

2016-2017 ANNUAL REPORT OF THE
**SLEEP RESEARCH SOCIETY
FOUNDATION**

Supporting & Advancing Sleep & Circadian Research





The Sleep Research Society Foundation (SRSF) provides support for growth and development in the field of sleep 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 \$1.45 million in support for research by 44 early stage scientific investigators. The SRSF has helped investigators obtain NIH and other government funding through research supported by SRSF grants.

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.



Allan I. Pack, MBChB, PhD
President
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A MESSAGE FROM THE SRSF PRESIDENT

The Sleep Research Society Foundation (SRSF) is pleased to share news and updates of the Foundation for 2016-17. The Foundation announced the fourth solicitation for the SRSF Career Development Award, receiving 13 applications of highest quality. We are indebted to our esteemed Review Committee members, under the chairmanship of Ritchie Brown, DrRerNat The Committee aligned to the NIH grant review model, scoring each of the submissions for scientific merit, mentoring, environment and plan.

On March 3, 2017, the Board of Directors accepted the Committee's Report, selecting three proposals. One proposal will study how NALCN contributes to rhythmic physiology and behavior. The study may lead to new treatments for disorders based on misalignment of endogenous clocks and exogenous rhythmic cues. Another will address if long sleep is indicative of pre-existing sleep and medical disorders, or if excessive sleep contributes independently to the development of disease. The results have implications for how sleep duration is considered: as a marker of population wellbeing to be monitored, or as a potentially modifiable risk factor for disease. The third proposal will look at the role that GABA-ergic neurons within the lateral hypothalamus play in regards to stress-induced insomnia. This project could have a far reaching impact on the development of a treatment for insomnia due to stress. 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.

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 of 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 reports on Foundation activities and the success stories of our early investigators, on the following pages of our 2016-17 annual report.

GRANTS AND AWARDS

SRSF Career Development Awards

In 2016–2017, the Sleep Research Society Foundation was again pleased to partner with industry and individual stakeholders to offer competitive research grants 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 14 applications for current awards in the fall of 2016. 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 and 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 14 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 for their proposals.

Projects funded in 2016 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 APSS 2017 meeting in Boston. 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 4, 2017.

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

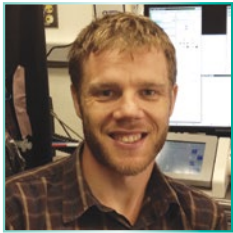
2017 CAREER DEVELOPMENT AWARDEES



Yu Sun Bin

UNIVERSITY OF SYDNEY

What is long sleep? Objective correlates of long sleep duration and prospective associations with healthcare utilization



Matthieu Flourakis

NORTHWESTERN UNIVERSITY

Role of the cationic leak channel NALCN in mammalian circadian physiology



Anne Venner

BETH ISRAEL DEACONESS MEDICAL CENTER AND
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Functional characterization of a genetically and anatomically defined sub-population underlying insomnia

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looks forward to continue to work with Jazz and Merck in the future, to continue to partner in fostering the next generation of sleep researchers. We are confident that these early career stage 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.

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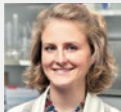

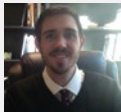
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Past Career Development Awards

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	Funding Source
2016	 Christopher Depner, PhD	University of Colorado Boulder	Mechanisms of insufficient sleep contributing to metabolic disease risk and impact from “weekend recovery” sleep	Jazz & SRSF
2016	 Jeffrey Donlea, PhD	University of California Los Angeles	Using the fruit fly to identify consequences of sleep loss in memory-encoding circuits	Jazz & SRSF
2016	 Heather E. Gunn, PhD	University of Pittsburgh	Adolescent sleep, circadian rhythmicity, and cardiovascular disease risk: a dyadic approach	Jazz & SRSF
2014-2015	 Josiane Broussard, PhD	University of Colorado Boulder	Influence of physical activity status on the effects of insufficient sleep on metabolism	Merck & SRSF
2014-2015	 Sara Biggs, PhD	Monash University	Identifying pathways for new treatment strategies for children with primary snoring	Jazz & SRSF
2014-2015	 Michael Scullin, PhD	Baylor University	Slow-wave sleep and prospective memory consolidation in aging adults	Jazz & SRSF

<i>Years</i>	<i>Early Stage Career Researcher</i>	<i>Institution</i>	<i>Project Title</i>	<i>Funding Source</i>
2014-2015	 Jon T. Willie, MD, PhD	Emory University	Reflex and murine cataplexy: proof of concept for novel therapy for narcolepsy type 1	Jazz & SRSF
2013-2014	 Joseph Dzierzewski, PhD	University of California Los Angeles	Long-term clinical outcome of hypersomnia in at-risk older adults	Jazz
2013-2014	 Jimmy Fraigne, PhD	University of Toronto	Optogenetic probing of narcolepsy/cataplexy dopamine circuitry	Jazz
2013-2014	 See Wan Tham, PhD	Seattle Children's Hospital	Sleep-wake disturbances and pain responsivity in adolescents	Jazz
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?	Sanofi-Aventis
2008-2010	 Natalia Tulina, PhD	University of Pennsylvania	Function of sleep in the regulation of stem cell activity	Takeda Pharmaceutical Company



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 has funded 31 Gillin awards since 2005, 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>Year</i>	<i>Gillin Grant Recipient</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 <i>Drosophila</i>
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?

<i>Year</i>	<i>Gillin Grant Recipient</i>	<i>Institution</i>	<i>Project Title</i>
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 Stremler	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

SRS 22ND 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-second consecutive year, a variety of trainee opportunities were offered during the SLEEP 2016 meeting in Denver. On Saturday afternoon trainees and early career researchers participated in a grant writing workshop, facilitated by noted sleep researchers. Trainees received practical information and guidance on the grant writing process, from initial planning to funding. There was also a mock NIH review, and the opportunity to have specific aims reviewed by a faculty member. 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 (requiring registration) 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 2017.

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

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