



Sleep
Research
Society
Foundation

2017-2018 ANNUAL REPORT
Supporting Sleep and Circadian Research



The Sleep Research Society Foundation (SRSF) provides support for growth and development in the field of sleep and circadian research. The SRSF was established in 2005 by the Sleep Research Society Board of Directors to provide support for investigators to conduct pilot studies that would form the basis of more comprehensive applications to federal agencies, private foundations and industry partners.

Since its inception, the Sleep Research Society Foundation has awarded more than \$1.6 million in support for research by 47 early stage scientific investigators. The SRSF has helped investigators obtain NIH and other government funding through research supported by SRSF awards.

MISSION

The Sleep Research Society Foundation is committed to the growth and development of the field of sleep research through education and research funding opportunities.



Kathryn J. Reid, PhD

President

Sleep Research Society Foundation

A MESSAGE FROM THE SRSF PRESIDENT

The Sleep Research Society Foundation (SRSF) is pleased to share news and updates of the Foundation's activities for 2017-18. The Foundation announced the fifth solicitation for the SRSF Career Development Award, receiving 16 high quality applications. The support provided by this SRSF award is believed by many prior awardees to have been an important stepping stone to their future success.

We are extremely grateful to the Scientific Review Committee, under the chairmanship of Ritchie Brown, DrRerNat, for undertaking the review of these proposals. The review process was aligned to the NIH grant review model, scoring each of the submissions for scientific merit, mentoring, environment, and plan. On March 9, 2018, the Sleep Research Society Foundation Board of Directors gratefully accepted the Committee's Report and selected to fund three of these proposals.

The three selected proposals represent a broad range of topics and approaches in sleep and circadian research including a project to further refine an intervention to improve sleep in children with low-socioeconomic status, another to determine whether there is a circadian rhythm in coronary microvascular function, and a third will use a multi-omics approach to further understand the role of iron-related pathways in sleep disordered breathing. The scope of work to be supported in the coming year is a reflection of the growth of our field and the need to support career development for investigators from a variety of areas. All of these projects help to increase the knowledge of sleep and circadian science and change the way we think about the impact of sleep in public health.

This year also marks the beginning of a very exciting time for the Sleep Research Society Foundation. In June of last year, leaders of the SRSF began organizing a leadership team for a national fundraising campaign, Funding Our Future Scientists, to elevate financial resources for the Foundation's early-career award program. Over the past year, we have made tremendous progress toward our \$2.5 million goal with an excellent start to "fundraising" for the Foundation, as we secured pledges from 60 individual donors totaling \$336,200 as well as 7 corporate partners totaling \$1,200,000. As President of the Foundation, I look forward to the continued growth and impact of this effort and to sharing more information on this extremely important initiative with you soon.

I would like to take this opportunity to again thank all supporters of the SRSF annual appeal and the Funding Our Future Scientists campaign. Without your support, we would be unable to fulfill our mission of financially supporting the best and brightest young minds in sleep and circadian research.

The importance of these career development awards for the advancement of scientific careers cannot be overstated. The awards provide seed money for early career investigators, so important in defining their future success as investigators. In addition to the scientific advances made possible by the generous contributions of our sponsors, we are very grateful for the strong tradition of Trainee Day events made possible by the support of the SRS membership and industry sponsors. We are pleased to share with you the report on Foundation activities and the success stories of our early investigators, on the following pages of our 2017-18 annual report.

GRANTS AND AWARDS

SRSF Career Development Awards

In 2017-2018, the Sleep Research Society Foundation was again pleased to partner with industry and individual stakeholders to offer competitive research awards for early career investigators to enable them to launch their research careers. The SRSF received generous contributions from Jazz Pharmaceuticals, Merck, Sleep Research Society, and individual donors. Together we have pledged and are providing research support to promising early career investigators engaged in sleep and circadian rhythms research.

The SRSF received 16 applications for current awards in the fall of 2017. Over a three-month period, the applications were reviewed by a committee of 24 established sleep and circadian research experts. These professionals evaluated and scored each of the applications based on the following criteria: potential for the applicant to become an independent investigator in sleep research, quality and innovation of the proposed research, appropriateness of budget, the training that the individual would be receiving, and the mentor's commitment to the overall career development of the applicant. Each application was reviewed by three members of the committee and given a numeric rating between 1–9 (with 1 being the highest). These ratings were averaged for each application to yield a final score and rank. While all 16 proposals were of high quality, the three shown on the following page were felt to be outstanding by the Sleep Research Society Foundation's Board of Directors and were approved to receive funding.

Projects funded in 2017 are wrapping up or have been very recently completed. We are pleased to share that these early stage investigators will be presenting some of their research results from these or other projects, at the SLEEP 2018 meeting in Baltimore. These individuals have also been invited to showcase their work at the SRS opening event at that meeting, the Club Hypnos Data Blitz, on Sunday evening, June 3, 2018.

The Sleep Research Society and SRSF wish to thank Jazz Pharmaceuticals and Merck for their generosity in funding these outstanding applicants with a Career Development Award. The SRSF looks forward to

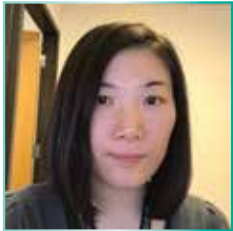
2018 CAREER DEVELOPMENT AWARDEES



Saurabh Thosar, PhD

OREGON HEALTH & SCIENCE UNIVERSITY

Circadian Rhythms of Vascular Function in Cardiovascular Disease



Heming Wang, PhD

BRIGHAM AND WOMEN'S, HOSPITAL, HARVARD MEDICAL SCHOOL,
BROAD INSTITUTE

Multi-Omics Investigation of Iron-Related Pathways in Sleep-Disordered Breathing



Ariel Williamson, PhD

CHILDREN'S HOSPITAL OF PHILADELPHIA

Adapting an Evidence-Based Behavioral Sleep Intervention for Urban Primary Care

funded by



Jazz Pharmaceuticals®



MERCK



Sleep
Research
Society
Foundation

continuing to work with Jazz, Merck and others in the future to partner in fostering the next generation of sleep researchers. We are confident that these early career investigators increase our knowledge of sleep and circadian science and change the way we think about the impact of sleep in public health. We are proud to partner with Jazz Pharmaceuticals and Merck to help foster these scientific careers.

SCIENTIFIC REVIEW COMMITTEE 2017–2018

Ritchie Brown, Dr Rer. Nat.—*Chair*
VA Boston /Harvard Medical School

Cathy Alessi, MD—*Vice Chair*
*University of California Los Angeles, VA
Greater Los Angeles*

Elda Arrigoni, PhD
*Beth Israel Deaconess Medical Center,
Harvard University*

Bei Bei, PhD
Monash University

Carlos Blanco-Centurion, PhD
Medical University of South Carolina

Josiane Broussard, PhD
University of Colorado Boulder

Jun Cai, MD, PhD
University of Louisville School of Medicine

Michael W. Calik, PhD
University of Illinois at Chicago

Jeff Donlea, PhD
University of California Los Angeles

Joshua J. Gooley, PhD
Duke-NUS Graduate Medical School

Michael A. Grandner, PhD
University of Arizona

Susan T. Harbison, PhD
National Heart Lung and Blood Institute

James M. Krueger, PhD
Washington State University

Thomas A. Mellman, MD
Howard University College of Medicine

Sara Nowakowski, PhD
University of Texas

Sabine Plancoulaine, MD, PhD
INSERM

Michael J Prerau, PhD
Massachusetts General Hospital

David M. Raizen, MD, PhD
University of Pennsylvania

Vetrivelan Ramalingam, PhD
Beth Israel Deaconess Medical Center

Ari Shechter, PhD
Columbia University

Jennifer C Tudor, PhD
Saint Joseph's University

Eliza Van Reen, PhD
CPS, Inc







Kristine A Wilckens, PhD
University of Pittsburgh










Mark R Zielinski, PhD
*Harvard Medical School and VA Boston
Healthcare System*

Sara Aton, PhD—*Board Liaison*
University of Michigan

Past Career Development Awards

Since 2008, the SRSF has partnered with industry in efforts to widen the reach of our Foundation support for early stage career researchers. Between 2014–2016, the SRSF received generous contributions from Jazz Pharmaceuticals, Merck, Sleep Research Society, and individual donors to award 7 out of 84 competitively reviewed research grants. In 2013, through a very generous donation from Jazz Pharmaceuticals, the SRSF was able to award 3 out of 27 competitively reviewed research grants. In 2010, through a generous contribution from Sanofi-Aventis, the SRSF gave a competitive award, and in 2008, the SRSF was able to provide a competitive grant through a generous contribution from Takeda. Researchers funded since 2008 are listed below and on the following page.

Years	Early Stage Career Researcher	Institution	Project Title
2017	 Yu Sun Bin	University of Sydney	What is long sleep? Objective correlates of long sleep duration and prospective associations with healthcare utilization
2017	 Matthieu Flourakis	Northwestern University	Role of the cationic leak channel NALCN in mammalian circadian physiology
2017	 Anne Venner	Beth Israel Deaconess Medical Center and Harvard Medical School	Functional characterization of a genetically and anatomically defined sub-population underlying insomnia
2016	 Christopher Depner, PhD	University of Colorado Boulder	Mechanisms of insufficient sleep contributing to metabolic disease risk and impact from sleep “weekend recovery”
2016	 Jeffrey Donlea, PhD	University of California Los Angeles	Using the fruit fly to identify consequences of sleep loss in memory-encoding circuits
2016	 Heather E. Gunn, PhD	University of Pittsburgh	Adolescent sleep, circadian rhythmicity, and cardiovascular disease risk: a dyadic approach

<i>Years</i>	<i>Early Stage Career Researcher</i>	<i>Institution</i>	<i>Project Title</i>
2014-2015	 Josiane Broussard, PhD	University of Colorado Boulder	Influence of physical activity status on the effects of insufficient sleep on metabolism
2014-2015	 Sara Biggs, PhD	Monash University	Identifying pathways for new treatment strategies for children with primary snoring
2014-2015	 Michael Scullin, PhD	Baylor University	Slow-wave sleep and prospective memory consolidation in aging adults
2014-2015	 Jon T. Willie, MD, PhD	Emory University	Reflex and murine cataplexy: proof of concept for novel therapy for narcolepsy type 1
2013-2014	 Joseph Dzierzewski, PhD	University of California Los Angeles	Long-term clinical outcome of hypersomnia in at-risk older adults
2013-2014	 Jimmy Fraigne, PhD	University of Toronto	Optogenetic probing of narcolepsy/cataplexy dopamine circuitry
2013-2014	 See Wan Tham, PhD	Seattle Children's Hospital	Sleep-wake disturbances and pain responsivity in adolescents
2010-2011	 Monika Haack, PhD	Beth Israel Deaconess Medical Centre & Harvard Medical	School Does sleep maintenance insomnia lead to stronger activation of stress response systems then sleep onset insomnia?
2008-2010	 Natalia Tulina, PhD	University of Pennsylvania	Function of sleep in the regulation of stem cell activity



J Christian Gillin, MD, Research Grant

The Sleep Research Society Foundation's J. Christian Gillin, MD, Research Grant supports early career investigators in sleep research with the purpose of collecting pilot data to be used for future grant applications. The grant is intended for junior faculty investigators who do not already have substantial independent research funding.

The SRSF funded 31 Gillin awards between 2005-2014, and the recipients of those awards are listed below. These awardees are publishing their sleep and circadian research findings and >60% of the awardees in US institutions have gone on to receive NIH research grants.

<i>Years</i>	<i>Name</i>	<i>Institution</i>	<i>Project Title</i>
2014	Nicholas Stavropoulos, PhD	NYU Neuroscience Institute	Interrogation of protein degradation pathways regulating sleep
2014	Jon T. Willie, MD, PhD	Emory University School of Medicine	Investigation of the effects of deep brain stimulation of amygdala upon laughter-induced changes in Hoffman reflex, a surrogate for cataplexy
2013	Thien Thanh Dang-Vu, MD, PhD	Concordia University	Pathophysiology of idiopathic hypersomnia: a multimodal neuroimaging study
2013	Aric Prather, PhD	University of California San Francisco	The effects of race-based social stress on objectively measured sleep and nocturnal autonomic functioning
2013	Irma Rukhadze, PhD	Harvard Medical School	The role of medullary A1/C1 neurons in control of state dependent activity of genioglossus muscle in behaving mice
2012	Sudha Arunachalam, PhD	Boston University	Effects of sleep on word learning in preschoolers
2012	Jamie Cvengros, PhD	Rush University	Medical Center Changes in eating behavior following initiation of CPAP
2012	Olga Dergacheva, PhD	George Washington University	Chronic intermittent hypoxia alters a REM sleep pathway to parasympathetic cardiac neurons in the brainstem
2012	Michelle Garrison, PhD	Seattle Children's Hospital Foundation	Sleep health in preschoolers (SHIP)
2011	Joanna MacLean, MD, PhD	University of Alberta	A follow-up study of infants at high risk of sleep disordered breathing
2011	Subhabrata Sanyal, PhD	Emory University	Genetic modeling of restless legs syndrome in Drosophila

2011	Christi S. Ulmer, PhD	Durham VA Medical Center, Duke University	Is reduced blood pressure a consequence of improved sleep following a behavioral sleep intervention for adults with PTSD?
2010	Stephanie J. Crowley, PhD	Rush University Medical Center	A light phase response curve to treat delayed sleep in adolescents
2010	Katherine Sharkey, MD, PhD	Brown University, EP Bradley Sleep Lab	Sleep and circadian phase disruption in postpartum depression
2009	Jun Cai, MD, PhD	University of Louisville, Kosair Children's Hospital	Vulnerability of defective myelin to intermittent hypoxia during sleep
2009	Giancarlo Vannini, MD	University of Michigan	Modulation of sleep and wakefulness by extrasynaptic γ -aminobutyric acid (GABA) receptors
2008	Nancy Johnston	Southern Illinois University	Sleep fragmentation, the metabolic syndrome, and diabetes in mice
2008	Anna Kalinchuk	Harvard (BVARI)	Nitric oxide-mediated mechanisms of sleep regulation: spatial and temporal aspects
2008	Mirjam Munch	Harvard (BWH)	Circadian light effects and fMRI - a pilot study
2008	Yuka Sasaki	Harvard Medical School/Mass General	MRI-constrained spectral imaging of spontaneous neuromagnetic activity during sleep in human cortex associated with visual learning
2007	Christoph Nissen	University of Freiburg (Germany)	Medical Center Sleep-related neuroplasticity in depression
2007	Robyn Stremmler	University of Toronto	Sleep disturbances in hospitalized children
2007	Xiangdong Tang	Eastern Virginia Medical School	Baseline sleep and effects of social stress on sleep in tree shrews (<i>Tupaia belangeri</i>)
2006	Camellia Clark	University of California San Diego	Sleep deprivation, polysomnography and functional MRI in minor depression
2006	Jonathan Emens	Oregon Health & Science University	Determination of intrinsic circadian period in blind individuals with non-entrained circadian rhythm sleep disorders
2006	Fernando Louzada	Federal University of Parana, Brazil	Home electric lighting effects on circadian rhythms
2006	Jonathan Wisor	SRI International	Gamma-hydroxybutyrate for narcolepsy: role of the locus coeruleus
2005	Dmitry Gerashchenko	SRI International	Identification of neurons in the lateral hypothalamus playing critical role in arousal
2005	Lisa Meltzer	Children's Hospital of Philadelphia	Sleep patterns in children with autism and their caregivers
2005	Natalia Suntsova	UCLA/VA/Sepulveda Research Corporation	Absence epilepsy and the hypothalamic/basal forebrain sleep promoting and arousal systems
2005	Kenneth P. Wright	University of Colorado	The metabolic cost of extended wakefulness



T32 GRANT SUPPORT AWARD A SUCCESS!

In 2016, Dr. Robert Greene with UTSW Medical Center was awarded a \$25,000 T32 Grant Support Award. The goal of the award was to target and increase training opportunities in the field of sleep and circadian rhythm research, by providing a potential program director funding to work with his/her institution to offset personnel and administrative expenses during the development and submittal of a NEW T32 Institutional Training Grant proposal in the field of sleep and circadian rhythm research to the National Institutes of Health (NIH). Below, Dr. Robert Greene expresses his gratitude for this support.

“I want to express my gratitude to the SRS for starting us off on this T32 by sponsoring a pre-grant grant to fund the needed administrative help for organizing a T32 submission. I am sure without this support, that I would not have undertaken this venture in the first place. It also had the added bonus of helpful reviews of the pre-T32 which aided in development of the actual grant proposal... my initial submission in the spring of 17 was not funded but re-submission (with a few suggested tweaks from the study section) resulted in its finally being funded. I think it will provide a real foundation for our new sleep and circadian rhythms center at the Peter O'Donnell Brain Institute, UTSW Medical Center”. - Dr. Robert Greene

23RD ANNUAL TRAINEE SYMPOSIA SERIES

In addition to Career Development Awards, the SRSF is very proud to report that generous contributions from the SRS and individual donors has meant that for the twenty-third consecutive year, a variety of trainee opportunities were offered during the SLEEP 2017 meeting in Boston. On Saturday afternoon nearly 50 early career researchers participated in a leadership workshop, facilitated by noted sleep researchers, covering key topics designed to help cultivate the development of our field's future leaders. On Sunday morning, more than 300 trainees attended the Trainee Symposia Series, which included 32 workshops/lectures by leading researchers, spanning the spectrum of sleep and circadian research. The SLEEP 2016 conference marked the establishment of the Trainee Development Suite (TDS) series. While the TDS has always served to provide a central location to network, relax, connect, and reconnect with colleagues and friends, for the first time, themed breakfast and lunch sessions gave SRS trainee members the opportunity to network with other trainees, experienced researchers, and mentors in sleep and circadian science in a more structured setting. Throughout the annual meeting, trainees participated in a variety of social opportunities, and met and shared ideas with sleep and circadian research colleagues from around the world. The support garnered from members and industry partners helps these important events continue and blossom as we move into 2018.

DONORS

The Sleep Research Society Foundation wishes to acknowledge and thank the following organizations and individual sponsors for their contributions.

Organizations



Individual Donations

Sabra M Abbott, MD, PhD

Christine Acebo, PhD

Pranshu Adavadar, MD

Olukunle A Ajagbe, MD

Cathy A Alessi, MD

Malaz Almsaddi

Sonia Ancoli-Israel, PhD

Noah D Andrews, RST

Raanan Arens, MD

Sara J Aton , PhD

Najib Ayas, MD

Ruth M Benca, MD, PhD

Edward S Bernreuter, MD

Jed Black, MD

Donald L Bliwise, PhD

Mark S Blumberg , PhD

Jeffrey Borchardt

Katrina Borg

Raymond E Bourey, MD

Josiane L Broussard, PhD

Ritchie E Brown, Dr., Rer., Nat.

Helen J Burgess, PhD

Glenn W Burris, MD

Daniel J Buysse, MD

David W Carley, PhD

John B Carlile, MD

Mary A Carskadon, PhD

Patricia A Carter, PhD

Mindy B Cetel, MD

Eileen R Chasens, RN, PhD

Michael W Chee, MBBS

Stephen S Chung, MD

Chiara Cirelli, MD, PhD

Charles A Czeisler PhD, MD

Julie L Dahl, NP

Spencer C Dawson

David Dedrick

David F Dinges, PhD

Jeanne F Duffy, PhD

Sean P A Drummond, PhD

Christopher J Earley, PhD, MBBSCh

Tyler J Eble

Colin Espie PhD, DSc,

Helen Emsellem

Carol A Everson, PhD

Victor B Fenik , PhD

William Fishbein, PhD

Caris Fitzgerald, MD

Judith A Floyd, PhD

Patrick M Fuller, PhD

Brian K Gehlbach, MD

Philip Gehrman, PhD

Jacqueline Genova

Kuljeet K Gill, MD

Jennifer R Goldschmied, PhD

Joshua J Gooley, PhD

Sasikanth Gorantla

Anthony L Gotter, PhD

Daniel J Gottlieb, MD

Timothy L Grant, MD

Kara S Griffin

Andrew Greenhill

Fang Han

Jonika Hash, RN

Kun Hu, PhD

Conrad Iber, MD

Michael Irwin, PhD

Soichi Katayama, MD

Thomas S Kilduff, PhD

Elizabeth B Klerman, MD, PhD

Kristen L Knutson, PhD

Ihori Kobayashi, PhD

Individual Donations (continued)

Dorit Koren
Andrew D Krystal, MD
Robert J Lapidus, MD
Kathryn A Lee, PhD, RN
Daniel S Lewin, PhD, Diplomate
Emeritus, ABDSM
Scott M Leibowitz, MD
Christopher S Leonard, PhD
Daniel G Lorch Jr. , MD
Brendan P Lucey, MD
Caroline M Lustenberger, PhD
Carrie E Mahoney, PhD
Mark Mahowald, MD
Molly M Mao, RST, RPSGT, RRT
Jennifer L Martin , PhD
Abul F Matin, MD
Thomas A Mellman, MD
Emmanuel Mignot, MD, PhD
Kiwamu Misaki, MD
Andrew A Monjan, PhD
Christian R Morales, MD
Charles M Morin, PhD
Douglas E Moul, MD
Janet M Mullington, PhD
Quan Ni, PhD
John Noel
Bruce F O'Hara, PhD
Allan I Pack, MBChB, PhD
Thomas Penzel
Raymond C Perkins, MD
Andrew Peterson
Shanna Phillips

Bharati Prasad, MD
Aric A Prather PhD
Xavier Preud'homme, MD
Adrian M Pristas, MD
David M Rapoport , MD
Susan Redline, MD
Kathryn Reid, PhD
Anstella D Robinson, MD
Dominic J Roca, MD, PhD
Ann M Romaker, MD
Mark Rosekind, PhD
Carol L Rosen , MD
David B Rye, MD, PhD
Larry M Salberg, MD, FAASM
Mark H Sanders, MD, FAASM
Yuka Sasaki, PhD
Kenneth C Sassower , MD
Steven J Scheer, MD
Carlos H Schenck, MD
Herbert H Scherzer, MD, FAASM
Edward Schuman, MD
Kazue Semba
Paul J Shaw, PhD
Katherine M Sharkey, MD, PhD
Marc Sherkin
Priyattam Shiromani, PhD
Lisa Shives
Jerald H Simmons, MD
Michael Simmons, DMD, MSc,
Diplomate, ABDSM
Neil M Skjodt, MD
Korey A Smith

Robert Stickgold, PhD
Kingman P Strohl, MD
Patrick J Strollo Jr., MD
Shannon S Sullivan, MD
Ron Sutton
Ronald S Szymusiak, PhD
Ignacio E Tapia MD
David E Thomas, MD, PhD
Maria L Thomas, PhD
Robert J Thomas, MD
Lowery L Thompson, MD, FAASM
Donald R Townsend, PhD
Eve Van Cauter, PhD
Hans P Van Dongen , PhD
Sigrid C Veasey, MD
James K Walsh, PhD
Arthur S Walters, MD
Simon Warby, PhD
Patrick Weyer
David P White, MD, FAASM
Kenneth Wiesert
Lisa F Wolfe, MD
Amy R Wolfson , PhD
Warangkhan Wongba, MD
Kenneth P Wright Jr, PhD
James K Wyatt, PhD
Paul E Wylie, MD
Yasushi Yoshida, MD, PhD
Shawn D Youngstedt, PhD
Gary K Zammit , PhD
Phyllis C Zee MD, PhD

Support the SRSF: sleepresearchsociety.org/donate.aspx



Sleep
Research
Society
Foundation

2017–2018 SRSF BOARD OF DIRECTORS

Kathryn Jean Reid, PhD—President
Northwestern University

Jeanne F. Duffy, MBA, PhD—Secretary/Treasurer
Brigham and Women's Hospital

Sean P.A. Drummond, PhD
Monash University

Andrew D. Krystal, MD
University of California San Francisco

Sara J. Aton, PhD
University of Michigan

Julie Carrier, PhD
University of Montreal

Patrick M. Fuller, PhD
Beth Israel Deaconess Medical Center

H. Craig Heller, PhD
Stanford University

Sigrid C. Veasey, MD
University of Pennsylvania

David P. White, MD
Harvard Medical School

Kenneth P. Wright Jr., PhD
University of Colorado Boulder

Janna Mantua, PhD—Trainee Member-at-Large
Walter Reed Army Institute of Research

STAFF

John A. Noel—*Executive Director*

Barbara A. Hoeft—*Coordinator*





Sleep
Research
Society
Foundation

Supporting Sleep and Circadian Research