

Application for SNACC Director-at-large 2022 : Entry # 47**Name**

Max Kelz

Degrees

MD PhD

Current Institution

University of Pennsylvania

SNACC Member Since:

2011

Upload Your Headshot

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Services to SNACC (limit to no more than 5 most significant services):

- Served a 3-yr term as a SNACC Board member
- Chaired Scientific Affairs Committee, after serving as a committee member
- Member of the SNACC Finance Committee, Program Planning Committee, and Research Committee
- Member of the SNACC Annual Meeting Taskforce Committee
- SNACC Panelist at Recent SNACC meetings and SNACC sponsored events (2011, 2014, 2015, 2019)

Relevant leadership experience (limit to no more than 5):

- I have served as one of SNACC's at Large Directors for the previous 3 years
- I am one of 12 Trustees of the IARS Board of Directors
- As Chair of SNACC's scientific affairs, I have helped to coordinate the annual meeting

Your commitment to diversity, equity and inclusion (limit 50 words):

In my existing roles at Penn as Vice Chair of Research, Director the Dripps research track residency program at Penn, and also as head of admissions for Penn's Neuroscience MSTP program, I've had a steadfast commitment to advancing diversity, equity, and inclusion. As a SNACC board member, I will ensure the society continues to advance EDI values.

How do you envision advancing SNACC as a Director at Large (limit 150 words):

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If elected, I will continue to promote all of SNACC's essential missions: advancing neuroscience in anesthesiology and critical care, the delivery of leading educational initiatives, the championing of diversity, and the organization of a world-class annual meeting. As we venture forward, I plan to incorporate some of the highlights of the virtual meeting (abstract presentations where every viewer had a "front row seat" and in which presenters could be easily heard without background noise) into our return to live meetings. I will do my best to serve as a faithful financial steward and help SNACC navigate its difficult upcoming course through rising costs in the setting of limited revenue. As Board Members, it is our duty to attract new members and remind existing ones of the fabulous benefits our society provides. Thank you for considering my candidacy.

Anything else you would like considered in your candidacy (limit 50 words):

SNACC has served as a home-away-from-home community that I've cherished. I believe in SNACC's missions and am looking forward to helping the society thrive as it enters its 2nd half century.

Notes



Admin Notification (ID: 6241f2322e665)

added May 2, 2022 at 10:30 am

WordPress was unable to send the notification email.



UNIVERSITY OF PENNSYLVANIA - PERELMAN SCHOOL OF MEDICINE
Curriculum Vitae

Date: 02/03/2022

Max B. Kelz, MD PhD

Address: 3620 Hamilton Walk,
John Morgan Building - Room 334
Philadelphia, PA 19104 United States

If you are not a U.S. citizen or holder of a permanent visa, please indicate the type of visa you have:
none (U.S. citizen)

Education:

1993	BS	Yale University (Molecular Biophysics and Biochemistry)
1993	MS	Yale University (Molecular Biophysics and Biochemistry)
1999	PhD	Yale University (Neuroscience)
2000	MD	Yale University (Medicine)

Postgraduate Training and Fellowship Appointments:

2000-2001	Transitional Internship, University of Pennsylvania Perelman School of Medicine
2001-2004	Resident in Anesthesiology, University of Pennsylvania Perelman School of Medicine

Military Service:

[none]

Faculty Appointments:

2004-2014	Assistant Professor of Anesthesiology and Critical Care, University of Pennsylvania School of Medicine
2014-2016	Associate Professor of Anesthesiology and Critical Care, University of Pennsylvania School of Medicine
2016-2020	David E. Longnecker Associate Professor of Anesthesiology and Critical Care, University of Pennsylvania School of Medicine
2020-present	Anesthesia Distinguished Professor, University of Pennsylvania School of Medicine

Hospital and/or Administrative Appointments:

2004-present	Attending Anesthesiologist, Hospital of the University of Pennsylvania
2012-present	Chair of Admissions MD PhD Neuroscience Graduate Group, University of Pennsylvania, Perelman School of Medicine
2013-present	MSTP Program Advisor, University of Pennsylvania
2013-2015	Ombudsman, Department of Anesthesiology & Critical Care, University of Pennsylvania
2014-present	Director for Research Education, Department of Anesthesiology, University of Pennsylvania, Perelman School

	of Medicine
2014-present	Director, Dripps Research Fellowship Program, University of Pennsylvania
2017-2019	Ombudsman, Department of Anesthesiology and Critical Care, University of Pennsylvania
2019-present	MSTP Program Steering Committee, University of Pennsylvania
2022-present	Vice Chair for Research, Department of Anesthesiology & Critical Care, University of Pennsylvania

Other Appointments:

2000-2004	Postdoctoral Researcher, University of Pennsylvania, Department of Pharmacology, Laboratory of Dr. James Eberwine
2018-present	Founding Director NEURRAL Center, University of Pennsylvania, Perelman School of Medicine

Specialty Certification:

2001	Diplomat, National Board of Medical Examiners
2005	Diplomat, American Board of Anesthesiology

Licensure:

2005-present	State of Pennsylvania
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Awards, Honors and Membership in Honorary Societies:

1992	Richter Fellow, Davenport College, Yale University
1993	B. Edward Bensinger III prize, Yale University
1996	Farr Scholar, Yale University
1997-2000	NIH Predoctoral National Research Service Award
1999-2000	Yale University Outstanding Doctoral Thesis Award
2000	Farr Scholar, Yale University
2003	Sir James Young Simpson Award
2006-2007	McCabe Pilot award
2010	Elected to the Association for University Anesthesiologists
2010	American Society of Anesthesiologists Presidential Scholar Award
2011-2014	Elected to the Scientific Advisory Board of the Association of University Anesthesiologists
2011	Selected as the ACES Scholar visiting professor, Duke University
2013	Selected to deliver the 27th Annual Helrich Matjasko Lecture, University of Maryland Department of Anesthesiology
2016-2020	Appointed with the Inaugural David E. Longnecker Endowed Chair
2017	Elected to the Academy of Research Mentors, Foundation for Anesthesia Education and Research
2018-2021	Study Section Chairman, International Anesthesia Research Society

2019	Inaugural Chair, Anesthesia Research Collaborative Steering Committee
2019-2022	Elected to Board of Directors, Society for Neuroscience in Anesthesia and Critical Care
2019	Selected as the Virginia Apgar Scholar's Day Visiting Professor and Lecturer, Columbia University
2019-2031	Named as one of the world's 12 Trustees to the Board of Trustees, International Anesthesia Research Foundation
2019-2021	President, FAER Academy of Research Mentors
2020	Appointed as an Endowed Distinguished Full Professor, University of Pennsylvania

Memberships in Professional and Scientific Societies and Other Professional Activities:

International:

2000-Present	International Anesthesia Research Society (Member, IARS Mentored Research Training Grant Reviewer 2014-Present)
2011-Present	Sleep Research Society (Member)
2013-Present	IARS (Member, IARS Mentored Research Awards Grant Study Section)
2018-Present	IARS (Member, IARS Frontier's in Anesthesiology Research Award Study Section)
2018-2019	IARS (Chairman Grant Study Section)
2019-2031	International Anesthesia Research Society (Nominated to Board of Trustees)

National:

1993-Present	Society for Neuroscience (Member)
2000-Present	American Society of Anesthesiologists (Member, Committee on Anesthetic Action and Biochemistry 2006-2007; Committee on Experimental Neurosciences 2015-present, Committee on Excellence in Research 2010-present; Educational Track Subcommittee on NeuroAnesthesiology 2018-present;)
2010-Present	Association of University Anesthesiologists (Member)
2010-Present	Society for Anesthesia and Sleep Medicine (Founding Member)
2011-Present	Society for Neuroscience in Anesthesia and Critical Care (Member; Chairman Scientific Affairs Committee (2019-present))
2015-Present	American Society of Anesthesiologists (Committee on Research, Grant Reviewer)
2019-Present	Anesthesia Research Collaborative (ARC) (Inaugural Chairman Steering Committee)

Local:

- 2004-Present Pennsylvania Society of Anesthesiologists (Member)
- 2005-present Mahoney Institute of Neurological Sciences, University of Pennsylvania (Member)
- 2005-present Neuroscience Graduate Group, University of Pennsylvania (Member)
- 2005-present Penn Genomics Institute, University of Pennsylvania (Member)
- 2006-present Center for Sleep and Circadian Neurobiology, University of Pennsylvania (Member)
- 2006-present Graduate Group in Pharmacological Sciences, University of Pennsylvania (Member)
- 2006-present Institute for Translational Medicine and Therapeutics (Member)
- 2018-present Bioengineering Graduate Group, University of Pennsylvania (Member)

Editorial Positions:

- 2006-Present Ad hoc reviewer, Biological Psychiatry
- 2006-Present Ad hoc reviewer, Brain Research
- 2006-Present Ad hoc reviewer, Anesthesiology
- 2008-Present Ad hoc reviewer, Journal of Neuroscience
- 2009-Present Ad hoc reviewer, Clinical Pharmacology & Therapeutics
- 2009-Present Ad hoc reviewer, Experimental Neurology
- 2009-Present Ad hoc reviewer, New England Journal of Medicine
- 2009-Present Ad hoc reviewer, Pain
- 2010-Present Ad hoc reviewer, Journal of Clinical Investigation
- 2010-Present Ad hoc reviewer, Sleep
- 2010-Present Ad hoc reviewer, Anesthesia & Analgesia
- 2010-Present Ad hoc reviewer, Journal of Clinical Anesthesia
- 2010-Present Ad hoc reviewer, Journal of Cerebral Blood Flow and Metabolism
- 2010-Present Ad hoc reviewer, Proceedings of the National Academy of Sciences
- 2011-Present Ad hoc reviewer, British Journal of Anaesthesia
- 2011-Present Ad hoc reviewer, Journal of Neurochemistry
- 2011-Present Ad hoc reviewer, PLoS One
- 2011-Present Ad hoc reviewer, Behavioral Brain Research
- 2012-2016 Editorial Board Member, Sleep
- 2012-Present Ad hoc reviewer, Current Biology
- 2013-Present Editorial Board Member, Current Anesthesia Reports
- 2013-2016 Editorial Board Member, BMC Anesthesiology
- 2013-Present Ad hoc reviewer, Psychopharmacology
- 2014-Present Ad hoc reviewer, Progress in Neurobiology
- 2014-Present Ad hoc reviewer, Journal of Clinical Sleep Medicine
- 2014-Present Ad hoc reviewer, Frontiers in Systems Neuroscience
- 2015-Present Ad hoc reviewer, CNS Neuroscience & Therapeutics
- 2015-Present Ad hoc reviewer, Critical Care Medicine

2015-Present	Ad hoc reviewer, Neuropeptides
2016-Present	Ad hoc reviewer, Journal of Clinical Monitoring and Computing
2016-Present	Ad hoc reviewer, Consciousness and Cognition
2017-Present	Ad hoc reviewer, Canadian Journal of Pharmacology & Physiology
2017-Present	Ad hoc reviewer, Brain and Behavior
2018-Present	Ad hoc reviewer, PLoS Computational Biology
2018-Present	Ad hoc reviewer, British Journal of Pharmacology
2018-Present	Ad hoc reviewer, Journal of Clinical Medicine
2018-Present	Ad hoc reviewer, Scientific Reports
2018-Present	Editorial Board Member, Frontiers in Molecular Neuroscience
2019-Present	Ad hoc reviewer, Journal of Neurophysiology
2019-Present	Ad hoc reviewer, Journal of Neurosurgical Anesthesiology
2019-Present	Ad hoc reviewer, Journal of Neuroscience Methods
2020-Present	Ad hoc reviewer, Biochemical Pharmacology
2021-Present	Ad hoc reviewer, Cerebral Cortex

Academic and Institutional Committees:

2005-Present	Member, Rotation Talk Committee, Neuroscience
2005-Present	Member, Department of Anesthesiology Residency Selection Committee
2006-Present	Member, Anesthesia Education Committee
2007-Present	Member, University of Pennsylvania Conflict of Interest Standing Committee
2007	Member, Britter Gundersen's PhD Preliminary Committee, Department of Neuroscience
2007-2012	PhD Thesis Advisor for Jason Moore, Department of Neuroscience
2008-2009	Member, Christopher Vecsey's PhD Thesis Committee, Department of Neuroscience
2008-Present	Member, Neuroscience Graduate Group MD/PhD Admissions Committee
2009-2012	Member, Mathiew Wimmer's PhD Thesis Committee, Department of Neuroscience
2009-2010	Member, Amanda Crocker's PhD Thesis Committee, Department of Neuroscience
2009-2014	PhD thesis Advisor for Hilary McCarren, Department of Pharmacology
2010	Member, Kevin Snyder's PhD Preliminary Committee, Department of Neuroscience
2011-2015	Chairman, Adam Watson's PhD Thesis Committee, Department of Neuroscience
2012	Member, Ali Buch's PhD Qualifying Exam Committee, Department of Neuroscience
2012	Member, Brian Weiser's PhD Qualifying Exam Committee, Department of Pharmacology
2012	Member, Nick Trojanowski's PhD Qualifying Exam Committee, Department of Neuroscience

2012-2015	Member, Ali Buch PhD Thesis Committee , Department of Neuroscience
2012-2014	Member, Brian Weiser's PhD Thesis Committee, Department of Pharmacology
2012-Present	Chair of Admissions, Department of Neuroscience MD PhD program, Perelman School of Medicine, University of Pennsylvania
2013-2015	Ombudsman, Department of Anesthesiology
2013-2017	Graduate Thesis Advisor for Kaitlyn Maier, Department of Pharmacology
2014	Member, Gregory Artiushin's PhD preliminary exam committee, Department of Neuroscience
2014-2015	Chairman, Kellie Woll Pharmacology PhD Qualifying exam committee
2015-2016	Member, Sheng Tang PhD Qualifying Exam Committee Department of Neuroscience
2015-2017	Chairman, Kellie Woll's PhD Thesis Committee, Department of Pharmacology
2015-2020	PhD Thesis advisor for Sarah Reitz, Department of Neuroscience
2015-2017	Member, Chris Angelakos PhD thesis committee
2015-Present	Member, Committee of Appointments and Promotions, Department of Anesthesiology, University of Pennsylvania
2016-Present	PhD Thesis Advisor for Adeeti Aggarwal Department of Neuroscience
2017	Chair, Jack Jacobs Candidacy Exam Committee, Department of Pharmacology
2017-2020	Member Jack Jacobs PhD thesis committee, Department of Pharmacology
2017-Present	Education Council Member, Children's Hospital of Philadelphia, Department of Anesthesiology
2018	Chair, Jennifer Staib PhD candidacy exam committee, Department of Neuroscience
2018-Present	PhD Thesis Advisor for Andrzej Wasilczuk, Department of Bioengineering
2018-2019	Member, Dean's Internal review of the Department of Neuroscience, University of Pennsylvania
2018-Present	Member, Clinical Operations Executive Committee, Department of Anesthesiology & Critical Care
2018-2021	Member, New Patient Pavilion OR planning Committee, Department of Anesthesiology & Critical Care
2019-2020	Chair, John Maurer PhD candidacy exam committee, Department of Pharmacology
2019-Present	Member, Amanda Schott PhD candidacy exam committee, Department of Neuroscience
2019-Present	Chair, Jennifer Staib Hafycz PhD Thesis committee, Department of Neuroscience
2020-Present	Member, Alyssa Wiest PhD candidacy exam committee, Department

	of Pharmacology
2020-Present	Chair, John Maurer PhD thesis committee, Department of Pharmacology
2021-Present	Member, Rebecca Rothhaas PhD candidacy exam committee, Department of Neuroscience
2021-Present	Member, Student Standards Committee, University of Pennsylvania Perelman School of Medicine
2022-Present	Chair, PhD Thesis Committee Kyla Mace, Department of Pharmacology

Major Academic and Clinical Teaching Responsibilities:

1997-1998	Course Director and Lecturer, "Molecular Biology, Medicine, and Ethics", Yale University undergraduate course offering
1997-1998	Physiology Lecturer, Yale University, Physician Associate Program
2004-Present	Resident Education, Department of Anesthesiology and Critical Care
2004-Present	Medical Student Education: University of Pennsylvania Neurobiology, Physiology, and Pharmacology of Respiratory Control
2004-Present	University of Pennsylvania Department of Anesthesia Grand Rounds: Review of Sleep Neurobiology and Its Relevance to Anesthetic Action
2004-2006	Medical Student 200 Physiology Lecture Series: Physiology of Respiratory Control, University of Pennsylvania School of Medicine
2005-Present	Medical Student Education, University of Pennsylvania Anesthesia Day: History and Mystery of Anesthesiology
2005	Resident Preceptor for Intensive 100+ hour Summer One on One Instruction in Anesthesiology for Drs. David Taylor and Michael He
2006-2017	Resident Anesthesia Lecture Series, Muscle Relaxants
2006-2011	Anesthesia Resident Education: Small group leader
2006	"General Anesthetics Hijack Endogenous Sleep Pathways to Produce Hypnosis", University of Pennsylvania Department of Anesthesiology and Critical Care Grand Rounds
2006	Resident Preceptor for Intensive 100+ hour Summer One on One Instruction in Anesthesiology for Drs. Ben Scott and Greg Weller
2007-2011	Instructor in Physiology and Anesthesiology Simulation Center designed to improve resident recognition and treatment for rare events
2007-Present	Resident Lecture Series: Pulmonary Physiology, Neural Control, and Effects of Anesthetics
2007-Present	Resident Lecture Series: Mechanisms of Anesthetic Action
2007-2012	PhD thesis Advisor for Jason Moore Department of Neuroscience
2007	Resident Preceptor for Intensive 100+ hour Summer One on One Instruction in Anesthesiology for Drs. Meghan Lane-Fall and Ben Duckles
2008	Resident Preceptor for Intensive 100+ hour Summer One on One Instruction in Anesthesiology for Drs. Devin Tang and Jessica

	Dworet
2009-Present 2009	Structural Neurobiology (INSC593): The Hypothalamus "Neural Inertia: A barrier to cognitive restoration in flies, mice, and men," Department of Neurosurgery Grand Rounds, Philadelphia PA
2009-2014	PhD Thesis Advisor for Hilary McCarren, Department of Pharmacology
2010-2011 2010	Course Co-Director, NGG 584: Neurobiology of Sleep and Arousal Resident Preceptor for Intensive 100+ hour Summer One on One Instruction in Anesthesiology for Drs. Kristin Brennan and Jenny Baek
2011-Present	Neuropharmacology (PHRM510/INSC596): Hypocretin/Orexin Neurophysiology
2011-2020 2011	Medical Pharmacology, PHRM600 General Anesthetics Resident Preceptor for Intensive 100+ hour Summer One on One Instruction in Anesthesiology for Drs. Wayne Godfrey and Maddy Gregorits
2012-2013 2012-Present 2013-2018	Course Co-Director, NGG 584: Neurobiology of Sleep and Arousal Neurotransmitter Signaling and Pharmacology PHRM510/NGG510 Graduate thesis advisor for Kaitlyn Maier, Department of Pharmacology
2013-Present	NeuroAnesthesia Resident Lecture Series: Strategies to Reduce Awareness Under Anesthesia
2013-2014 2014 2014	MD PhD program advisor to Greg Peterfreund Course Co-Director, NGG 584: Neurobiology of Sleep and Arousal "Exit from the Anesthetic State: Reconstructing Consciousness and Cognition in Humans", University of Pennsylvania Department of Neurosurgery Grand Rounds
2014-Present	NeuroAnesthesia Resident Lecture Series: EEG interpretation guides for estimating anesthetic depth
2014-Present	MD PhD program advisor to Jonathan Lang
2014-2021	MD PhD program advisor to Leela Chakravarti Dilley
2014-2021	MD PhD program advisor to Ethan Solomon
2015-2020	PhD thesis advisor for Sarah Reitz, Department of Neuroscience
2015-Present	MD PhD program advisor to Joseph Park
2015-Present	MD PhD program advisor to Daniel Zhang
2015-2021	MD PhD program advisor to Robert Dilley
2016-2020	Medical Pharmacology 600 Lecturer: Local Anesthetics
2016-2020	Medical Pharmacology 600 Lecturer: Sedative Hypnotics
2016-2017	Course Co-Director, NGG 584: Neurobiology of Sleep and Arousal
2016-Present	MD PhD program advisor to John Bernabei
2016-Present	MD PhD program advisor to Joyce Liu
2017-2021	PhD thesis advisor for Adeeti Aggarwal, Department of Neuroscience
2017	Resident Preceptor for Intensive 100+ hour Summer One on One Instruction in Anesthesiology for Drs. Kenny Hayes and Adnan Karim

2017-Present	MD PhD program advisor to Daniel Connolly
2017-Present	MD PhD program advisor to Diego Espinoza
2018-Present	PhD thesis advisor for Andrzej Wasilczuk, Department of Bioengineering
2018	Course Co-Director, NGG 584: Neurobiology of Sleep and Arousal
2018	Resident Preceptor for Intensive 100+ hour Summer One on One Instruction in Anesthesiology for Drs. Joe Cichon and Jordan Farber
2018	Clinical Connections Preceptor for David Kersen
2018-Present	MD PhD program advisor to Emily Shea
2018-Present	MD PhD program advisor to David Kersen
2019	Resident Preceptor for Intensive 100+ hour Summer One on One Instruction in Anesthesiology for Drs. Harmondip Ghuman and Mazell Winikor
2019-2020	Clinical Connections Preceptor for Katherine Beattie
2019-Present	MD PhD program advisor to Raymond Ng
2019-Present	MD PhD program advisor to Rohan Palanki
2019-Present	MD PhD program advisor to Emma Lewis
2020	Resident Preceptor for Intensive 100+ hour Summer One on One Instruction in Anesthesiology for Drs. Alexandria Trakimas and Jeremy Zuckerberg
2020	Clinical Connections Preceptor for Kevin Goff
2020-Present	MD PhD program advisor to Jeremy Morrissette
2021-Present	Clinical Connections Preceptor for Kathleen Krauss
2021-Present	Clinical Connections Preceptor for Karen Xu
2021	Resident Preceptor for Intensive 100+ hour Summer One on One Instruction in Anesthesiology for Drs. Navdeep Chahal and Alexandra Zoraian
2021-Present	MD PhD program advisor to Pay Ravindran
2021-Present	MD PhD program advisor to Jack You

Lectures by Invitation (Last 5 years):

Mar, 2017	"Neuronal Mechanisms Underlying Anesthetic Unconsciousness" Stanford University, Palo Alto CA
Apr, 2017	"Anesthetic Activation of Hypothalamic Sleep-Promoting Neurons: Coincidence or Convergent Cause of Hypnosis" Oxford University, England
May, 2017	"Recent Advances in Neural Circuit Mechanisms of General Anesthesia" IARS 2017 Annual Meeting, Chicago, IL
Oct, 2017	"Reshaping Anesthesia through Neuroscience" ASA Annual Meeting Boston, MA
Oct, 2017	"Emergence from Anesthesia" ASA Annual Meeting, Boston MA
Mar, 2018	"Schrodinger's Patient: Unconscious and Not," Department of Anesthesia Grand Rounds, University of Colorado Denver, CO
Mar, 2018	"Anesthetic Hijacking of Endogenous Sleep Circuits," Basic Science Seminar University of Colorado Denver, CO
Apr, 2018	"IARS Scholars Program: Moving from Insight to Scientific Premise

- to Research Program" IARS 2018 Annual Meeting, Chicago, IL
- May, 2018 "Neuronal Mechanisms of Hypnosis," University of Chicago, Chicago, IL
- Oct, 2018 "Applying Systems Neuroscience to Advance Patient Care in Anesthesiology," ASA annual Meeting, San Francisco, CA
- Oct, 2018 "Anesthetic Emergence: Intended or Otherwise," ASA Annual Meeting, San Francisco, CA
- Apr, 2019 "Personalized Anesthesia: What do Population Dose-Response Curves Tell Us about Individuals", Columbia University's Virginia Apgar Scholars Day Invited Speaker, New York, New York
- May, 2019 "Anesthesia and Sensory Awareness: How Mechanism May Inform Clinical Practice," IARS Meeting, Montreal, Quebec, Canada
- Aug, 2019 "A Novel Look at the Anesthetized State: What Can Population Dose-Response Curves Teach Us about Individuals", Mayo Clinic Department of Anesthesiology Grand Rounds, Rochester, MN
- Sep, 2019 "Burst Suppression Surprises: What Deep Anesthetic States Reveal", 47th Annual SNACC Meeting, Phoenix AZ
- Oct, 2019 "The Squiggle-ology primer: An Anesthesiologists Guide to Recognizing and Interpreting EEG signals," ASA Annual Meeting, Orlando, FL
- Oct, 2019 "The Transparent Brain-Using Advanced Monitoring to Improve Perioperative Brain Health," ASA Annual Meeting, Orlando, FL
- May, 2020 "Beyond Population Pharmacokinetics and Pharmacodynamics and Towards Personalized Medicine-Lessons from Inter-Individual Anesthetic Variability" Academic Evening Visiting Professor and Grand Rounds Speaker, Department of Anesthesiology and Pain Medicine, University of Washington, Seattle, WA
- Sep, 2020 "Challenges Facing Academic Anesthesiology in the COVID-19 Era," Washington University in St. Louis Extended Leadership Council, St. Louis MO (virtual meeting)
- Oct, 2020 "From Protoplasm to Neural Networks: State Stability," 2020 ASA Annual Meeting, Washington DC (Virtual Meeting only)
- Oct, 2020 "When it the Anesthetic Over: Insights from the ReCCognition Trial," ASA Annual Meeting, Washington DC (virtual meeting)
- Oct, 2020 "Academy of Research Mentors in Anesthesiology Panel on Mentoring for Aspiring Clinician Scientists," ASA Annual Meeting, Washington DC (virtual meeting)
- Jan, 2021 A Novel Look at the Anesthetized State: What Population Data Teaches us About Individuals, John Hopkins Grand Rounds, Baltimore MD* (event held virtually due to COVID-19 pandemic)
- Mar, 2021 "The Accidental Anesthesiologist: The Physician Scientist Path Down a Road Less Travelled," University of Pennsylvania MD PhD Program Combined Degree Grand Rounds, Philadelphia, PA* (event held virtually due to COVID-19 pandemic)
- May, 2021 "Personalized Anesthetic Pharmacology," 10th European-American Anesthesia Conference, Croatia (Event held virtually due to

	COVID-19 Pandemic)
May, 2021	"Find your Funding: Opportunities for Early Stage Investigators with Mentored Institutional and Foundational Grants (Pre K)" early Stage Anesthesia Scholars Research Conference, event held virtually due to pandemic
May, 2021	"The Future of the Anesthesiology Physician Scientist: An Anesthesia Research Council (ARC) Update and Needs Assessment" IARS Annual Meeting, Event held virtually due to COVID Pandemic
May, 2021	"Sleep and Anesthetic Hypnosis Converge in the Mammalian Hypothalamus," President's Panel at the AUA Meeting, Event held virtually due to COVID-19 pandemic
Sep, 2021	"Resistance to State Transitions: A Novel Marker of Anesthetic Sensitivity," Brown Department of Anesthesiology Grand Rounds, (held virtually in Providence, RI)
Oct, 2021	"Through the Looking Glass and Beyond the EEG: In Vivo Imaging of Neuronal Activity during Wakefulness and General Anesthesia," Anesthesiology Annual Meeting, San Diego, CA
Oct, 2021	"Defining the Academic Future: ARC's Recommendations for Anesthesiology's Physician Scientist Pipeline," Anesthesiology Annual Meeting, San Diego, CA
Oct, 2021	"The Sluggish Brain: Resistance to State Transitions is a Novel Marker Impacting Anesthetized Individuals" University of Washington Anesthesiology & Pain Medicine Academic Evening Speaker, Seattle, WA
Dec, 2021	"The Sluggish Brain: Resistance to State Transitions and its Impact on an Individual's Arousal," University of California San Francisco, San Francisco

Organizing Roles in Scientific Meetings:

Nov, 2007	International Working Group on Rodent Models of Narcolepsy San Diego, CA
Oct, 2010	Founding Member for the Society for Anesthesia and Sleep Medicine San Diego, CA
May, 2011	Scientific Advisory Board, Association of University Anesthesiologists Annual Meeting Philadelphia PA
Oct, 2011	Steering Committee, International Consortium for EEG Training of Anesthesia Practitioners Interactive Website Training Module: http://www.icetap.org/
May, 2012	Scientific Advisory Board, Association of University Anesthesiologists Annual Meeting Cleveland OH
Apr, 2013	Scientific Advisory Board, Association of University Anesthesiologists 60th Annual Meeting

	Miami, FL
2017	Dripps Anesthesia Research Fellowship Quarterly Seminar Series University of Pennsylvania, Philadelphia PA
Oct, 2018	Planning Member, Educational Track Committee on Neuroanesthesia San Francisco, CA
Sep, 2019	Chairman, Scientific Affairs Committee, Society for Neuroscience in Anesthesiology and Critical Care Phoenix, AZ
Oct, 2019	Planning Member, Educational Track Committee on Neuroanesthesia Orlando, FL
Sep, 2020	Co-Chair SNACC Annual Meeting Oversight Committee Planned for Montreal, Canada, but held virtually
May, 2021	Planning Committee Chairman, 15th Annual Pennsylvania Anesthesiology Resident Research Conference Philadelphia, PA
May, 2021	Co-Chair IARS Annual Meeting Oversight Committee Scheduled for Toronto Canada, but held virtually
Sep, 2021	Co-Chair SNACC Annual Meeting Oversight Committee Planned for Seattle WA, but held virtually
Mar, 2022	Co-Chair IARS Annual Meeting Oversight Committee Honolulu, Hawaii
Jun, 2023	Chairman Gordon Conference Submission on Consciousness, Anesthesia, and Evolutionary Biology Smithfield, Rhode Island

Bibliography:

Research Publications, peer reviewed (print or other media):

1. Hope BT, Kelz MB, Duman RS, Nestler EJ: Chronic electroconvulsive seizure (ECS) treatment results in expression of a long-lasting AP-1 complex in brain with altered composition and characteristics. Journal of Neuroscience 14(7): 4318-28, Jul 1994.
2. Hope BT, Nye HE, Kelz MB, Self DW, Iadarola MJ, Nakabeppu Y, Duman RS, Nestler EJ: Induction of a long-lasting AP-1 complex composed of altered Fos-like proteins in brain by chronic cocaine and other chronic treatments. Neuron 13(5): 1235-44, Nov 1994.
3. Chen J, Nye HE, Kelz MB, Hiroi N, Nakabeppu Y, Hope BT, Nestler EJ: Regulation of delta FosB and FosB-like proteins by electroconvulsive seizure and cocaine treatments. Molecular Pharmacology 48(5): 880-9, Nov 1995.
4. Nye HE, Hope BT, Kelz MB, Iadarola M, Nestler EJ: Pharmacological studies of the regulation of chronic FOS-related antigen induction by cocaine in the striatum and nucleus accumbens. Journal of Pharmacology & Experimental Therapeutics

275(3): 1671-80, Dec 1995.

5. Chen J, Kelz MB, Hope BT, Nakabeppu Y, Nestler EJ: Chronic Fos-related antigens: stable variants of deltaFosB induced in brain by chronic treatments. Journal of Neuroscience 17(13): 4933-41, Jul 1 1997.
6. Wexler BE, Fulbright RK, Lacadie CM, Skudlarski P, Kelz MB, Constable RT, Gore JC: An fMRI study of the human cortical motor system response to increasing functional demands. Magnetic Resonance Imaging 15(4): 385-96, 1997.
7. Chen J, Kelz MB, Zeng G, Sakai N, Steffen C, Shockett PE, Picciotto MR, Duman RS, Nestler EJ: Transgenic animals with inducible, targeted gene expression in brain. Molecular Pharmacology 54(3): 495-503, Sep 1998.
8. Kelz MB, Chen J, Carlezon WA Jr, Whisler K, Gilden L, Beckmann AM, Steffen C, Zhang YJ, Marotti L, Self DW, Tkatch T, Baranauskas G, Surmeier DJ, Neve RL, Duman RS, Picciotto MR, Nestler EJ: Expression of the transcription factor deltaFosB in the brain controls sensitivity to cocaine. Nature 401(6750): 272-6, Sep 16 1999.
9. Nankova BB, Rivkin M, Kelz M, Nestler EJ, Sabban EL: Fos-related antigen 2: potential mediator of the transcriptional activation in rat adrenal medulla evoked by repeated immobilization stress. Journal of Neuroscience 20(15): 5647-53, Aug 1 2000.
10. Sabatakos G, Sims NA, Chen J, Aoki K, Kelz MB, Amling M, Bouali Y, Mukhopadhyay K, Ford K, Nestler EJ, Baron R: Overexpression of DeltaFosB transcription factor(s) increases bone formation and inhibits adipogenesis.[see comment] Nature Medicine 6(9): 985-90, Sep 2000.
11. Kelz MB, Kuszak JR, Yang Y, Ma W, Steffen C, Al-Ghoul K, Zhang YJ, Chen J, Nestler EJ, Spector A: DeltaFosB-induced cataract. Investigative Ophthalmology & Visual Science 41(11): 3523-38, Oct 2000.
12. Chen J, Zhang Y, Kelz MB, Steffen C, Ang ES, Zeng L, Nestler EJ: Induction of cyclin-dependent kinase 5 in the hippocampus by chronic electroconvulsive seizures: role of [Delta]FosB. Journal of Neuroscience 20(24): 8965-71, Dec 15 2000.
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5. Kelz MB, Friedman E: Anesthetic sensitivity: Learning to fly. Anesthesiology 111(1): 5-7, July 2009.
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10. Kelz MB, Mashour GA: The Biology of General Anesthesia from Paramecium to Primate. Current Biology 29(22): R1199-R1210, Nov 2019.
11. Reitz SL, Kelz MB: Preoptic Area Modulation of Arousal in Natural and Drug-Induced Unconscious States Frontiers in Neuroscience 15: 644330, Feb 2021.

Contributions to peer-reviewed research publications, participation cited but not by authorship:

1. Kim H, Hudetz AG, Lee J, Mashour GA, Lee U; ReCCognition Study Group.: Estimating the Integrated Information Measure Phi from High-Density Electroencephalography during States of Consciousness in Humans. Front Hum Neurosci 12: 42, Feb 2018.
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Editorials, Reviews, Chapters, including participation in committee reports (print or other media):

1. Kelz MB: Blueprints: Pocket anesthesiology. Anesthesia and the Gastrointestinal System. Gaiser R (eds.). Lippincott Williams & Wilkins, first edition: 85-90, May 2006.
2. Kelz MB, Yang J, Eckenhoff RG: Mechanisms of general anesthetic action. Anesthesiology. Longnecker DE, Brown DL, Newman MF, Zapol W (eds.). McGraw-Hill, first edition: 718-738, December 2007.
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Gaiser R (eds.). Elsevier, Page: www.procedureconsult.com, 2008.

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13. Proekt A, Kelz MB: Schrodinger's cat: Anesthetized and not. Br J Anaesth 120(3): 424-8, Mar 2018.
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Patents:

Yale University: Methods of using agents that modulate bone formation and inhibit adipogenesis. USA Patent Number 6916603, 2005.

University of Pennsylvania: In Situ Cloning from Pathological Tissue Specimens. USA Patent Number R3718, 2006.

PAST GRANT SUPPORT

NAME: Max B. Kelz, MD PhD

DEPARTMENT: Anesthesiology and Critical Care

DATE: 02/03/2022

<u>Name of Grant</u>	<u>Period of Award</u>	<u>Grant Category*</u>	<u>Role in Grant**</u>	<u>% Effort</u>	<u>Funding Source</u>	<u>Current Annual Direct Cost</u>	<u>Additional Comments***</u>
1. GM112596 - PHYSICIAN POSTDOCTORAL RESEARCH TRAINING IN PERIOPERATIVE MEDICINE (PPRTPM)	07/01/2019 - 06/30/2020	TG	PI	5	National Institute of General Medical Sciences/Nih/Dhhs	\$320,772.00	Over 40 million anesthetics are annually delivered to patients in this country. The proposed program will train anesthesiology/perioperative medicine physician-scientists to be researchers, whose goal will be to advance and improve care in anesthesiology/perioperative medicine for recipients of healthcare in the United States.
2. - Neurophysiologic correlates of conscious perception	04/01/2016 - 03/31/2019	PG	multi-PI	10	Penn Translational Neuroscience Initiative	\$133,316.00	The goal of this proposal is to determine the neural correlates that underlie conscious perception using high density EEG in humans and mechanistic studies in rodents during wakefulness and states of anesthetic induced unconsciousness.
3. - Reconstructing Consciousness and Cognition Phase II	09/01/2015 - 08/31/2019	PG	PI	10	James S. McDonnell Foundation	\$604,860.00	We propose a series of collaborative experiments that build on our past investigation using the general anesthetic isoflurane to probe human consciousness, but move forward using unique approaches such as

*For **Grant Category**, use code in bold from the following menu:

RO1 NIH RO1
PP NIH Program Project, Center or Core Grants
PG Federal Grants - Other (including other NIH grants and grants from VA, NSF, Dept. of Energy, etc.)
FM Fellowship (management)

CT Clinical Trials
TG Training Grants
IG Industrial Grants (including pharmaceutical)
PG Private Foundation Grants (including internal Penn grants)
O Other

** For program projects, specify whether PI, co-leader or project leader. For center, core and training grants, similarly specify your role.

*** Include any additional, brief information. For clinical trials, for example, specify if multicenter or single center and indicate role of Penn site. Explain any grants in **Other** category.

If space is needed for more entries, use an additional sheet.

								excitatory anesthetics (ketamine, xenon) and seizures, combining both empirical work in humans and computational modeling guided by the resulting data. This multi-PI effort will examine governing principles that permit the human brain to transition between states of consciousness.
4.	5T32GM112596 - PHYSICIAN POSTDOCTORAL RESEARCH TRAINING IN PERIOPERATIVE MEDICINE (PPRTPM)	07/01/2015 - 06/30/2019	TG	Co-PI	1	National Institute of General Medical Sciences/Nih/Dhhs	\$298,344.00	I became the PI of this grant on 7/1/19, the beginning of year 5 of this grant.
5.	5-K08-GM-106144-05 - Neurophysiological Basis Of General Anesthesia	07/01/2015 - 05/31/2018	FG	Co-I	1	National Institute Of General Medical Sciences/Nih/Dhhs	\$208,633.00	I served as the Mentor for Dr. Proekt on this K-08 grant
6.	- MRI Detection of Human Glymphatic Function	02/20/2015 - 02/08/2017	PG	PI	0	TBIC ITMAT Pilot Grant Award	\$45,000.00	Preclinical data recently generated in rodents, suggests that waste disposal in the brain may occur through rapid exchange of cerebrospinal fluid (CSF) with interstitial fluid along paravascular spaces abutting glia, which has been termed the "glymphatic" system. This proposal will apply diffusion tensor MRI imaging to seek evidence of the human glymphatic system.
7.	5-R01-GM-107117-04 - Optoanesthesia	08/01/2014 - 07/31/2019	FG	PI	20	National Institute Of General Medical Sciences/Nih/Dhhs	\$310,228.00	This grant will employ novel, photoreactive analogues of the general anesthetic propofol that are activated by light to

*For **Grant Category**, use code in bold from the following menu:

RO1 NIH RO1
PP NIH Program Project, Center or Core Grants
FG Federal Grants - Other (including other NIH grants and grants from VA, NSF, Dept. of Energy, etc.)
FM Fellowship (management)

CT Clinical Trials
TG Training Grants
IG Industrial Grants (including pharmaceutical)
PG Private Foundation Grants (including internal Penn grants)
O Other

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*** Include any additional, brief information. For clinical trials, for example, specify if multicenter or single center and indicate role of Penn site. Explain any grants in **Other** category.

If space is needed for more entries, use an additional sheet.

							become exceptionally potent and durable. Their use in mice both in the presence and absence of photoillumination should help to determine the molecular, cellular, and network substrates of alkylphenol anesthetics in vivo.	
8.	- Reconstructing Consciousness and Cognition	04/15/2013 - 04/14/2015	PG	PI at Penn	10	James S. McDonnell Foundation	\$132,600.00	Understanding mechanisms of human consciousness and cognition is a fundamental pursuit in the 21st century science. One method to explore these complex neural processes is to characterize how they are reconstructed after a state of unconsciousness. In human volunteers, we will assess the return of consciousness and higher cognition after general anesthesia using a multimodal approach.
9.	5-F31-NS-080519-03 REVISE - Light-Enabled Identification Of The Neural Substrates For Alkylphenol Anesthesia	07/01/2012 - 12/31/2014	FG	Co-PI		National Institute Of Neurological Disorders And Stroke/Nih/Dhhs	\$23,152.00	
10.	5-R25-HL-084665-10 - St Research Education Program To Increase Diversity In Health Related Research	02/01/2011 - 01/30/2016	FG	Co-PI		National Heart, Lung, And Blood Institute/Nih/Dhhs	\$105,675.00	
11.	5-R01-GM-088156-05 - Neuronal Basis Underlying Volatile Anesthetic Induced Hypnosis	04/15/2010 - 03/31/2016	FG	PI	20	National Institute Of General Medical Sciences/Nih/Dhhs	\$190,436.00	The scientific goals of this proposal are to test the hypothesis that volatile anesthetic-induced unconsciousness is caused by recruitment of endogenous

*For **Grant Category**, use code in bold from the following menu:

RO1 NIH RO1
PP NIH Program Project, Center or Core Grants
FG Federal Grants - Other (including other NIH grants and grants from VA, NSF, Dept. of Energy, etc.)
FM Fellowship (management)

CT Clinical Trials
TG Training Grants
IG Industrial Grants (including pharmaceutical)
PG Private Foundation Grants (including internal Penn grants)
O Other

** For program projects, specify whether PI, co-leader or project leader. For center, core and training grants, similarly specify your role.

*** Include any additional, brief information. For clinical trials, for example, specify if multicenter or single center and indicate role of Penn site. Explain any grants in **Other** category.

If space is needed for more entries, use an additional sheet.

12. 3-K08-GM-077357-04S1 - Arousal, Orexins And Anesthesia	09/15/2009 - 03/31/2011	FG	PI	0	National Institute Of General Medical Sciences/Nih/Dhhs		sleep-promoting neurons. This ARRA supplement to the parent K08 grant is designed to accelerate the pace of research and will prevent job loss of a highly skilled employee
13. - Neural Inertia: an obstacle to cognitive return, a new view of arousal state control	02/01/2008 - 01/31/2011	PG	PI	2	Institute for Translational Medicine and Therapeutics, University of Pennsylvania School of Medicine	\$50,000.00	The goal of this work is to prove the existence of a barrier separating the states of wakefulness and anesthetic-induced unconsciousness that is not explained simply by pharmacokinetics. Work will proceed in two distantly related species, the mouse and the fly.
14. - Medical Hibernation	01/01/2008 - 12/31/2010	PG	PI	1	Groff Foundation	\$20,940.00	This grant is designed to evaluate a state of drug induced hibernation, comparing the state to that induced by traditional inhaled general anesthetics.
15. - PACES: PCR anatomic Cloning of Expressed Sequences	11/10/2007 - 11/30/2008	PG	PI	0.5	LBS	\$89,179.00	The goal of this work is to optimize our novel approach for amplification and subsequent detection of RNAs expressed in fixed or live tissues.
16. 5R21AI070929 - Creation of a conditional IL-6 knockout mouse	08/15/2007 - 07/31/2010	FG	investigator	5	NIH	\$150,000.00	The goal of this work is to better understand mechanisms multi-organ dysfunction in a murine model of sepsis by creating an inducible tissue specific IL-6 knockout mouse
17. CNC inaugural pilot grant - Severe Sleepiness and the Lateral Hypothalamus	07/01/2007 - 06/30/2008	PG	PI	0.36	Comprehensive Neuroscience Center, University of	\$65,000.00	The goal of this work was to identify a neurochemical phenotype

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						Pennsylvania		and markers for a novel population of wake-promoting neurons predicted to be in the lateral hypothalamus.
18.	- Do General Anesthetics Hijack Endogenous Sleep Circuits?	08/01/2006 - 07/31/2007	PG	PI	0	McCabe Foundation	\$18,054.00	The goal of this work is to evaluate anesthetic sensitivity in mice with sham or actual lesion of hypothalamic sleep-promoting neurons to determine their contribution to anesthetic-induced hypnosis.
19.	5-K08-GM-077357-05 - Arousal, Orexins And Anesthesia	04/01/2006 - 03/31/2012	FG	PI	65	National Institutes Of Health	\$118,400.00	This is a mentored physician scientist career development award. The scientific goals of this proposal are to test the hypothesis that inhaled anesthetics exert hypnotic effects upon endogenous neural circuits regulating wakefulness, including hypothalamic orexin neurons. The training goals of this proposal are to learn the scientific fields of sleep and neuronal mechanisms of anesthetic action and to develop expertise in murine anesthetic phenotyping at the behavioral as well as EEG/EMG levels.
20.	- Orexins, Arousal, and Inhaled Anesthetic Action: Development of a Novel and Universally Applicable Method for Cloning and Amplifying RNAs	12/16/2004 - 12/15/2006	PG	PI	0	Penn Genomics Institute Seed Grant	\$100,000.00	The major goal of this work is to develop a rapid and universally applicable method for cloning RNAs from single cells. Once

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from Fixed, Archival Tissue

							the methodology is developed, it will be applied to orexinergic neurons harvested during various states of arousal
21.	FAER-RTG - Hypocretin Neurons and Hypnosis: A Novel Site for Inhaled Anesthetic Action	07/01/2004 - 06/30/2006	PG	PI	0	Foundation for Anesthesia Education and Research \$175,000.00	The major goal of this work is to investigate the role of the hypocretin/orexin system in mediating the hypnotic properties of volatile anesthetics.
22.	F30DA005805 - Delta FosB and Cocaine Addiction	07/15/1997 - 07/31/1999	FG	PI	100	NIDA Predoctoral NRSA \$44,398.00	The major goal of this predoctoral NIH award was to determine the role of the transcription factor, Delta FosB, in cocaine addiction. Previous studies had determined that chronic exposure cocaine and other drugs of abuse specifically induce DeltaFosB in reward pathways. This work sought to induce Delta FosB directly in reward pathways in drug naïve mice by genetically engineering mice to have nucleus accumbens-specific inducible overexpression of DeltaFosB

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CURRENT GRANT SUPPORT

NAME: Max B. Kelz, MD PhD

DEPARTMENT: Anesthesiology and Critical Care

DATE: 02/03/2022

<u>Name of Grant</u>	<u>Period of Award</u>	<u>Grant Category*</u>	<u>Role in Grant**</u>	<u>% Effort</u>	<u>Funding Source</u>	<u>Current Annual Direct Cost</u>	<u>Additional Comments***</u>
1. GM144377 - Personalized Anesthetic Pharmacology Across the Lifespan	07/01/2021 - 06/30/2025	RO1	Multi-PI	25	NIGMS	\$483,159.00	
2. GM112596 - Physician Postdoctoral Research Training in Perioperative Medicine (PPRTPM)	07/01/2020 - 06/30/2025	TG	PI	5	National Institute of General Medical Sciences/Nih/Dhhs	\$497,726.00	Over 40 million anesthetics are annually delivered to patients in this country. The proposed program will train anesthesiology/perioperative medicine physician-scientists to be researchers, whose goal will be to advance and improve care in anesthesiology/perioperative medicine for recipients of healthcare in the United States.
3. NS113366 - Role of dynamical criticality in human perception	04/01/2020 - 03/31/2025	RO1	Co-I	20	NIMH	\$403,933.00	The proposed research will establish a new and theoretically sound property of neuronal activity that allows the brain to consciously detect and respond to sensory stimuli. Identifying the conditions in which this property is present will help us reliably determine the likelihood of conscious perception in patients undergoing anesthesia and in those suffering from brain

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								injury.
4. 1F30EY029931-01A1 - Quantifying the Effect of Brain State on the Spatiotemporal Dynamics of Visual Evoked Responses	09/01/2019 - 08/31/2022	TG	Co-I	1	National Eye Institute	\$32,233.00		I serve as the PhD advisor to Adeeti Aggarwal for this grant.
5. 2R01 GM088156-06 - Neuronal Basis Underlying Volatile Anesthetic Induced Hypnosis	09/01/2019 - 06/30/2020	RO1	PI	33	National Institute Of General Medical Sciences/Nih/Dhhs	\$249,834.00		This is an administrative "equipment supplement" to the parent GM088156 grant.
6. 2R01 GM088156 - Neuronal Basis Underlying Volatile Anesthetic Induced Hypnosis	09/01/2018 - 06/30/2022	RO1	PI	33	National Institute of General Medical Sciences/Nih/Dhhs	\$470,616.00		The scientific goals of this proposal are to test the hypothesis that volatile anesthetic-induced unconsciousness is caused by recruitment of endogenous sleep-promoting neurons
7. - Intersections Of Sleep And Coma: Neural Pathways Of Alpha-2 Adrenergic Hypnosis	05/01/2017 - 04/30/2022	FG	Co-I	1	National Institute Of General Medical Sciences/Nih/Dhhs	\$182,000.00		I serve as the mentor for this K08 grant
8. - Short-Term Research Education Program To Increase Diversity In Health-Related Research	04/05/2016 - 03/31/2021	FG	Co-I	1	National Heart, Lung, And Blood Institute/Nih/Dhhs	\$154,755.00		I serve as a research mentor for David Camacho, a Penn Medical student, on this grant
9. - Training In Sleep And Sleep Disorders	08/01/2015 - 07/31/2020	FG	Co-I	1	National Heart, Lung, And Blood Institute/Nih/Dhhs	\$398,596.00		I serve as a PhD thesis advisor to Sarah Reitz, a neuroscience graduate student, on this grant

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