Issue Highlights:

• From the Desk at NIH: Update from the NCSDR
• RECAP from the 4th Conference of the Canadian Sleep Society
• The National Sleep Foundation’s 2009 Sleep in America™ Poll
The Sleep Research Society Educational Programs Committee is excited to announce the new, fully peer-reviewed *SRS Basics of Sleep Guide, second edition*. The newly revised *SRS Basics of Sleep Guide, second edition* has been significantly expanded in both scope and content, including the addition of 10 new chapters authored by esteemed international experts covering all fields of basic and applied sleep research. Each of the original *Basics of Sleep Guide* chapters has been completely revised by the authors to reflect the ‘state of the art’ in the particular area of sleep. Many of the chapters now include ‘Sleep Pearls,’ an invaluable tool for those preparing for specialty exams associated with basic and clinical sleep sciences. The chapters and figures have also been coordinated with the new SRS Slide Sets (v1.1), providing an excellent foundation for a graduate or medical course in sleep medicine or research.

**Features:**

- Chapters are authored by over 40 internationally recognized experts
- Original 15 chapters are fully updated and expanded in content
- 10 new chapters have been added in critical areas of sleep
- Now including ‘Sleep Pearls’ especially designed for those who are studying for a specialty sleep examination
- Over 1000 references are provided throughout the Sleep Guide
- Every chapter has been fully peer reviewed
- New figures are added and coordinated with the latest SRS Slide Sets (v1.1)
- Keyword index has been added
Table of Contents

President’s Message • 4
Editor’s Column • 5
In Memoriam: Robert L. Williams, MD • 6
From the Desk at NIH: Update from the NCSDR • 9
RECAP from the 4th Conference of the Canadian Sleep Society • 11
The National Sleep Foundation’s 2009 Sleep in America™ Poll • 12
Standing Committee Updates • 13
News Briefs • 14
Domestic Laboratory Spotlight • 16
International Laboratory Spotlight • 18
New Members • 21

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Dear Colleagues,

Over the past several months since my last message, the SRS has been very busy. The Society has held a referendum on several proposed bylaw changes, held officer elections, and has set in place much of the groundwork for SLEEP 2009 in Seattle, Washington. In addition many of your fellow SRS members have been hard at work at other important society business. Here is a brief review of recent and ongoing SRS activities.

SLEEP 2009:

SLEEP 2009 will again be the premier meeting for investigators involved in sleep and circadian research. The number of session proposals and abstracts submitted for SLEEP 2009 were up significantly over 2008. This increase in submissions speaks volumes about the enthusiasm for the meeting and among investigators in our field. SLEEP 2009 promises many professional and educational opportunities for SRS members.

This year, the Keynote address will be given by Dr. Howard P. Roffwarg, a past president of the SRS, and is titled, “Participation of REM Sleep in the Development of the Brain: Starting Hypothesis, Unfolding Data, Current Perspective.” In addition to the Keynote address, SRS members, Ronald Chervin, M.D., Anne Germain, Ph.D., Barbara Jones, Ph.D., and Thomas Scammell, M.D., will each be presenting invited lectures.

Membership:

Members are the heart and soul of the SRS. Your contributions allow the society to thrive and continue to promote sleep research. During these tough economic times, many organizations lose membership as people cut back on spending. I am pleased to announce that, despite the dire conditions in the economy, SRS membership is up over this point last year. This increase speaks to the strength of our field and the value of society. Many thanks go to Dr. Strecker and the Membership Committee for their membership recruitment and retention efforts. I would like to extend a hearty thank you to all members who renewed their societal involvement this year, and warmly welcome all of our new members.

Career Development:

This year at SLEEP 2009, members of the SRS are presenting three lunchtime workshops on grantsmanship and research funding. These workshops were created as part of the SRS’s ongoing mission to enhance research funding opportunities for investigators at all levels. The three workshops will focus on different aspects of research funding and include presentations and discussions on NIH and other grant sources. Terri Weaver, R.N., Ph.D., Mark Opp, Ph.D., James Walsh, Ph.D., and Phyllis Zee, M.D., Ph.D., will be hosting these workshops.

The Educational Programs Committee under the leadership of Charles Amlaner, D.Phil., has nearly completed the second edition of the SRS Basics of Sleep Guide. The guide is a great tool for sleep and circadian researchers at all career levels. Additionally it is useful as a reference for preparing lectures, and an excellent study tool for the sleep medicine board exam. The new guide incorporates and updates the 15 chapters from the first edition and adds 10 new chapters. All of the content represents the most up-to-date material in all areas of sleep. Another new feature to the second edition of the Basics of Sleep Guide is “Sleep Pearls,” which are clinical vignettes used to highlight key concepts in selected chapters.

The Trainee Education Advisory Committee (TEAC) will again be hosting the Trainee Symposia Series on Sunday, June 7th at SLEEP 2009. The Trainee Symposia Series is a unique opportunity for students from undergraduate to post graduate status to hear from many of the top scientists in the field of sleep and circadian research. Once again this year, Dr. Jennifer Martin and TEAC have assembled an outstanding program. Following the Trainee Symposia Series is a reception and career fair. All SRS members are invited to attend this reception and meet the next generation of sleep researchers.

Professional Education:

The SRS will be presenting a half-day course, “Basic Science of Sleep for the Sleep Specialist,” August 13, 2009 in Oak Brook, IL and September 10, 2009 in Glendale Arizona. This course will be held in conjunction with the American Academy of Sleep Medicine “Board Review for the Sleep Specialist” course. Course Chairs Ruth Benca, M.D., Ph.D. and Thomas Scammell, M.D. will be joined by Gary Richardson, M.D. and Ron Szymusiak, Ph.D. in presenting this course. Preliminary registration figures for the course are promising and indicate both sessions will be well attended. For more information on the Basic Science of Sleep for the Sleep Specialist course please contact the SRS national office or visit the SRS website at http://www.sleepresearchsociety.org.

SRS Referenda:

Earlier this year, the SRS held a vote on five proposed changes to the SRS Bylaws. Three of the five proposed changes were approved by the members. Proposals to change all references of “student” in the bylaws to “trainee”; setting the time when new officers and board members take office from “at the annual business meeting” to “the end of the annual meeting”; and clarifying the Board of Directors authority to create and dissolve committees were approved.

The proposals to discontinue sections and change the minimum age of emeritus members did not receive the necessary two-thirds super majority and thus were not approved. My sincere thanks to all members who cast their vote on these proposed changes. Your input on the future direction of the SRS is greatly valued.

SRS Elections:

Earlier this spring, the SRS held elections to fill the following positions: President-Elect, three seats on the Board of Directors and
all four Section Heads. The field of candidates for these positions was impressive. I thank all candidates who ran for these leadership positions. The health and future success of a volunteer organization such as ours depends upon the hard work and sacrifice of dynamic individuals who are willing to step forward into leadership roles. I am pleased to announce the results of the elections and welcome the following to their various new societal responsibilities:

**President-Elect**
James K. Walsh, Ph.D.

**Directors-at-Large**
Sean Drummond, Ph.D.
Gina Poe, Ph.D.
David Rye, M.D. Ph.D.

**Section Heads**

- **Basic Sleep Research** – Marcos Frank, Ph.D.
- **Sleep and Behavior Research** – Michael Bonnet, Ph.D.
- **Circadian Rhythms Research** – Derk-Jan Dijk, Ph.D.
- **Sleep Disorders Research** – Ann Rogers, Ph.D., R.N.

Additionally, Brant Hasler was selected as the **Trainee Member-at-Large Elect.** He will join the Board of Directors as a non-voting Trainee Member in 2010-2011.

**Other SRS Activities:**
The SRS has a number of other activities underway. The Presidential Taskforce on Academic Sleep Centers will meet at SLEEP 2009 to discuss data collected from a survey sent to 38 existing academic sleep centers with the goal of assisting institutions throughout the country in creating their own sleep centers.

The Research Advocacy Board Subcommittee embarked on their first “Day on the Hill” and “Day at NIH” in early May. The purpose of this event was to promote funding of sleep research in Congress and at NIH.

Another endeavor in the early stages of development is a joint workshop between NIH and SRS to address critical needs in sleep research. Although this project is in its formative stages, we have high hopes that it will help address various needs of investigators, especially young investigators in sleep research.

I close this, my final President’s Message, with a heartfelt thank you for all of the contributions of individual members, committee members and the Board of Directors to the SRS over this past year. The society’s continued growth and successes could not be accomplished without each of your invaluable contributions. It has been my honor and privilege to serve as President of the SRS. I wish Cliff Saper, M.D. Ph.D. the best of luck in the coming year as President and look forward to supporting his efforts to keep the SRS growing and relevant to its members.

And I look forward to seeing all of you in my hometown of Seattle for SLEEP 2009!

Sincerely,

Michael V. Vitiello, Ph.D.
President
Sleep Research Society
In Memoriam:

Robert L. Williams, MD

Dr. Robert L. Williams, or “Bob” as he preferred to be called among friends was a key member of a group of scientists and clinicians interested in sleep in the 1960’s at the University of Florida. The “Gainesville Group” included Robert L. “Bob” Williams, Wilse B. “Bernie” Webb (with whom he wrote the book “Sleep Therapy” in 1966), Iset “John” Karacan, A. J. Block, Jack Smith, and Ralph Weaver. Back then, such sleep groups were so rare you could count them on your fingers. In the early 1970’s Dr. Williams was invited by Michael E. DeBakey to be the Chairman of the Department of Psychiatry and Neurology at Baylor College of Medicine. He accepted this position and moved to Houston, Texas (climate change adjustment not needed).

I met Dr. Williams for the first time in 1977 when interviewing for a position. He impressed me as reserved and venerable (temperate even) and not at all what I expected to find in Texas. His deportment stood in stark contrast to the zestful flamboyance of his long-time colleague John Karacan. He quite literally made me a deal I could not refuse. I have been here ever since. As department chairman, support for the sleep research, sleep medicine, and sleep educational programs was always good and “sleep” prospered. He was surprisingly quiet and thoughtfully preoccupied at times (he did have a department to run) but was a source of sage advice. In the years before he retired, he spent much of his time with administration. However, enduring interest in sleep was evident at the Tuesday and Thursday afternoon case conferences he regularly attended.

Bob asserted that to understand sleep dysfunction you first had to determine what was normal. Throughout the 1960’s and into the 1970’s he helped develop and refine recording technique and establish normative sleep values for men and women across the lifespan. This almost Herculean task was performed with some of the earliest model polygraph equipment that used paper recordings (the microfilm of which still exists for some records). Data was keypunched onto cards for mainframe analysis. It was all very high-tech at the time but it now looks like stone-knives and axes. It was grueling, hard work. However, Bob Williams was a quiet but determined, single minded force when he pursued something. Interestingly, he developed EEG recording and scoring approach that now after 45 years is being reinvented as new. Our sleep records were staged using central, frontal, and occipital EEG in conjunction with left and right EOG. In some ways, Bob may have been too far ahead of the curve. Certainly, his most enduring published work was the book “The EEG of Human Sleep: Clinical Applications” (Williams, Karacan, and Hursch, 1974). The data from this work were used for decades, and are still in use today, as norms. This was followed in 1976 by The Pharmacology of Sleep. Two years later, Williams and Karacan published one of the first major volumes devoted to Sleep Disorders (Sleep Disorders: Diagnosis and Treatment, 1978).

Robert L. Williams, MD was a pioneer in our field. He died the end of November 2008. He lived in retirement on Galveston Island. He managed to survive hurricane Ike but with his passing we lost one of the unsung pioneers of sleep medicine and research.

By Max Hirshkowitz, PhD
Baylor College of Medicine and DeBakey VAMC
Many recent studies have shown that sleep plays an important role in the consolidation of memory\(^1\) including emotional memories.\(^2\) Extinction (defined below) is a form of emotional memory that both is important to normal emotion regulation and that bears particular relevance to the pathophysiology and treatment of anxiety disorders including post-traumatic stress disorder (PTSD).\(^3\) Sleep is markedly disturbed in certain anxiety disorders including PTSD, generalized anxiety disorder and panic disorder.\(^4\) Therefore, in such disorders, poor sleep may interfere with memory processes, such as extinction, by which emotions such as fear and anxiety are normally regulated. Although facilitative effects of sleep on extinction have been demonstrated in rats,\(^5\) such effects have not until recently been reported in humans. Researchers at Massachusetts General Hospital (MGH) have now demonstrated that normal sleep promotes generalization of extinction learning.\(^7\)

Extinction is a process by which the expression of conditioned fear is reduced.\(^1\) Fear conditioning occurs when an emotionally neutral stimulus is associated with an inherently aversive experience (termed an unconditioned stimulus or US), thereby becoming a conditioned stimulus (CS) with the capability, on its own, to evoke a fearful response (termed a conditioned response or CR). When the CS is subsequently presented repeatedly without the US, extinction (reduction) of the CR typically takes place. Extinction does not erase the conditioned fear memory. Instead, it creates a new memory that coexists and competes with it when the CS is again encountered.\(^1\) The well-documented phenomena of spontaneous recovery, renewal, and reinstatement of conditioned fear demonstrate that the original CS/US association remains in memory.\(^12\)\(^-\)\(^14\)

The MGH study examined the effects of normal sleep on the retention of extinction of an experimentally induced conditioned fear. Healthy young adult volunteers were assigned to Sleep and Wake groups and participated in the protocol of Milad et al.\(^13\) This protocol consists of 4 experimental phases. Habituation, Conditioning, and Extinction occurred, in this order, either between 8:30 and 10:30 AM (Wake group) or 7:30-9:30 PM (Sleep group). Extinction Recall was then tested 12 hr later, at 9:30 PM in the Wake group (following 12 hours of waking) or at 8:30 AM in the Sleep group (following a 12-hour period containing a normal night’s sleep).

At their initial laboratory visit, subjects first chose a level of mild electric shock that was “highly annoying but not painful” by being administered shocks of increasing intensities through electrodes connected to two fingers. They were told that this level of shock would be used throughout the experiment. In fact, shocks were only administered during the Conditioning phase. The CS’s consisted of digital photographs of three differently colored lamps displayed on a computer screen within the image of two different photographic environments (contexts). One environment served as the “conditioning context” in which the US accompanied certain CS’s (termed CS+) during the Conditioning phase. The other was the “extinction context” in which CS+’s were presented without US’s during subsequent Extinction and Extinction Recall phases.

Before each experimental phase except Habituation (when they were simply exposed to CS’s and contexts), subjects were told they “may or may not be shocked.” During Conditioning, two different lamp-color CS+’s were repeatedly presented in the conditioning context, and a 0.5-sec US (i.e., shock) immediately followed some but not all of them (a “partial reinforcement” procedure that prevents too-rapid extinction). A third lamp color (termed the CS-) was repeatedly presented but was never paired with the US. During the Extinction phase, one CS+ color, termed the CS+E, was repeatedly presented in the extinction context, along with CS-’s but no US’s. The other CS+ color, the CS+U, did not appear and therefore remained un-extinguished. Twelve hours later, prior to the Extinction Recall phase, subjects were told to use their memory of their first laboratory visit to predict if and when they would be shocked. They were then shown equal numbers of CS+E’s and CS+U’s in the extinction context, again with CS-’s but no US’s. The measurement of conditioned fear to the CS+E and CS+U was skin conductance response (SCR), reflecting palmar sweat, a reliable index of sympathetic activation.

During Conditioning, SCR’s to the CS+’s did not differ between Sleep and Wake groups indicating that comparable fear conditioning was achieved in the two groups. At Conditioning, SCR’s to the CS+E and CS+U also did not differ, as would be expected since they were only later differentiated. However, during the Extinction Recall phase 12 hours later, there was a significant interaction between the Sleep vs. Wake and the CS+E vs CS+U effects. This interaction occurred because, in the Sleep group, SCR’s did not significantly differ between the CS+E and CS+U, whereas in the Wake group SCR’s to the CS+U were significantly larger (Figure 1, lower two graphs). Moreover, at Extinction Recall, although the CS+E did not differ

![Figure 1](image) —Average SCR to the extinguished (CS+E) and unextinguished (CS+U) CS+ in the two groups during each trial of the Extinction Recall phase. µS\(^{1/2}\), square-root transformed SCR in micro-Siemens, * p < 0.05, ** p < 0.01, bars are standard errors.

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**Sleep Research Highlight:**

between groups, SCR to the CS+U was significantly greater in the Wake versus the Sleep group (Figure 1, upper two graphs).

Because it was the CS+U and not the CS+E that differentiated the groups, this difference resulted from diminished responding to the unextinguished CS+ in the Sleep group rather than loss of extinction memory for the extinguished CS+ in the Wake group. In other words, subjects with an intervening period of sleep responded to the CS+U as if it had been extinguished, even though it had not been. Sleep, therefore, promoted generalization of extinction memory from an extinguished CS+ (CS+E) to a similarly conditioned but unextinguished CS+ (CS+U).

Sleep-facilitated extinction generalization has implications for the exposure-based cognitive behavioral therapy of PTSD, a disorder in which prominent sleep abnormalities occur. Extinction generalization is essential for successful exposure therapy since, outside the treatment context, the patient will encounter feared stimuli differing from the specific stimulus extinguished in therapy. If therapeutic extinction fails to generalize to different exemplars of a feared category of stimuli, maladaptive fearful responding may recur in vivo. It is possible, therefore, that scheduling exposure therapy sessions in the evening, in proximity to sleep, might promote therapeutic extinction generalization. Additionally, behavioral or pharmacological augmentation of post-therapy sleep quality may help PTSD patients generalize what they have learned in therapy. Moreover, since REM sleep is important to emotional memory and specifically disrupted in PTSD, pharmacotherapeutic strategies concurrent with psychotherapy for PTSD might strive to minimally impact REM.

References


Edward F. Pace-Schott, Ph.D.
Harvard Medical School
**From the Desk at NIH:**

**Update from the NCSDR**

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**Sleep Disorders and Circadian Biology Research at the National Institutes of Health**

In recognition that sleep disorders are a major public health concern, the United States Congress established the National Center on Sleep Disorders Research (NCSDR) in 1993 to facilitate government-wide coordination of sleep disorder awareness, research, and training activities. As an office of the National Heart, Lung, and Blood Institute, the NCSDR (http://www.nhlbi.nih.gov/sleep) is a point of contact for the Trans-NIH Sleep Research Coordinating Committee (SRCC), coordination with the Centers for Disease Control and Prevention, partnerships with non-governmental organizations, and the public. The profile of sleep and circadian research supported by the NIH has changed significantly since 1993. The pace of discovery has also accelerated with sleep and circadian-related research and training activities present across the NIH (Figure 1).

The Sleep Disorders Research Advisory Board (SDRAB) at its meeting on April 14, 2009, advised the NCSDR to initiate a revision of the NIH Sleep Disorders Research Plan with tentative plans for publication in mid-to-late 2010. In brief, the plan revision aims to set research goals and enumerate objectives that are potentially implementable within three to five years. Scientific priorities and strategies for implementation will be developed from visions shared by scientists, clinicians, and public and private community stakeholders. The core of the plan will highlight the capabilities, emerging needs, and expected outputs of “tomorrow’s” sleep and circadian research.

As a step towards revising the sleep research plan, NCSDR organized a public conference April 13-14, 2009, centered on the theme of “Sleepiness and Health Related Quality of Life” at the NIH Campus in Bethesda, MD. The agenda showcased recent advances and future directions in sleep and circadian research supported by sponsors including NHLBI, NIAAA, NICHD, and NINDS in the behavioral and neurobiological sciences. Staff from the Centers for Disease Control and Prevention and NCSDR presented new findings from multiple health surveillance data sources suggesting that sleepiness, insufficient rest, and short sleep duration are pervasive conditions frequently affecting 20-40% of U.S. adults. Other presentations by NIH funded scientists highlighted risks that excessive sleepiness posed to public health including work-related psychosocial stress, work-family conflict, motor vehicle crashes, risks associated with alcohol and drug use, young adolescent behavior, and the impact on academic performance. Advances in the genetics and biology of sleepiness and hypersomnina, and its impact on brain and cardiometabolic health risks were also presented. A workshop summary will be posted on the NHLBI webpages shortly (http://www.nhlbi.nih.gov/resources/docs/).

A formal solicitation and instructions for submitting comments on five year goals and objectives for the Sleep Research Plan will be announced shortly. SDRAB will assimilate the public comments and, through discussion with NCSDR and the Trans-NIH SRCC, develop strategies for implementation that take into account the interdependence of stakeholders. The NIH overall mission to improve public and global health includes sleep disorders among 200+ categories of biomedical research (http://report.nih.gov/rcdc/categories/). In the broadest view, strategies presented in the revised plan will aim to harmonize sleep and circadian research goals with the larger NIH framework of missions, resources, and strategic research management practices. However, the initiative of individual researchers and teams of investigators remains the key to future accomplishment. Submission of scientifically compelling applications that are recognized as highly meritorious in peer review is the penultimate intermediary goal in driving the biomedical research process forward. Sleep and circadian biology research is heavily dependent on time-consuming and sophisticated data collection. Opportunities to coordinate study protocols, data sharing, and strategic collaboration may be increasingly important in developing successful proposal strategies. No less important is the timely dissemination of findings to scientific communities, health care providers, the public, and policy makers. Non-governmental organizations have a “stake” in the sleep research plan and can contribute significantly to effective dissemination across stakeholder communities.

The last decade has brought stunning advances in sleep and circadian biology spanning genetics, large-scale biology, behavior, and the practices of health care providers. There are abundant new opportunities for discovery, translation, and application in public health domains as diverse as the prevention and treatment of cardiovascular disease, diabetes, and motor vehicle accidents. The revision of the NIH sleep disorders research plan will identify several potential goals and suggest several key directions where new advances towards improved public and global health can be anticipated.

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**Figure 1—Distribution of sleep and circadian research grants in various NIH Institutes and Centers in fiscal year 2008. Grants were identified by the NIH Research, Condition, and Disease Category (RCDC) system. All extramural and intramural research grant mechanisms are included. Source: http://report.nih.gov/rcdc/categories/, April 2009.**
Daniel Lewin, PhD  
Director, Sleep Disorders Medicine Program  
National Heart, Lung, and Blood Institute  

Aaron Laposky, Ph.D.  
Director, Sleep and Neurobiology Program  
National Heart Lung and Blood Institute  

Michael Twery, PhD  
Director, National Center on Sleep Disorders Research  
National Heart, Lung, and Blood Institute  

**Selected Web Resources**

**List of NIH Institutes and Centers Participating in the Sleep Research Coordinating Committee**

Program Official Contacts Representing Sleep and Circadian Biology  
http://www.nhlbi.nih.gov/about/ncsdr/comm/comm2.htm

**SleepRFA-L (National Center on Sleep Disorders Research)**

Selected NIH and Federal announcements of potential interest to the sleep and circadian research community. View archives and self-subscribe to the listserv at the website listed below.  
https://list.nih.gov/archives/sleeprfa-l.html

**NIH Research Portfolio Online Reporting Tool (RePORT)**

Various reports and searchable databases including success rates by mechanism and Institute.  
http://report.nih.gov/

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**Slide Sets**

*(version 1.1)*

to Accompany the  

**SRS Basics of Sleep Guide**

The slide set series developed by the SRS Educational Programs Committee includes comprehensive and up-to-date slide sets based on the *Basics of Sleep Guide*. Ten, hour-long lectures in PowerPoint format have been crafted by internationally-recognized expert authors. This peer-reviewed slide set serves as a tool for a variety of audiences from advanced high school education programs and graduate students to PhD/MD professionals. With its supporting text and references in Notes pages, the slide set is easy to use whether you are an expert speaker or a beginner.

To order your slide set visit www.sleepresearchsociety.org or write to:  
Sleep Research Society, One Westbrook Corporate Center, Suite 920, Westchester, IL 60154, U.S.A.  
Email Nick Cekosh at: NCekosh@srsnet.org
The 4th Conference of the Canadian Sleep Society (CSS), “Waking Up to Sleep Disorders”, was held April 26-28, 2009 at the Downtown Eaton Marriot in Toronto, Ontario, Canada. With approximately 750 registrants and international participation, the conference was a great success. The varied 2.5 day program included 7 keynote speakers, scientific symposia, sessions for students and technologists, technical workshops, posters, and industry exhibitors.

**Keynote speakers included:**

- **Irene Tobler**, University of Zurich, “Sleep regulation in animals”
- **Derk-Jan Dijk**, University of Surrey, “Sleep/wake regulation: Circadian, homeostatic and genetic components”
- **Mary A. Carskadon**, Brown University, “Sleep & Sleepiness in Adolescents”
- **Eus Van Someren**, Netherlands Institute for Neuroscience and VU Medical Center, “Melatonin and light treatment in dementia”
- **Charles Morin**, Laval University, “Insomnia: From epidemiology to treatment”
- **Ruth Benca**, University of Wisconsin-Madison, “Sleep, seasonality and mood”
- **Doug Bradley**, University of Toronto, “Sleep apnea and cardiovascular disorders”

Symposia organized by members of the CSS included topics such as: Dental Sleep Medicine, Public Health, Sleep Deprivation, Sleep/Wake Regulation, Fatigue in the Workplace, Sleep Spindles, Sensory and Motor Regulation of Upper Airways in Sleep, Narcolepsy, Insomnia, Sleep in Pregnancy and Menopause, and Children’s Sleep.

Technical workshops were popular with technologist members and included Pediatric PSG, Sensor Technology, Portable Monitoring, Coping with Night Work, Mask Fitting, CPAP Compliance, New Scoring Rules for Francophone Technologists, and BRPT Exam Eligibility Requirements for Canadians.

In addition, a number of other events took place including: an evening lecture with Dr. David White on “The Future of Sleep Medicine” (Hosted by Respironics) followed by dancing with the band “Catch 22”; A “Sleep Professionals Social” (Hosted by ResMed and Praxair) at the Hard Rock Café, and a SALSA PARTY (Hosted by CSS), which included dancing and sizzling Latin music with Toronto’s own *Casavita Latin Rhythms*.

The **Distinguished Scientist Award** went to Dr. Carlyle Smith (above R pictured with Robert Ogilvie, Ph.D.) of Trent University for his significant contributions to the area of sleep and memory research. In true Canadian-style, Carlyle was presented a hockey jersey (with CSS logo and colours) to acknowledge his accomplishments. A biosketch of Carlyle and a list of his publications can be found on our website [http://www.css-meeting.ca/cssawards.htm](http://www.css-meeting.ca/cssawards.htm).

The **Roger Broughton Young Investigator Award** for early career contributions to sleep research went to Dr. Jean-François Gagnon of the Université de Montréal for his work on REM sleep behaviour disorder (RBD) and its association with neurodegenerative diseases. See [http://www.css-meeting.ca/cssawards.htm](http://www.css-meeting.ca/cssawards.htm) for a full list of publications.

The first **CSS Outstanding Student Achievement Award** for the scientific merit of a single publication by a student in the field of sleep research went to **Patti Brooks** of the University of Toronto:


Thank you to all of those who participated in the conference, from the organizers and reviewers to the speakers and delegates. It was a tremendous success and we hope to see you at the next CSS sleep conference in *Quebec City, 10-15 September 2011*. Visit the CSS website for updates: www.css.to.

Helen Driver, PhD, RPSGT, DABSM

CSS President

Kimberly Cote, PhD

CSS VP Research and Scientific Program Chair

Shelly Weiss, MD

CSS VP Clinical and Local Organizing Committee Chair
The National Sleep Foundation’s 2009 Sleep in America™ Poll

Key Findings

The National Sleep Foundation recently released the results of its annual Sleep in America™ Poll to kick off National Sleep Awareness Week 2009. One thousand Americans were interviewed about their sleep, health status, and health-related habits. The poll’s findings suggest that inadequate sleep is associated with unhealthy lifestyles and negatively impacts health, safety, and performance.

NSF’s Sleep in America™ poll reveals striking disparities in the sleep patterns, health habits, and quality of life between healthy and unhealthy Americans. Those in poor health are twice as likely to be in poor health to report being unable to work efficiently, exercise or eat healthy because they are too sleepy.

In addition, insufficient sleepers are significantly more likely than those who get adequate sleep to report being unable to do various healthy activities because they are too sleepy. They are twice as likely to be unable to work well and efficiently (21% vs. 9%) and more than three times as likely to be unable to exercise (28% vs. 8%) or eat healthy (23% vs. 7%).

An Overview of NSF’s Sleep in America™ Poll, 2009

The number of people reporting sleep problems has increased 13% since 2001. In the past eight years, the number of Americans who sleep less than six hours a night has jumped from 13% to 20%, and those who reported sleeping eight hours or more dropped from 38% to 28%. The average adult says that they need 7 hours and 24 minutes to function at their best, but report getting only 6 hours and 40 minutes of sleep on a typical workday or weekday.

Two out of every ten Americans sleep less than six hours a night. People sleeping too few hours report being too tired to work efficiently, to exercise or to eat healthy. Nearly 40% of these Americans sleeping too few hours have driven when drowsy at least once a month in the past year and nearly 90% report symptoms of insomnia at least a few nights a week in the past month.

Lack of sleep is creating a major public safety problem as well—drowsy driving. The 2009 NSF poll finds that more than one-half of adults (54%) – potentially 110 million licensed drivers – have driven when drowsy at least once in the past year. Nearly one-third of drivers polled (28%) say that they have nodded off or fallen asleep while driving a vehicle.

The National Sleep Foundation released the poll results as part of its annual National Sleep Awareness Week, held March 1 – 8. To read the complete Summary of Findings, please visit www.sleepfoundation.org.

Sleep and the Economy

The poll also found that nearly one-third (27%) of Americans are losing sleep over the U.S. economy and financial concerns at least a few nights a week. Other national and global issues are affecting their sleep to a much lesser extent: healthcare costs (8%), the war in Iraq or Afghanistan (6%), global warming (3%), and/or the threat of terrorism (3%). More than half (54%) of those losing sleep over economic concerns had difficulty with their feelings at least a few days a week in the last month.

People losing sleep over the economy and other issues were found to be more likely to report that their sleep needs are not being met and engage in unhealthy behaviors. Compared to others surveyed, this group is more than twice as likely to sleep less than six hours on a typical weekday, eat foods high in sugar or carbohydrates, smoke a cigarette, or drive while drowsy at least once a month.

“With the economy worsening, we are seeing patients in our clinic who have told us that they would not be returning for treatment because they or other family members have lost their jobs, and they are concerned about costs,” says Meir Kryger, MD, Director of Research and Education at Gaylord Sleep Services. “Some patients have elected not to be treated for sleep apnea because they could not afford the co-pay for the equipment. These patients may wind up far sicker.”

Poll Methodology

The 2009 Sleep in America™ poll uses a random sample of 1,000 head of household adults at least 18 years of age who were interviewed by telephone last fall. The margin of error is plus or minus 3.1%. The poll was independently developed by the National Sleep Foundation.

2009 Sleep in America™ Poll Taskforce

Amy Wolfson, PhD, Professor of Psychology, College of the Holy Cross
Michael V. Vitiello, PhD, Professor, Psychiatry and Behavioral Sciences, U.W.; and Associate Director, Northwest Geriatric Education Center, Psychiatry and Behavioral Sciences, University of Washington
Woodie Kessel, MD, MPH, Assistant Surgeon General, USPHS (Retired)
Janet Croft, PhD, Chief, Emerging Investigations and Analytic Methods Branch, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention
Susan Redline, MD, MPH, Professor of Pediatrics and Medicine, Case Western Reserve University, Case School of Medicine

National Sleep Foundation’s National Sleep Awareness Week Professional Events

Pain and Sleep: A Scientific and Clinical Conference

Pain and Sleep: A Scientific and Clinical Conference was held March 1-2 at the Gaylord in National Harbor, MD to commence National Sleep Awareness Week 2009. Gilles Lavigne, DMD, PhD...
and Timothy Roehrs, PhD co-chaired the event. This one and a half day CME program was the most comprehensive course on pain and sleep to date.

The syllabus covered basic epidemiology through to the behavioral and pharmacological management of pain and sleep. The 20 faculty members included Michael V. Vitiello, PhD; Eric Nofzinger, MD; Meir H. Kryger, MD; Thomas Roth, PhD; and Ralph Lydic, PhD. Nearly 150 sleep clinicians, pain specialists, primary care physicians, registered nurses, and sleep techs attended.

Jennifer Cowher
National Sleep Foundation

Podcasts of select lectures will be available at sleepfoundation.org in the coming weeks. SRS members are invited to attend next year’s National Sleep Awareness Week professional events.

Jennifer Cowher
National Sleep Foundation

Research Committee Report

The primary responsibility of the Research Committee has been to review applications for the SRS Foundation’s small grants program. This highly successful program began 4 years ago when the Gillin and Weitzman grants were introduced. The Gillin grants support pilot studies by early career investigators, while the Weitzman grants provide bridge funding for investigators who submitted an application to NIH that received a positive review but did not get funded. This year we also assumed responsibility for reviewing the Young Investigator Award. The Committee reviewed 15 Gillin applications, 3 Weitzman applications and 17 Young Investigator Award applications. Applications are reviewed by 3 reviewers with expertise in the area relevant to each application and rankings are forwarded to the SRS Foundation for funding decisions.

The committee also drafted a letter for the SRS Board of Directors to Tom Insel, MD, Director of NIMH in response to the omission of any mention of sleep research from the NIMH Strategic Plan. Through these activities the Research Committee aims to aid the SRS to achieve its goal of advancing sleep research. I would like to thank our committee members, our outside reviewers, and the SRS staff for their hard work in advancing this worthy goal.

Andrew D. Krystal, M.D., M.S.
Committee Chair

Trainee Education Advisory Committee (TEAC)

The Trainee Education Advisory Committee (TEAC) has been hard at work organizing the 14th Annual Trainee Symposia Series (TSS) to be held at SLEEP 2009. The TSS program is in the final stages and a preliminary program can be viewed on the APSS website. This year the TSS will begin with a keynote address by Derk-Jan Dijk, PhD. During the day, trainees will take part in a series of scientific and professional development workshops. This year, there will be two extended sessions offered to provide training in writing NIH post-doctoral and K-award grants. As always, this event would not be possible without the generosity of the over 40 faculty members who will volunteer their time to take part in the day’s activities. The day will conclude with a reception and career fair where approximately 25 institutions with training programs in sleep research will be represented.

In addition, TEAC will provide travel awards to approximately 50 students with highly-ranked abstracts submitted for presentation to the meeting and to a select group of trainees attending the SLEEP meeting for the first time.

In an effort to continue our program evaluation activities, we also are working on a survey that will be distributed to trainee members of the SRS to help TEAC evaluate and improve our programs in the future.

Finally, the next Trainee Member-at-Large Elect was announced this past month. TEAC looks forward to the addition of Brant Hasler to the committee this June as Eliza Van Reen, PhD rotates off the committee and Sara Nowakowski, PhD assumes the roll of Trainee Member-at-Large for the 2009-2010 year.

Jennifer Martin, Ph.D.
Committee Chair

Jennifer Cowher
National Sleep Foundation

Jennifer Cowher
National Sleep Foundation
Peretz Lavie Elected to Presidential Post

Professor Peretz Lavie, a psychologist and pioneer of Israeli sleep medicine, has been elected president of the Technion-Israel Institute of Technology in Haifa, Israel. He was chosen by the academic executive from among a dozen candidates, who originally numbered more than twice as many. The Technion’s board of directors will formally approve the decision in June and he will begin serving his term in October 2009.

Among his numerous accomplishments, Dr. Lavie established the country’s first sleep lab to diagnose sleep disorders in 1979, when the field was embryonic, and also participated in the opening of Harvard University’s own sleep lab in Boston. He was responsible for the cancellation of “zero hour” classes in Israeli schools due to poor functioning by pupils early in the morning and the use of the “Silent Channel” on radio during the First Gulf War, an open channel that would allow for undisturbed sleep and sound a siren only when there was actual danger. He is the editor-in-chief of the Journal of Sleep Research, author of the best-selling book The Wonderful World of Sleep and seven others, as well as more than 300 publications in medical journals. Congratulations to Dr. Lavie for this outstanding achievement!

SRS Board Review Course Update

The Sleep Research Society will be hosting the Basic Science of Sleep for the Sleep Specialist course in conjunction with the American Academy of Sleep Medicine (AASM) Board Review for the Sleep Specialist course twice - on August 13, 2009 at the Hyatt Lodge in Oak Brook, Illinois, a suburb of Chicago, and on September 10, 2009 at the Renaissance Glendale in Glendale, Arizona, a suburb of Phoenix. Individuals must be registered for the Board Review for the Sleep Specialist course to attend the Basic Science for the Sleep Specialist course.

The Basic Science of Sleep for the Sleep Specialist course is a half-day course that will cover content areas for ABMS sleep medicine exam preparation including sleep-wake mechanisms, neurophysiology; chronobiology/neurophysiology; organ systems physiology; and basic sleep-wake pharmacology.

For more information on both the SRS Basic Science of Sleep for the Sleep Specialist course and the AASM Board Review for the Sleep Specialist, visit www.sleepresearchsociety.org.

Circadian Disruption and Cancer Conference

This 1-day meeting will bring together both established and young career cancer biologists, epidemiologists, geneticists, molecular biologists, oncologists and chronobiologists to exchange information and determine the systemic, cellular and molecular mechanisms by which circadian disruption increases cancer incidence and cancer growth rate. Participants will discuss cutting-edge, novel scientific and clinical research on the complex relationship between circadian rhythm disruption and cancer. The potential implications of this comorbidity for therapy and even for prevention will be also addressed.

The conference will take place June 19, 2009 at the New York Academy of Sciences in New York City.

For more information, please visit: http://www.nyas.org/cancer-circadian

Australasian Sleep Association Annual Meeting

The Organizing Committee would like to invite you to the 2009 combined ASA & ASTA Annual Scientific Meeting, Visions of the Night: Sleep, Science and Research on the World Stage, to be held at the Sofitel Melbourne on Collins, October 8-10, 2009. The meeting will explore the importance of sleep for good health and function, as well as the impact of disease and lifestyle factors on this function.

For more information on the ASA Annual Meeting please visit: http://www.sleep.org.au/meetings.html

NHLBI - Phase II Clinical Trials of Novel Therapies for Lung Diseases (U01) RFA-HL-10-003

The National Heart, Lung, and Blood Institute has announced a new cooperative agreement program to conduct proof-of-concept Phase II clinical trials that test a novel intervention for a lung disease or a cardiopulmonary disorder from sleep. The potential for substantially changing clinical management must be addressed.

For more information please visit: http://grants.nih.gov/grants/guide/rfa-files/RFA-HL-10-003.html

NIH Institutes “Enhanced Peer Review”


JOIN SLEEPRAFA-L@LIST.NIH.GOV!

SLEEPRAFA-L@LIST.NIH.GOV is a listserv that generates NIH initiatives of potential interest to sleep and circadian researchers. To join SLEEPRAFA-L@LIST.NIH.GOV, contact Michael Twery, Ph.D. at twerym@NHLBI.NIH.GOV.
Domestic Laboratory Spotlight

RESEARCH INTERESTS

Research in the lab focuses on the role of sleep in human brain function, especially the impact of sleep (and lack thereof) on: learning and memory, brain plasticity, emotional regulation, clinical mood disorders and aging. We tackle these questions using a multimodal imaging approach, including functional and structural MRI, neurophysiological, psychophysical and cognitive techniques. The lab is located in the department of psychology at the University of California, Berkeley, in association with the Helen Wills Neuroscience Institute and the Henry H. Wheeler Jr. Brain Imaging Center.

CURRENT RESEARCH

The lab currently has two broad research programs that investigate the interaction between 1) sleep & memory, and 2) sleep & emotion (for review, see Walker 2009).

1) Sleep & Memory: Our first main track of research explores the role of sleep in human memory processing, and its relationship to brain plasticity, in healthy and disease populations. We study numerous memory types, from declarative learning systems to procedural skill systems. We are interested in understanding how sleep impacts the different developing steps of human memory, including encoding, consolidation and integration. We continue to explore the role of sleep in preparing key brain regions for the initial formation or “encoding” of new human memories. Previously, we have shown that sleep deprivation markedly impairs the ability of the human hippocampus to record new facts (Yoo et al., 2007a). We are now interested in how these types of encoding deficits differ according to the emotional salience of the material being learned, and also whether sleep loss in the elderly is a causal factor underlying the cognitive hallmark of aging – poor memory. Additionally, we are investigating the role of sleep in the subsequent offline “consolidation” of both declarative and procedural memories. These studies investigate whether sleep triggers an overnight, plastic reorganization of memory at a systems-level, thereby enhancing retrieval the following day (Walker et al. 2002, 2003). Using combined EEG-fMRI technology, we are also examining whether the brain actually reactivates or “replays” recently learned information during different stages of sleep. Most recently, we have demonstrated that sleep not only consolidates individual memories, but intelligently associates and cross-links new memories together, thereby identifying interconnected relationships – the basis of creativity (Nishida et al., in press; Ellenbogen et al. 2007). We are currently examining the role of specific sleep-stage cortical oscillations in facilitating these processes. In summary, it is our hope that such neurocognitive studies will bridge the gap between brain and behavior, offering a comprehensive understanding of how sleep modulates learning, memory and brain plasticity.

2) Sleep & Emotion: Our second research program examines the benefit of sleep, and the impact of a lack thereof, on human emotional brain function. Our recent findings indicate that just one night of sleep loss results in a hyper-limbic brain response to negative affective challenges, and that this amplified amygdala activity is associated with a loss of top-down prefrontal control (Yoo et al., 2007b). Thus, sleep appears to “reset” the correct brain reactivity to next-day social and emotional challenges by maintaining functional integrity of this prefrontal-amygdala circuit. Building on these findings, we are now examining how sleep and sleep loss may modulate our reaction to—and recognition of—different types of emotions (e.g. fear, anger, sadness, happiness), and whether specific sleep-stage physiologies orchestrate these brain processes (Nishida et al., in press). Using such experimental probes, we are also beginning to translationally examine several clinical populations that exhibit co-occurring sleep loss and emotional dysfunction. We hope this program of combined basic and clinical research will provide key insights into the pervasive relationship between sleep disruption and mood disorders (e.g. major depression, PTSD), which instead of being viewed as co-occurring, may in fact be more causally related.
Technical Capabilities

The lab is equipped with an array of technical equipment to examine human behavior and brain function at a variety of descriptive levels, affording the ability to triangulate cognitive performance, sleep physiology and functional brain anatomy. Facilities include:

- Isolated human polysomnographic sleep recording rooms with full digital polysomnographic acquisition systems
- High-density EEG recording abilities
- Custom power spectral EEG analysis software
- Custom structural and functional MRI analysis software
- 2 MRI machines (4T and 3T)
- MRI compatible EEG recording system
- Wrist actigraphy monitoring
- Isolated cognitive testing suites
- Autonomic physiology measures

Training Opportunities

Our group offers research opportunities for PhD students, Master’s students and Undergraduate students through the universities’ Psychology and Neuroscience programs, as well as postdoctoral fellows and visiting research scientist positions.

Representative Publications


activities focused on the specific role of monocytes, lymphocytes and neutrophiles and their interactions with endothelial cells in this process, and recently on the important involvement of platelets. One of our major research achievements was the development of a novel technology to measure peripheral arterial tone that enables the measurement of respiratory events during sleep as well as different sleep stages, based on digital blood flow patterns alone. The same technology allows us to address the subject of endothelial dysfunction in sleep apnea as well as in pregnant women with pre-eclampsia. We found that they experience both OSA and endothelial dysfunction, which may contribute to hypertension. Using the clinical sleep laboratory computerized database that includes detailed information on more than 50,000 patients, we are able to investigate mortality among sleep apnea patients as well as a variety of clinically-related endpoints.

Another area of our group’s research interests is sleep disturbances in children, including sleep-disordered breathing, movement disorders in sleep, the autonomic nervous system function during sleep, and the relationship between sleep disturbances and attention deficit hyperactive disorder. We have developed a novel treatment regimen for rhythmic movement disorder, which we clinically apply and gain good success rates. By enforcing sleep restriction we have shown that the sleep pressure of these children increase, and the rhythmic movements decrease. This also suggests that the mechanism of rhythmic movements is in fact a self-soothing behavior (to aid the child falling asleep) rather than a motion disease.

**Current Research Projects**

1) **Leukocytes atherogenic phenotype in sleep apnea**

The working hypothesis in our laboratory is that the hypoxia/reoxygenation associated with Obstructive Sleep Apnea (OSA) pro-

**History**

The Technion sleep laboratory was established in 1975 when Peretz Lavie joined the Faculty of Medicine after completing his doctoral and post doctoral studies in sleep research in the US. During the 70s and 80s research in the laboratory focused on the temporal structure of sleepiness, the effects of traumatic events on sleep and dreaming, shift work and its consequences, and sleep disorders, particularly sleep apnea. Several of the students graduated from the laboratory at that time -- Avi Sadeh, Giora Pillar, Nir Peled, Yaron Dagan, Orna Tzichinsky, Tamar Shochat and Iris Chaimov—went on to establish their own sleep laboratories and programs and almost all of them hold academic positions. In addition to research activity, the laboratory developed a clinical service for the diagnosis and treatment of sleep disorders. In 1994 when Peretz Lavie was appointed as the Dean of the Faculty of Medicine in the Technion, the sleep research laboratory moved from the Technion main campus to the Faculty of Medicine under the leadership of Lena Lavie, a cell biologist specializing in oxidative stress and inflammation. The clinical laboratory moved to the RAMBAM university hospital under the leadership of Ron Peled who was the first Israeli physician to obtain a US sleep medicine board certification.

**Research Interests**

In the last 10 years research activities in the Technion have focused on sleep disorders and their consequences, particularly on breathing disorders in sleep, and on the development of novel technologies to monitor sleep and breathing events during sleep. Investigating cardiovascular sequelae in sleep apnea, our working hypothesis has been that oxidative stress, that is the production of toxic ‘free radicals’ as a result of the apenic events during sleep, initiates progressive atherogenesis that leads to cardiovascular morbidities. Our research
apnea. We hypothesize that a process known as ischemic precondi-
tioning protects elderly patients with sleep apnea. We hypothe-
size that a process known as ischemic preconditioning protects elderly patients with sleep apnea.

3) Mortality in sleep apnea

In recent years we studied all cause mortality of sleep apnea patients investigated in our clinical laboratories across the country. Using a case control design we demonstrated that although sleep apnea severity was not an independent predictor of mortality, the interaction of obesity and sleep apnea severity as well as the interaction of chronic obstructive pulmonary disease with apnea severity significantly affects mortality. In a second study we demonstrated that the risk of mortality in sleep apnea in comparison with the general population was age dependent. Patients aged 20 to 50 years had significantly higher rates of mortality than their counterparts in the general population while patients older than 50 had similar mortality rates to the general population. Currently we are focusing on the general population while patients older than 50 had similar mortality rates to the general population. We are investigating the interactions between endothelial cells and leukocytes – monocytes and various subpopu-
lations of cytotoxic T lymphocytes and neutrophiles – in OSA patients as well as in cells obtained from normal controls and subjected to intermittent hypoxia in vitro. Recently, we demonstrated delayed apoptosis in neutrophiles of sleep apnea patients, which could be also induced in neutrophiles of normal controls exposed to intermittent hypoxia in vitro. Currently, we are finalizing a large series of stud-
ies on atherogenic phenotypes of platelets and the formation of the atherogenic foam cells in sleep apnea.

2) Breathing disorders in sleep in children

In the sleep-disordered breathing area in children we are in the process of studying the effects of airway length. We first showed that the length of the collapsible part of the airway is similar in prepuber-
tal boys and girls, but becomes significantly longer in boys compared to girls after puberty. We then found that indeed airway length is correlated with the severity of sleep-disordered breathing, suggesting that this anatomical characteristic may play a role in the pathophysi-
ology of OSA. This finding also adds to previously reported mecha-
nisms explaining the male predominance in this disease.

In addition, we study the impact of sleep-disordered breathing in children on cognitive and behavioral outcomes. We have previously reported that children with ADHD are in fact sleepy and that many of them suffer from OSA. We recently found that a substantial portion of children who do not qualify for first grade experience sleep disturbances, which we postulate may contribute to their scholastic failures.

4) Prevalence of OSA in applicants for professional driving license

The increased risk of motor vehicle accidents in patients with sleep apnea has been documented in a large number of studies. There is no validated protocol to screen for sleep apnea in young adults in their 20s. We therefore conduct a large scale study to screen candidates applying for professional driving license in an attempt to develop a screening protocol. Preliminary results based on the first 150 candidates investigated demonstrate that 12% of the candidates had significant sleep-disordered breathing. Interestingly, this could be predicted only by familial history and a composite score of sleep disorders in general.

5) Sleep apnea in patients with acute MI: Clinical conse-
quences

This study examines the impact of pre-existing obstructive sleep apnea on the outcomes of acute myocardial infarction (AMI). As sleep apnea is a very prevalent syndrome in the middle-aged popula-
tion, we assume that many patients suffering acute MI also have undiagnosed OSA, which may affect the outcomes of AMI. Thus, we investigate breathing disorders in sleep in every patient hospitalized in the Rambam Cardiology Department Intensive Care Unit with AMI. Sleep studies are performed in the cardiology department using the Watch PAT 200 ambulatory devices. So far 150 consecutive patients have been investigated within 4-6 days of the attack. Preliminary analysis shows that 63% of the MI patients also have clinically significant sleep apnea. Patients with co-morbid sleep apnea had higher levels of C-reactive protein in comparison with patients who did not have sleep apnea. We plan to investigate 300 MI patients.

TECHNICAL CAPABILITIES

The Lloyd Rigler Sleep Apnea Research Laboratory is located in the Rappaport Faculty of Medicine that is a 5-minute walk from the 8-bed Sleep clinic in the Rambam hospital. It is fully equipped for all cell biology, biochemical and tissue culture studies. It includes Centrifuges, spectrophotometer, heated water baths, NO analyzer (NOA – 280, Sievers), hoods, incubators, refrigerators and -80°C freezers, and computerized fluorescent and confocal microscopes with add-on cameras. It also includes a computerized system for in-vitro intermittent and sustained hypoxia studies in both tissue cultures and animals (OxyCycler C42 system by BioSpherix, 4 chambers). In addition, the following equipment in the Faculty of Medicine Interdepartmental Equipment Department is also available: Flow cytometers (Becton-Dikinson using a FACScalibur apparatus (Becton Dickinson; Franklin Lakes, NJ), FACS Aria sorter and computerized analysis for FACS (CellQuest), ELISA microplate readers, ultra-centrifuges (Sorvall) microscopes – Confocal BioRad, inverted fluorescent microscope with micromanipulator, upright fluorescence microscope all with add-on cameras and computerized analysis, sentillation counters and Real-time PCR (ABI700, Applied Biosystems, Germany).

CLINICAL ACTIVITIES

Clinical services are provided in 4 clinics located in Rambam hospi-
tal Haifa (8 beds), Wolfson Hospital near Tel Aviv (6 beds), Hillel Yaffe hospital in Hadera (4 beds), and in Hadassah medical
center in Jerusalem (6 beds). Services include whole night PSG, CPAP titrations, MSLT, MWT, NPT, infant sleep monitoring, and ambulatory and actigraphic monitoring. The clinical staff includes 2 neurologists and a pediatrician who are US board certified sleep physicians, a pulmonologist, and several junior physicians. Almost all of the sleep technicians are medical students who are trained in the clinics in sleep technology. The number of patients examined in the sleep clinics in the last 10 years was between 5000-6000/year.

Collaborations

Our group collaborates with several laboratories and departments around the world. In the autonomic nervous system and the relatively newly discovered peripheral arterial tone signal we have collaborated with the sleep laboratories at Harvard (Brigham and Women’s hospital), Sahlgrenska University Hospital, Gothenburg, Sweden, and University of Florida, Gainesville. We have an ongoing study with University of Uppsala in Sweden on biomarkers of oxidative stress in women with sleep apnea, and we collaborate with Seva Polotzky’s group at Johns Hopkins on the pathophysiology of cardiovascular morbidity in OSA. In addition, our sleep medicine center is part of the multi-center European study investigating an orexin antagonist as a treatment for patients with chronic insomnia. We also contribute to the European database of patients with OSA and are members of COST 26, a European consortium that promotes sleep apnea research.

There is extensive collaboration between our sleep group and various departments at RAMBAM hospital such as Cardiology, Imaging, Pediatrics, Gynecology & Obstetrics, and the National Medical Institute for the Safety of Driving.

Training Opportunities

Our group continuously trains sleep technicians, students (undergraduate and graduate), and fellows. Pending financial support, we also accept postdoctoral fellows and host visiting scholars.

Representative Publications

11. Lavie, P. Who was the first to use the term Pickwickian in connection with sleepy patients? History of sleep apnoea syndrome. Sleep Med Rev 12:5-17, 2008.
The Sleep Research Society welcomes members who recently joined the organization. Our membership continues to grow — help us strengthen the impact of the profession by encouraging your colleagues to join. Information regarding membership can be found on the Society website (www.sleepresearchsociety.org).

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Silvia Gatti, PhD  
Zhiwei Guan, MD  
Rosemary S Horne, PhD  
Levente Kapas, MD  
Mary C Kapella, PhD, RN  
Moshe Laudon, PhD  
Pierre Maquet, MD, PhD  
Kyoko Nishihara, RhD, PhD  
Srinivasan Rajaraman, PhD  
Prema Sanne, MD  
Somnus Therapeutics, Bedminster, NJ  
King’s College Hospital, London, United Kingdom  
School of Nursing, Seattle, WA  
Eli Lilly and Company, Indianapolis, IN  
Eli Lilly and Company, Indianapolis, IN  
University of South Australia, Adelaide, SA, Australia  
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University of Liege, Liege, Belgium  
Tokyo Institute of Psychiatry, Setagaya-ku, Japan  
Bioinformatics Cell/Telemedicine and Advanced Technology Research Center, Fort Detrick, MD

**Associate Members:**

Tamara L Bond, PhD  
Chung-Chu Chen, PhD  
Shu Ling Chou  
Anna O Goodman, PhD  
Alice M Gregory, PhD  
Christine Lewis  
Suzanne Perkins  
Fabio Pizza  
Libby A Rosen, RN  
Parijat Sengupta, PhD  
E. P. Bradley Hospital, Providence, RI  
Stanford University, Stanford, CA  
Sleep Center of Shin Long Wu Ho-Su Memorial Hospital, Taipei, Taiwan  
Cambridge Centre for Brain Repair, Cambridge, United Kingdom  
Goldsmiths College, New Cross, London, United Kingdom  
Somnus Therapeutics, Bedminster, NJ  
Southern Arizona VA Healthcare System, Tucson, AZ  
Dipartimento di Scienze Neurologiche, Bologna, Italy  
Stormont-Vail Regional Health Center, Topeka, KS  
Washington State University, Pullman, Pullman, WA

**Postdoctoral Fellows:**

Mark A Brown, MD  
Thomas Curie, PhD  
Beverley M David, PhD  
Markus Dworak, PhD  
Heinrich Gompf  
Kerstin Hoedlmoser, PhD  
Margaret C Souders, PhD  
Militsa Svanidze, PhD  
University of Arizona, Tucson, AZ  
University of Lausanne, Lausanne, Switzerland  
Loughborough University, Loughborough, Leicester, United Kingdom  
Harvard Medical School - VAMC, West Roxbury, MA  
Harvard Medical School, Boston, MA  
University of Salzburg, Salzburg, Austria  
University of Pennsylvania, Philadelphia, PA  
I. Beritashvili Institute of Physiology, Tbilisi, Georgia
Predoctoral Students:

Samah A Afifi, MD  Wayne State University, Detroit, MI
Erin L Almklov  Alliant International University, San Diego, CA
Alanna S Batterby  University of Michigan, Ann Arbor, MI
Heather Beseler, RPSGT  UW Harborview Medical Center, Seattle, WA
Carole T Boudabesse  University of Pittsburgh, Pittsburgh, PA
Philippe Boudreau  Douglas Mental Health University Institute, Montreal, QC, Canada
Marcia E Braun  Marcia Braun, South Bend, IN
Megan Crawford, BDS  University of Glasgow Sleep Centre, Glasgow, United Kingdom
Jaime K DaSilva  University of the Sciences of Philadelphia, Philadelphia, PA
Sean P Dunne  Brigham and Women’s Hospital, Boston, MA
Marina Elloiszhivili  I. Beritashvili Institute of Physiology, Tbilisi, Georgia
Christine Gagnon  CETS, Ecole de Psychologie, Quebec, QC, Canada
Betty K Garner, APN, RN  Puyallup, WA
Kimberly A Gering  Liberty Lake, WA
Jennifer R Goldschildm  Denver, CO
Andrea Goldstein  University of California Berkeley, Berkeley, CA
Margaret R Gordon-Fogelson  Vassar College, Poughkeepsie, NY
Meghan M Hewlett  Canton, MI
Jessica L Hoehn  Johns Hopkins University School of Medicine, Baltimore, MD
Patricia L Johnson  Boston University LCN Lab, Boston, MA
Kamini Kannan  University of California - San Diego, La Jolla, CA
Darren W Kearney  Brigham and Woman’s Hospital, Boston, MA
Christopher E Knoepke  National Jewish Health, Denver, CO
Peter O Kosenko  Utrish Dolphinarium Ltd., Moscow, Russia
Marjolaine Lafortune  Hopital du Sacre-Coeur de Montreal, Centre detude du Sommeil, Montreal, QC, Canada
Benjamin M Laitman  University of Pennsylvania, Philadelphia, PA
Adam Leonard  Sleep Research Laboratory, Providence, RI
Maxime Maheu  Satteau, QC, Canada
Nicolas Martin  Centre detude du Dommeil et Des Rythmes Biologiques, Montreal, QC, Canada
Sarah F Marzetta  Brown University, Providence, RI
Elizabeth A McDevitt  Valley Village, CA
Lori L McGee  Northwestern University, Chicago, IL
Erin McInrue  Johns Hopkins University, Baltimore, MD
Emily R Mepham  Providence, RI
Frederick Michaud,  Universite du Quebec en Outaouais (UQO), Gatineau, QC, Canada
Marisa C Moreta  Unit for Experimental Psychiatry, Philadelphia, PA
Cristina Perozzo  Centre d’étude des Troubles du Sommeil, Quebec, QC, Canada
Swaroop J Pinto, MBBS  Philadelphia, PA
Joanie Roy  Gatinque, QC, Canada
Cari Sagum  Austin, TX
Gabrielle Santangelo  Gabrielle Santangelo, Boston, MA
Lauren M Schmitt  Universite of Notre Dame, Notre Dame, IN
Ari Shechter  Douglas Mental Health University Institute, Montreal, QC, Canada
Tracey H Slonim  San Diego, CA
Elizabeth A Spellman  College of the Holy Cross, Worcester, MA
Genevieve St-Jean  Universite Laval, Quebec, QC, Canada
Lianne M Tomforh  University of California, San Diego, CA
Oni O Tongo  Weill Cornell Medical College, White Plains, NY
Kimberly A Tremblay  University of Michigan Health System, Ann Arbor, MI
Helene C Van Gorse  Berkeley, CA
William M Vanderheiden  Washington University, Saint Louis, MO
Isabelle Viens  Isabelle Viens, Mootreal, QC, Canada
Jacoby M Williams  University of Florida, Gainesville, FL
Bradley D Winters  Pullman, WA
Garry Woodward  E.P. Bradley Hospital, Providence, RI
Marion E Young  West Virginia University, Morgantown, WV
Adriano Zager  Universidade Federal de Sao Paulo, Sao Paulo, SP, Brazil
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- Invest in supporting ongoing scientific investigations in the world of sleep research
- Invest in the promotion of gaining knowledge for prevention and treatment of sleep disorders
- Invest in building healthy life cycles for future generations
- Invest in your future

The SRSF is dedicated to the advancement of sleep research and in support of this commitment offers two grant awards to Sleep Research Society (SRS) members:

J. CHRISTIAN GILLIN, MD RESEARCH GRANT: A one-year grant to support beginning researchers in gathering pilot data for future grant applications.

ELLIOTT D. WEITZMAN, MD RESEARCH GRANT: A one-year grant to aid researchers in gathering pilot data for NIH or other federal grants.

You can make a difference – it is your future – donate online* - visit the SRSF website: www.sleepresearchsociety.org/foundation

* The SRSF is a not-for-profit 501 (c)(3) charitable/scientific organization and your contribution should be fully deductible.