proteins, Exploring Proteins, Hemoglobin and Myoglobin, Enzymes: Kinetics, Enzymes: Catalytic Strategies, Enzymes: Regulatory Strategies, and Drug Development based on the *Biochemistry text Berg/Tymoczko/Stryer* (7th edition). I led three 60-minute review sessions and developed and graded exam questions.

Spring: B890 "Biochemistry Student Seminar". Co-course director with Millie Georgiadis. This class met every other week for one hour during the fall semester. Every student is individually evaluated after their seminar in order to improve their public speaking skills. Each student also receives personalized instruction on organizing, writing and editing scientific abstracts.

2016 Summer: Undergraduate Summer Research Program (7 students). Direct a 9-week program that exposes undergraduate students to basic neuroscience research within the Stark Neuroscience Institute.

Fall: N612 "Neurotransmitter Dynamics and Synaptic Plasticity". Functioned as course director and participated in 12 lectures. Recruited faculty to assist with teaching, prepared course handouts, and participated in developing and grading exam questions.

Fall: B500 "Biochemistry". In this course, directed by Mark Goebel, I provided 7 lectures (Amino Acids and Proteins, Exploring Proteins, Hemoglobin and Myoglobin, Enzymes: Kinetics, Enzymes:

Catalytic Strategies, Enzymes: Regulatory Strategies, and Drug Development based on the *Biochemistry text Berg/Tymoczko/Gatto/Stryer* (8th edition). I led two 60-minute review sessions and developed and graded exam questions.

Spring: B890 "Biochemistry Student Seminar". Co-course director with Millie Georgiadis. This class met every other week for one hour during the winter semester. Every student is individually evaluated after their seminar in order to improve their public speaking skills. Each student also receives personalized instruction on organizing, writing and editing scientific abstracts.

2017 Spring: "Neuroscience and Behavior". Medical School Didactic Course. *Pain pathways and mechanisms of nociception* presented to Medical Student Class.

Summer: Undergraduate Summer Research Program (9 students). Direct a 9-week program that exposes undergraduate students to basic neuroscience research within the Stark Neuroscience Institute.

Fall: N612 "Neurotransmitter Dynamics and Synaptic Plasticity". I led 5 lectures and participated in developing and grading exam questions.

Qualifying Examination Committees

Student	Degree Program		Year
Brian Schmutzler	MD/PhD	Pharmacology/Toxicology	2007
Ramy Habashy	PhD	Pharmacology/Toxicology	2008
Brandy Akin	PhD	Biochemistry & Mol Biology	2009
Mike Kalwat	PhD	Biochemistry & Mol Biology	2009
Ben Thirlby	PhD	Pharmacology/Toxicology	2009
Sherry Pittman	PhD	Pharmacology/Toxicology	2009
Claire Xu	PhD	Pharmacology/Toxicology	2009
Jessica Pellman	PhD	Pharmacology/Toxicology	2011
Zeifan Pei	PhD	Pharmacology/Toxicology	2012
Aarti Chawla	PhD	Pharmacology/Toxicology	2013
Erik Dustrude	PhD	Pharmacology/Toxicology	2013
Chen Chen	PhD	Medical Neuroscience	2014
Joey Contreras	PhD	Medical Neuroscience	2014
Kacie Deters	PhD	Medical Neuroscience	2014
Liangping Li	PhD	Medical Neuroscience	2014
Sreeparna Majumdar	PhD	Medical Neuroscience	2014
Kimberley Burgess	PhD	Pharmacology/Toxicology	2014
Aaron Robert Waeiss	PhD	Medical Neuroscience	2015
Emily Mason	PhD	Pharmacology/Toxicology	2016
Yangling Pan	PhD	Medical Neuroscience	2016
Kathrine Andrews	PhD	Medical Neuroscience	2016
Evengy Chumin	PhD	Medical Neuroscience	2016
Cristian Bernabe	PhD	Medical Neuroscience	2016
Thatcher Ladd	PhD	Medical Neuroscience	2017

Agnes Zybura	PhD	Medical Neuroscience	2017
Omar El Jordi	PhD	Pharmacology/Toxicology	2017

MENTORING

Professional Mentoring

FACULTY

Anthony J. (AJ) Baucum II, PhD (IUPUI Biology)	K01 Mentor	2013 – present
Brian Overholser, Pharm D (Purdue College of Pharmacy)	K08 Mentor	2012 – present
Gustavo Arrizabalaga, PhD (Department of Physiology IUSM)	Mentor	2012 – 2015

POSTDOCTORAL FELLOWS

Weihua Song, PhD, SNRI	Primary mentor	2011 – 2012
JingWei Meng, PhD, Biochemistry	Primary mentor	2013 – 2015
Swarna Ramaswarny, Biochemistry	Primary mentor	2015 – 2016

Student Mentoring

DISSERTATION COMMITTEES

Cheryl Perkins, MS/MS student	Primary mentor	2007
Brian Schmutzler, MD/PhD, MSTP	Committee member	2007 – 2009
Neila Gracias, PhD, Pharmacology/Toxicology	Committee member	2008 – 2010
Brian Jarecki, PhD, Pharmacology/Toxicology	Committee member	2008 – 2010
Brandy Akin, PhD, Biochemistry & Molecular Biol	Committee member	2009 – 2010
Nicole Ashpole, PhD, Medical Neuroscience	Primary mentor	2008 – 2012
Ramy Habashy, PhD, Pharmacology/Toxicology	Committee member	2008 – 2012
Mike Kalwat, PhD, Biochemistry & Molecular Biol	Committee member	2009 – 2012
Erica Daniels, PhD, Biochemistry & Molecular Biol	Committee member	2009 – 2011
Andrew Piekarcz, PhD, Pharmacology/Toxicology	Committee member	2009 – 2011
Ben Thirlby, PhD, Pharmacology/Toxicology	Committee member	2009 – 2010
Derrick Johnson, PhD, Biochemistry & Molecular Biol	Committee member	2009 – 2016
Sherry Pittman, PhD, Pharmacology/Toxicology	Committee member	2009 – 2014
Weihua Song, PhD, Pharmacology/Toxicology	Committee member	2009 – 2011
Chao Li, PhD, Pharmacology/Toxicology	Committee member	2010 – 2014
Cindy Barbosa, PhD, Pharmacology/Toxicology	Committee member	2011 – 2016
Reesha Rajini Patel, PhD, Medical Neuroscience	Committee Chair	2011 – 2016
Waturo Yamamoto, PhD, Pharmacology/Toxicology	Committee member	2012 – 2012
Aarti Chawla, PhD, Medical Neuroscience	Primary mentor	2012 – 2016
Zeifan Pei, PhD, Pharmacology/Toxicology	Committee member	2012 – 2016
Deepak Kesani, MS Physiology	Primary mentor	2013 – 2014
Eric Talbert, MS, Biochemistry & Molecular Biology	Committee member	2014 – 2016
James Hamilton, PhD, Pharmacology/Toxicology	Committee member	2014 – 2017
William Risinger, MS Physiology	Primary mentor	2014 – 2015
Ross Nelson, post-bac IPREP IUPUI	Primary mentor	2014 – 2016
Victoria Alexe Engel, MD/PhD, MSTP	Committee member	2015 – present
Robert Aaron Waeiss, PhD, Medical Neuroscience	Committee member	2016 – present

Courtney Nicole Severin, MS, Physiology Primary mentor 2016

GRADUATE ROTATIONS FOR PHD STUDENTS

John Howard, PhD candidate in Biochemistry 2007
 Nicole Ashpole, PhD candidate, IBMG/Med Neuro 2008
 Mike Kalwat, PhD candidate, IBMG/Biochemistry 2008
 Joel Brittain, PhD candidate, IBMG/Med Neuro 2008
 Derrick Johnson, PhD candidate, IBMG/Biochemistry 2010
 Daryl Watkins, PhD candidate, IBMG/Medical Science 2015
 Agnes Zybura, PhD candidate, IBMG/Medical Science 2016

UNDERGRADUATE AND HIGH SCHOOL RESEARCH

Chris Smitson, Yale University undergraduate Summer Internship 2008
 Alex Ducey, Oberlin undergraduate Summer Internship 2008
 Victoria Mathis, Crispus Attucks High School HHMI Summer Internship 2009
 Daniel Gentry, Crispus Attucks High School HHMI Summer Internship 2010
 Ayanna Smith, Crispus Attucks High School HHMI Summer Internship 2011
 Derrick Kaiser, IUPUI undergraduate Full Year (LHSI) 2009 - 2013
 Corey Summers, IUPUI undergraduate Full Year (LHSI) 2010
 Brandon Kellinghaus, IUPUI undergraduate Full Year (LHSI) 2011
 Ren Yagami, China Medical University undergraduate Summer Internship 2011
 Logan Martin, Johns Hopkins University undergraduate Summer Internship 2012
 Jessica Leitzel, IUPUI undergraduate Full Year (LHSI) 2012
 Devin Bready, IUPUI undergraduate Full Year (LHSI) 2012
 Matthew Martin, Purdue University, undergraduate Summer Internship 2012, 2013
 Lakeshia Wilson, Crispus Attucks High School HHMI Summer Internship 2012
 Jason Meno, IUPUI undergraduate Summer Internship 2012
 Melissa Peden, IUPUI undergraduate Summer Internship 2014
 Parth Patel, IU-Bloomington undergraduate Summer Internship 2014
 Benjamin Leeds, IUPUI undergraduate Full Year workstudy 2015 – 2016
 Rajesh Singh, IUPUI undergraduate Full Year workstudy 2015 – 2016
 Julia Otteson, Brebeuf Jesuit High School Full Year 2015 – 2016
 Elizabeth Perkins, Herron High School Fall 2016

RESEARCH/CREATIVE ACTIVITY

GRANTS/FELLOWSHIPS IN RESEARCH

ACTIVE RESEARCH GRANTS

CTSI-CTR – Purdue/Indiana University School of Medicine

Calcium-dependent transcriptional regulation of KCNH2

Total award amount: \$75,000 / \$36,000

Duration: Jul 2016–Jun 2017

Role: Co-Principal Investigator (with B Overholser) FTE: No salary support

This study aims to assess the CaMKII-dependent control of microRNA regulating KCNH2 during heart failure.

NIH R01 NS078171-01A1 (A Hudmon, PI)

CaMKII in neuronal signaling and degeneration

Total award amount: \$1,339,504

Duration: Jul 2012–Jun 2017 (NCE)

Role: Principal Investigator

FTE: 28% (0% NCE year)

This study aims to understand aberrant CaMKII signaling during pathological calcium signaling and to shed new light on basic mechanisms related to targeting and protein aggregation.

NIH R01 01NS053422 (T Cummins, PI)

Sodium channels and electrogenesis in sensory neurons

Total award amount: \$1,637,936

Duration: Sep 2016–Jun 2020

Role: Co-Investigator

FTE: 15%

This study aims to identify mechanisms underlying resurgent sodium current generation, an unusual form of sodium channel activity contributing to spontaneous firing, hyperexcitability, and the initiation of pain sensations in DRG sensory neurons.

COMPLETED RESEARCH GRANTS

Mechanisms coupling gene expression to L-type calcium channel activity in neurons

IUPUI/ Biomedical Research Grant (A Hudmon, PI)

Total award amount: \$45,000

Duration: Nov 2006–Oct 2007

Role: Principal Investigator

FTE: No salary support

Calcium-dependent regulation of cardiac voltage-gated sodium channels: mechanisms underlying abnormal conduction in heart failure

Showalter Trust (A Hudmon, PI)

Total award amount: \$60,000

Duration: Jul 2008–Jun 2009

Role: Principal Investigator

FTE: 10%

High throughput peptide screening approach to identify regulatory and interaction domains in proteins (Intavis Spotsblotter robot, acquired Sept 2009)

IUPUI / RSF–Equipment Grant (A Hudmon, PI)

Total award amount: \$35,000

Duration: Jan 2009–Dec 2009

Role: Principal Investigator

TE: No salary support

Calcium-dependent neuronal death induced by traumatic brain injury: The role of CaMKII interaction with NMDA receptors

Indiana State Department of Health (ISCBIRG; A Hudmon, PI)

Total award amount: \$120,000

Duration: Jul 2009–Jun 2011

Role: Principal Investigator

FTE: 5%

Preventing excitotoxic neuronal death via inhibition of Ca²⁺/calmodulin-dependent protein kinase II

Showalter Trust (A Hudmon, PI)

Duration: Jul 2010–Jun 2011

Total award amount: \$25,000

FTE: 5%

Role: Principal Investigator

Generation of a novel CaMKII knockin mouse deficient in CaMKII self-association

Clinical and Translational Scientific Institute 54-822-07 (CTSI; A Hudmon, PI)

Total award amount: \$12,000

Duration: Jan 2012–Dec 2014

Role: Principal Investigator

FTE: No salary support

Novel analgesic mechanisms for suppressing excessive glutamate signaling through targeted disruption of protein-protein interactions.

IUCRG (CTSI; A Hohman and A Hudmon PI)

Total award amount: \$70,000

Duration: Mar 2013–Mar 2014

Role: Co-Principal Investigator

FTE: 5%

Targeting and phosphorylation of Nav1.5 voltage-gated sodium channels by CaMKII

American Heart Association (National) Developmental Scientist Award 0930064N

(A Hudmon, PI)

Total award amount: \$308,000

Duration: Jan 2009–Dec 2012

Role: Principal Investigator

FTE: 15 %

Strategies to develop novel CaMKII inhibitors to reduce neurodegeneration in traumatic brain injury

Indiana State Department of Health 47-822-05 (ISCBRG; A Hudmon, PI)

Total award amount: \$120,000

Duration: Aug 2011–Jul 2013

Role: Principal Investigator

FTE: 5 %

EMPOWER Mentoring grant

IUPUI; Anthony J. Baucum, PI-mentee

Total award amount: \$5,000

Duration: Oct 2013–Sep 2014

Role: Mentor

FTE: No salary support

An intracellular signaling switch for maintaining peripheral sensitization

NIH-NINDS 5 R01 NS069915 (M Vasko, IUSM, PI)

Total award amount: \$1,742,729

Duration: Apr 2010–Mar 2015

Role: Co-Investigator

FTE: 10%

Novel CaMKII Activators to Reduce Neurodegeneration

Indiana State Department of Health (ISCBRG; A Hudmon, PI)

Total award amount: \$120,000

Duration: Jan 2014–Dec 2015

Role: Principal Investigator

FTE: 5%

Sphingosine 1-phosphate receptors and sensitization of sensory neurons

NIH-NINDS R01-A1 NS078173-01A1 (G Nicol, IUSM, PI)

Total award amount: \$1,844,933

Duration: Dec 2012–Nov 2016

Role: Co-Investigator

FTE: 10%

INVITED PRESENTATIONS

Maximizing your post-doctoral experience - Neuroscience Graduate Student Retreat, student-selected speaker	Department of Neurobiology, The University of Texas School of Medicine, Galveston, TX	2006
Protein kinase or protein scaffold: The multifunctional life of CaMKII - Neuroscience Graduate Student Retreat, student-selected speaker	Department of Neurobiology, The University of Texas School of Medicine, Galveston, TX	2006
Transitioning from graduate school to your post-doc - Lunch seminar for graduate students	IU Department of Biochemistry and Molecular Biology, IU School of Medicine, Indianapolis, IN	2006
Structural and catalytic functions of the multi- functional CaMKII in neurons	IU Neuroscience Retreat (Bloomington and Indianapolis campuses) Bradford Woods, IN	2007
Structural versus enzymatic functions of CaMKII catalytic domain in neurons	IU Department of Pharmacology and Toxicology, IU School of Medicine, Indianapolis, IN	2008
Molecular players in the process of learning and memory: Discovering novel structural and catalytic functions for neuronal CaMKII	Department of Pharmaceutical Sciences, Butler University College of Pharmacy and Health Sciences, Indianapolis, IN	2008
Discovering novel structural and catalytic functions for neuronal CaMKII	IUPUI Department of Biology, Indianapolis, IN	2008
CaMKII regulation of ion channels	Department of Biochemistry and Molecular Biology, IU School of Medicine, Indianapolis, IN	2009
Mechanisms underlying activity-dependent targeting of CaMKII	Department of Physiology and Pharmacology, University of Calgary School of Medicine, Calgary, Canada; hosted by graduate students	2009

CaMKII regulation of voltage-gated sodium channels	Department of Physiology, University of Chicago, Chicago, IL	2009
Excitotoxic neuroprotection and vulnerability with CaMKII inhibition	American Chemical Society Central Regional Meeting, "Peptides in therapeutics: From biological mechanism to utility" session, Indianapolis, IN	2011
A Novel Mechanism for Substrate Selectivity in Multifunctional Kinases	Department of Biochemistry and Molecular Biology, IU School of Medicine, Indianapolis, IN	2014
CaMKII Signaling in Excitotoxicity	Neuroscience Research Center, Medical College of Wisconsin, WI	2014
A Novel Mechanism for Substrate Selectivity in CaMKII	IUPUI Department of Biology, Indianapolis, IN	2014
Dysregulated CaMKII Signaling in Neurodegeneration	Biomedical Seminar Series Department of Anatomy, Physiology and Pharmacology, College of Veterinary Medicine, Auburn, AL	2016
CaMKII Signaling in Neurodegeneration	Northeastern University College of Science, Boston, MA	2017
Substrate Gating in CaMKII	Stanford University Department of Chemical and Systems Biology, Palo Alto, CA	2017
Novel Functions of CaMKII in Synaptic Plasticity and Neurodegeneration	Purdue University Department of Medicinal Chemistry And Molecular Biology West Lafayette, IN	2017
CaMKII Signaling in Neurodegeneration	Department of Neurobiology & Anatomy The University of Texas, Houston, TX	2018

SERVICE

UNIVERSITY SERVICE

DEPARTMENT

Biochemistry and Molecular Biology Departmental Picnic	Co-Coordinator	2006, 2009
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Stark Neuroscience Research Institute – Faculty search committee (R Khanna hire)	Committee member	2007
Department of Pharmacology and Toxicology – Written/oral qualifying exams	Committee member	2007 – present
Department of Biochemistry and Molecular Biology – Faculty search committee (A Mosley hire)	Committee member	2009
Department of Biochemistry and Molecular Biology – Biochemistry Research Day	Scientific judge (3 times)	2007 – 2012
Stark Neuroscience Research Institute – Written qualifying examinations for Medical Neuroscience Program	Examination Grader	2009 – 2017
Stark Neuroscience Research Institute – Oral qualifying examinations for Medical Neuroscience Program	Examination Grader	2012 – 2017
Stark Neuroscience Research Institute – Graduate Studies, Medical Neuroscience Program	Co-Director	2012 – 2017
Stark Neuroscience Research Institute – Summer Undergraduate Research Program	Creator and Director	2013 – 2017
Stark Neuroscience Core Manager	Biochemistry Instruments	2014 – 2016
Neuroscience Research Building Operations	Committee Member	2014 – 2016
SCHOOL		
Admissions interviews for MSTP (MD/PhD program)	Interviewer	2007 – 2017
Admissions interviews IBMG (graduate program)	Interviewer	2007 – 2017
IBMG Admissions Committee	Member	2009 – 2010
MD/PhD Vertical Mentoring Group 0	Co-Mentor	2008 – 2012
MSTP (MD/PhD) Steering Committee	Member	2015 – 2017
Graduate Division Oversight Committee	Member	2015 – 2017
Graduate Curriculum Committee	Member	2015 – 2016
Search Committee, Stark Neuroscience (Director Search – Dr. Bruce Lamb hire)	Member	2015
UNIVERSITY		
Sigma Xi student research day	Judging/Award Panel member	2008
Sigma Xi student research day	Primary organizer	2010
Sigma Xi student research day	Primary organizer	2011
Sigma Xi student research day	Judging/Award Panel member	2016

PROFESSIONAL SERVICE

LOCAL

Pike High School Career Day; career talks to four groups of students as part of the Doctoral Medicine Academy	Pike High School	2009, 2010
Pike High School "Ask the Expert" symposium; links scientists, educators, and students in a dialogue about science education and careers	Pike High School	2010

NATIONAL

American Heart Association	Grant reviewer (#PC2) Proteins-Crystallography	2012 – present
Allyson Lewis (author of <i>The 7-Minute Difference</i>); provided input and external review for her next book (<i>The 7-Minute Solution</i> , Free Press, 2012), addressing the neurobiology of learning/memory, consciousness, and motivation	Content expert, external reviewer	2011
NIH Study Section <i>Ad hoc</i>	Grant reviewer (SYN) Grant reviewer (NeuroAIDS)	2014 – present 2015 – present

INTERNATIONAL

Biochemical Journal	Editorial Advisor	2003 – 2008
Service to scientific journals Biochemistry Journal of Biological Chemistry Journal of Amino Acids Cellular and Molecular Neurobiology Journal of Proteome Research NeuroSignals Cell Biochemistry and Biophysics Journal of Comparative Neurology Journal of Neuroscience Research European Journal of Medicinal Chemistry PLoS ONE The Scientific World Journal of Neurosciences Journal of Cerebral Blood Flow and Metabolism PNAS Molecular Biology Reports Journal of Physiology Nature Communications Stroke	<i>Ad hoc</i> reviewer	Ongoing

PUBLICATIONS

Peer-reviewed papers

- 1 Thompson K, Coleman ES, **Hudmon A**, Kemppainen RJ, Soyoola EO, Sartin JL. Effects of short-term cortisol infusion on growth hormone-releasing hormone stimulation of growth hormone release in sheep. *American Journal of Veterinary Research* 1995;56(9):1228–1231. PMID: 7486404
- 2 Kolb SJ, **Hudmon A**, Waxham MN. Ca^{2+} /calmodulin-dependent protein kinase II translocates in a hippocampal slice model of ischemia. *Journal of Neurochemistry* 1995;64:2147–2152. PMID: 7722499
- 3 **Hudmon A**, Aronowski JA, Kolb SJ, Waxham MN. Inactivation and self-association of Ca^{2+} /calmodulin-dependent protein kinase II during autophosphorylation. *Journal of Biological Chemistry* 1996;271(15):8800–8808. PMID: 8621518
- 4 Kolb SJ, **Hudmon A**, Ginsberg TR, Waxham MN. Identification of domains essential for the assembly of calcium/calmodulin-dependent protein kinase II holoenzymes. *Journal of Biological Chemistry* 1998;273(47):31555–31564. PMID: 9813071
- 5 Kolodziej SJ, **Hudmon A**, Waxham MN, Stoops JK. Three-dimensional reconstruction of CaM kinase II α and truncated CaM kinase II α reveal a unique organization for its structural core and functional domains. *Journal of Biological Chemistry* 2000;275(19):14354–14359. PMID: 10799516
- 6 Pitt GS, Zuhlke RD, **Hudmon A**, Schulman H, Reuter H, Tsien RW. Molecular basis of CaM tethering and Ca^{2+} -dependent inactivation of L-type calcium channels. *Journal of Biological Chemistry* 2001;276(33):30794–30802. PMID: 11408490
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