

SLEEP RESEARCH SOCIETY FOUNDATION (SRSF)

A woman in a white lab coat is adjusting an EEG cap on a man's head. The man is smiling and looking towards the camera. The woman is smiling and looking at the man's head. The background is a bright, clinical setting.

Funding Our Future Scientists

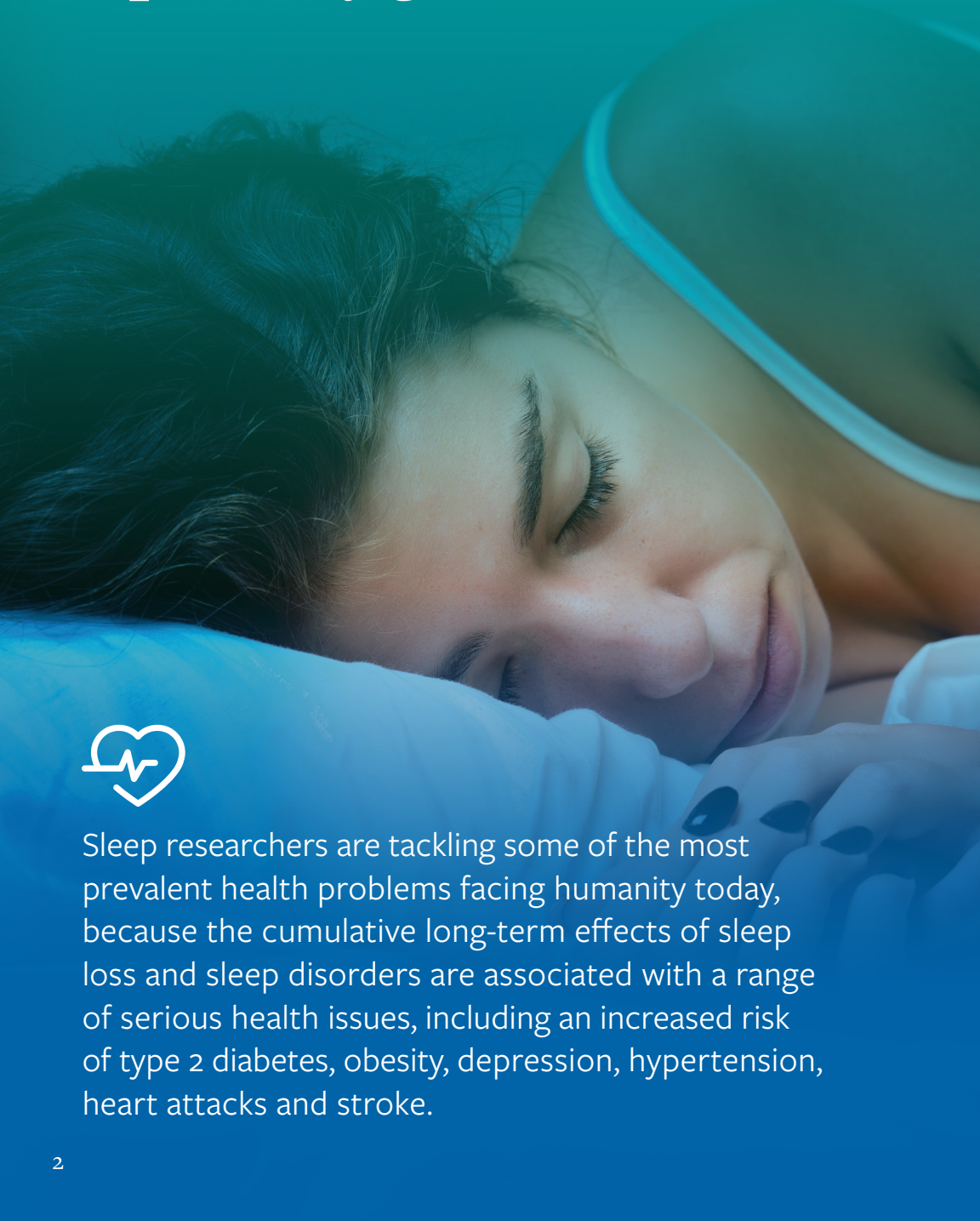
SUPPORTING EARLY-CAREER INVESTIGATORS
... AND THE FUTURE OF SLEEP RESEARCH



Sleep
Research
Society
Foundation

SLEEP

a pillar of good health



Sleep researchers are tackling some of the most prevalent health problems facing humanity today, because the cumulative long-term effects of sleep loss and sleep disorders are associated with a range of serious health issues, including an increased risk of type 2 diabetes, obesity, depression, hypertension, heart attacks and stroke.

“Developing a mechanistic understanding of the threat posed by sleep deficiency and circadian disturbance to health, healthy equity, and health disparities is an urgent challenge.”

2011 National Institutes of Health (NIH) Sleep Disorders Research Plan

Sleep loss hampers our ability to concentrate, reduces motivation and creativity, and increases irritability. Insufficient sleep jeopardizes our personal health, our workplace productivity, and the well-being of our communities.

In the United States, working days lost due to insufficient sleep and sleep disorders, account for \$411 billion in economic losses and represent 2.28 percent of our country’s GDP annually.¹

The National Academy of Medicine (NAM) has described the rising trend of insufficient sleep as “*an unmet public health problem.*”²

Thanks to breakthroughs in the field of sleep research, we are now beginning to understand the fundamental importance of sleep.

While the Sleep Research Society (SRS) and the American Academy of Sleep Medicine (AASM) recommend a minimum of seven hours of sleep per night for adults, as many as 56 percent of US adults report that they receive less sleep than needed on weeknights. Only 44 percent say that they get a good night’s sleep every night.³ The connection between poor sleep and poor health is even more startling—evidenced by the fact that 67 percent of those who reported poor quality sleep also reported ‘poor’ or ‘only fair’ health.⁴

sleep research MATTERS



Sleep has intrigued the human mind for millennia, but sleep research is a relatively recent field of inquiry. What we do know about sleep we have learned from intrepid researchers, intent on unlocking mysteries and finding answers. Over the past fifty years, sleep research has advanced our understanding of the basic biology and physiology of sleep and circadian rhythms as well as the pathophysiology of sleep disorders. For example:

Cognitive Aging and Dementia

While we have known for many years that sleep quality and quantity in older adults influences cognitive function, we are now starting to understand how and why. Slow Wave Sleep serves as a critical link between brain atrophy and memory, helping to clear toxins from the brain related to amyloid beta and tau, the two pathologies related to Alzheimer's disease. Diminished slow wave sleep in older individuals may contribute to the development of these disorders.

Obesity

It has become clear in recent years that sleep loss and the inappropriate timing of eating lead to endocrine abnormalities (e.g., changes in insulin levels and regulation) and appetite changes that ultimately contribute directly to obesity, demonstrating that proper sleep and circadian rhythms have a role to play in combating the obesity epidemic.

Childhood learning

Sleep is vital for appropriate learning. We now know sleep plays a key role in memory consolidation at all stages in life. This has critical implications for the role of sleep health in childhood learning and intellectual development. As an example, data show delaying school start times in older kids to better match their natural circadian rhythms reduces absenteeism and may lead to increased grades and performance on standardized tests.



Sleep and cancer

Altered timing in the sleep-wake cycle contributes to cancer risk. Cancer, as well as cancer treatments, in turn, cause sleep and circadian disruptions. Recent research shows we can improve sleep and quality of life by treating insomnia in patients and survivors of cancer. Exciting, cutting-edge research is demonstrating how we can use circadian rhythms to optimize the timing of cancer treatments to ultimately provide better outcomes with fewer side effects.



And, while we know that individuals differ in how they respond to sleep loss, shift work, and other sleep/circadian disruptions, we do not yet know how to predict those differences, or how to use them to decrease health and occupational risks and increase productivity. Sleep research matters, and it is vital that we continue to probe and investigate if we are to unlock these mysteries and so many more.

MAINTAINING *our momentum*



While there is no shortage of innovative thinking and ideas in the field of sleep research, there is a shortage of investigators to spearhead sleep-related research projects, specifically early-career investigators.

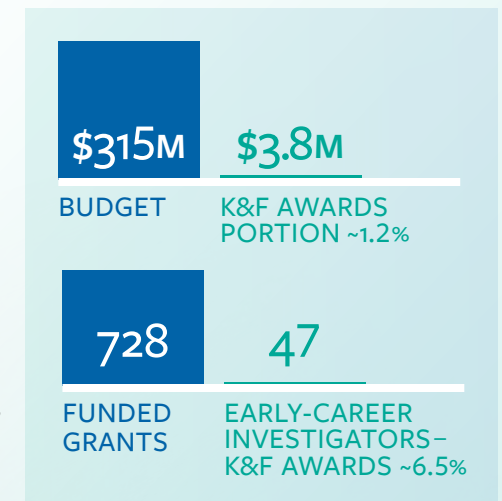
As in any scientific field, a pipeline of young investigators is crucial in order to maintain a robust research infrastructure. For sleep research, this challenge is even more daunting, in part due to the limited number of new scientists and clinician/scientists entering and remaining in the field.

This is not a new challenge. As far back as 2006, the Institute of Medicine (IoM), now the National Academy of Medicine, highlighted the “*critical paucity of sleep investigators in the training pipeline.*”⁵ In 2011, as the NIH Sleep Disorders Research Plan was being developed, it was again acknowledged that “*the current workforce of appropriately trained researchers is not adequate to address future research priorities.*”⁶ And as the current baby boom generation of senior researchers move toward retirement, the cultivation and retention of early-career investigators will become even more imperative.

The opportunities for sleep researchers have never been greater — or the need for their research more urgent. New directions and possibilities for sleep and circadian research have exploded over the last decade, involving genetics, molecular biology, physiology, epidemiology, and clinical research. Today, opportunities for research training exist in all areas of sleep and circadian biology. Experimental approaches and state-of-the-art technologies combine to make this a particularly exciting time for the field.

The alarming rise of sleep and circadian disturbances underscores the urgent need for ongoing sleep research. A recent update from the National Center on Sleep Disorders Research indicates that 31 successful new sleep Career Development Awards (K) and Individual Research Fellowships (F) are needed annually to maintain momentum in the field of sleep research.⁷

NIH'S 2016 SLEEP RESEARCH



We have a timely and unprecedented opportunity to make a difference – we have the technology, the biomedical methodologies, but most of all a pressing need. We simply need more early-career investigators in the research pipeline.

FUNDING

the future of sleep research

The Sleep Research Society and the Sleep Research Society Foundation (SRSF) are uniquely positioned to address the current critical shortage of early-career sleep researchers.

The SRS was established in 1961 by pioneers in sleep research, a group of investigators who shared a common goal — to advance sleep and circadian science. The SRS has since grown into a professional society of 1,300 researchers worldwide, from promising trainees to accomplished senior-level investigators. The Society promotes training and education in sleep research, public awareness and evidence-based policy. In addition to hosting forums for the exchange of scientific knowledge pertaining to sleep and circadian rhythms, the SRS

often partners with the American Academy of Sleep Medicine (AASM), and with international societies such as the Society for Research on Biological Rhythms (SRBR) and the World Sleep Society (WSS) on programs, services and initiatives that advance the field of sleep research.

The Sleep Research Society Foundation was established in 2005 by the Sleep Research Society Board of Directors to provide financial support for investigators and to develop the field of sleep research through education and research funding opportunities.



NICHOLAS STAVROPOULOS

“A grant from SRSF represents an important vote of confidence for a new investigator’s research program. These grants not only support a vital area of research but also serve to attract additional funding at a critical phase of one’s career. In the current funding climate, there is more need than ever for awards that support young investigators working on sleep.”

SINCE SRSF INCEPTION*



*While SRSF wouldn’t presume to take sole credit for the research careers of the grant recipients, the funding provided by the Foundation offered the critical support necessary to foster and advance those careers at a pivotal time.



The SRSF Career Development Award

The SRS Foundation recognizes the challenges of transitioning from post-doctoral training to independent research funding.

The goal of these awards is to invest in promising early-career researchers and assist with their transition into independence as junior investigators. Recipients are expected to apply for a mentored or independent federal

research award within the funding period, and the results of a recent SRSF survey reveal that 65 percent of grant recipients who responded had successfully secured additional funding for their projects.

AWARD FUNDING

 UP TO \$75,000	SRS MEMBERS +2	SUPPORT 1YR
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ADDITIONAL FUNDS SECURED TO CONTINUE PROJECTS

RANGED CONTRIBUTIONS \$17k-\$2.16M	APPROX TOTAL SUPPORT \$8.52M
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OUR PLAN



Every year we are inspired by the vision and the scope of the projects submitted for consideration.

We are thrilled to report that in the past three years the SRSF has received applications from 111 early-career investigators. Unfortunately, SRSF was able to fund only 10 of those research projects. Just imagine, however, the impact on sleep research had we been able to fund even half of those applicants.

Now, the SRSF is making a concerted effort to address the shortage of early-career researchers by substantially increasing our capacity to provide competitive seed grants. The Foundation's long-term goal is to triple the number of grants from three (3) to potentially ten (10) annually. An additional \$500,000 annually would be equivalent to 13 percent of current NIH funding for early-career investigators.

To achieve this, we are seeking \$2.5 million in new funding over the next five years.

Funding additional awards at this time represents an extraordinary opportunity to foster our future leaders and innovators. Many of these projects will have far-reaching and positive implications, helping generations of Americans and millions around the world enjoy a better quality of life. Ultimately, this work may enlighten perceptions and policies around sleep issues that impact public health and safety. It is time to invest in the future of sleep research and in those brilliant early-career investigators who will lead us into the next era of understanding of sleep and circadian biology and their disorders.

EARLY-CAREER INVESTIGATORS *need your support*

Without ongoing sleep research and healthy numbers of researchers in the career pipeline, we will not make the breakthroughs we need to address the troubling trend of inadequate sleep and sleep disorders. Without these young researchers, product innovations and the revelations that change the way we evaluate, diagnose and treat individuals who are affected by sleep disorders will never happen. By attracting and retaining the next generation of early-career investigators to the field of sleep research now, we will ensure that the most promising minds are dedicated to defining the future of our field.

The Sleep Research Society Foundation's Campaign "*Funding Our Future Scientists*" offers positive exposure to all supporters, partners and participants. We know that you are equally inspired by the promise and potential that sleep research offers. We are asking SRS members, industry partners, other stakeholders, and all supporters to help us raise the \$2.5 million in new funding needed to augment our early-career award program.

Sleep research is at a momentous crossroad, and we need to encourage researchers to remain in the field, to submit their ideas, and to continue their all-too-important research. Opportunities to make such a profound impact on a field of medicine are rare, so let us seize this opportunity together. Millions of Americans are and will be depending on the life-changing research we must fund today. We can take up that challenge together by supporting brilliant young minds and their innovative research ideas. It is within our reach to reduce the risk of disease and illness, improve on existing therapeutic approaches for our patients, and enhance public health and safety for millions.



CHRISTOPH
NISSSEN

"Being a recipient of the SRSF grant was a critically important step in my career. It allowed me to complete a smaller project on sleep and depression and to successfully apply for further research support. I strongly believe that the SRSF grant is a great funding mechanism! It is ideal to encourage young people and to further the field of sleep research."

References & Further Reading

1 Hafner, Marco, Martin Stepanek, Jirka Taylor, Wendy M. Troxel and Christian Van Stolk. *Why sleep matters — the economic costs of insufficient sleep: A cross-country comparative analysis*. Santa Monica, CA: RAND Corporation, 2016.

 rand.org/pubs/research_reports/RR1791.html

2 Colten, H. R., & Altevogt, B. M. (2006). *Sleep disorders and sleep deprivation: an unmet public health problem*. Washington, DC: Institute of Medicine.

3 2013 *International Bedroom Poll*. National Sleep Foundation.

 sleepfoundation.org/sites/default/files/RPT495a.pdf

4 *Sleep Health Index 2014 – Highlights*. National Sleep Foundation.

 sleepfoundation.org/sleep-health-index-2014-highlights

5 Colten, H. R., & Altevogt, B. M. (2006). *Sleep disorders and sleep deprivation: an unmet public health problem*. Washington, DC: Institute of Medicine.

6 2011 *National Institutes of Health Sleep Disorders Research Plan*.

 nhlbi.nih.gov/health-pro/resources/sleep/nih-sleep-disorders-research-plan-2011

7 “Survival” Plot for Fiscal Years 2008–2015 Active K and F Grants versus Project End: National Center on Sleep Disorders Research Director’s Update. Michael Twery, Director, June 22, 2017.

