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• Sleep Research Highlight: Wisconsin Cohort Follow-Up
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Dear Colleagues,

I trust each of you had an enjoyable, relaxing and contemplative but not too overwhelmingly caloric Holiday Season!

This is my second “President’s Message” and much has happened in the few short months since I sent you my first. As we head into the New Year the SRS Board of Directors and a host of your fellow members have been diligent in carrying out the business of the Society. Let me share with you what’s happening in the Sleep Research Society.

As you all know, the current economic situation is presenting a major challenge for all of us, and, as you might imagine, our Society is not exempt from these economic difficulties. Your Board of Directors has developed a 2009 budget that both takes this difficult economic environment into account and still meets the needs of our members by: 1) expanding Society membership, 2) communicating Society activities, 3) providing opportunities for career development of Society members at all career levels, 4) advocating for increased funding for sleep research, 5) providing professional education, and 6) providing SRS members with research funding opportunities through the Sleep Research Society Foundation.

Membership: The Membership Committee, chaired by Dr. Robert Strecker, tirelessly works to ensure the Society’s continued growth. The SRS membership has grown steadily over the last several years at an annual rate of approximately 5 percent. Help strengthen the SRS. If you have colleagues who do sleep or circadian rhythm research and who are not members of the Society, encourage them to join.

Communication: As you are reading my message in the SRS Bulletin, you have the Communications Committee, chaired by Dr. Steven Lockley, and Bulletin Editor, Dr. J. Todd Arnedt, to thank for keeping the lines of communication open and providing such an excellent forum for exploring the myriad activities of the SRS. This is only the second issue of the Bulletin since its conversion to an online publication, a transition that was made smoothly and that maintained the high production standards of its print-based predecessor.

Career Development: Career development opportunities for the full range of SRS membership are well underway. The Trainee and Education Advisory Committee (TEAC), chaired by Dr. Jennifer Martin, is hard at work planning Trainee Day for SLEEP 2009, ensuring the SRS’s student members another superb training opportunity. Planning is also already underway for SLEEP 2009’s version of the professional development course that Dr. Janet Mullington led so successfully at SLEEP 2008 in Baltimore. And not to be outdone, the Educational Programs Committee, chaired by Dr. Charles Amlaner, is well into development of a new edition of the "SRS Basics of Sleep Guide", and is planning to have it available by the time we meet in Seattle for SLEEP 2009.

Research Funding Advocacy: As I hope you are already aware one of the major goals of the SRS’s Strategic Plan is to advocate for more funding for sleep research from our U.S. congressional representatives and from the various agencies within the National Institutes of Health. In order to begin to address this goal the Board has approved funding to send four SRS members and one staff person to a “Day on the Hill” in May 2009, where they will meet with members of Congress and their staffs increasing their awareness of the need for more sleep research funding. The Board feels this is one of the critical needs to both preserve and increase funding in the field. The efforts to plan and organize this and related activities are being directed by the Board Sub-Committee on Research Funding, chaired by Dr. Terri Weaver. To further support these research funding advocacy efforts the SRS will soon be providing its members with online advocacy resources to facilitate individual SRS members in lobbying their congressional representatives for additional sleep research funding.

Research Funding Opportunities: The SRS Foundation, which was founded in 2004, continues to provide research funding opportunities exclusively for SRS members. The Gillin Award is intended to support beginning investigators in sleep research for the purpose of gathering pilot data to be used for future grant applications, while the Weitzman Award is intended for researchers to gather additional pilot data for NIH or other federal grants that are scored but not funded. Announcements for the Gillin and Weitzman Awards have appeared in the SRS Update and applications were due December 1, 2009. Applications will be reviewed by the Research Committee, chaired by Dr. Andrew Krystal, and award recipients will be announced at SLEEP 2009. Let me take this opportunity to remind you that a major source of support for the SRS Foundation are the funds raised at the annual SRS and AASM “Discovering the Secrets of Sleep” fundraising dinner held at our annual meeting. Please consider attending this worthy effort in Seattle at SLEEP 2009 and support the SRS Foundation.

Professional Education: For the last several years the SRS has offered an annual national course on various aspects of sleep research. This year the course was “The Development of Hypnotic Agents.” This course, chaired by Drs. Tom Roth and Tom Kilduff, was geared toward educating our colleagues in the pharmaceutical industry and was a sold out success, yielding a profit of $108,000, all of which was donated to the SRS Foundation. Plans are currently underway for the SRS to offer two half-day courses during 2009 on the “Basic Mechanisms of Sleep” to be held in conjunction with the AASM’s board review courses. Drs. Ruth Benca and Thomas Scammell are spearheading this effort for the SRS.

Other SRS Activities: The Society also has four active taskforces working on special projects that do not fall within the purview of any of its standing committees. The Academic Centers Task Force, chaired by Dr. Ruth Benca, is currently collecting data from universities that have developed major successful sleep research and clini-
cal sleep medicine programs, with the ultimate goal of developing guidelines to assist other institutions in emulating their success. The Sleep and Genetics Task Force, chaired by Dr. Alan Pack, is examining ways to facilitate genetics research in the areas of sleep and sleep disorders. The SRS 50th Anniversary Task Force, chaired by Dr. Sonia Ancoli-Israel, is working to ensure that this landmark anniversary of the SRS is celebrated appropriately. And finally a Joint SRS and AASM Task Force is examining ways that the two organizations' research foundations might work together and gain some economies of scale in their efforts to support research.

As you see, the Board and the many SRS members who chair or serve on the various SRS committees, task forces, and courses are all working tirelessly to ensure the continued health and growth of our Society - my sincere thanks to every one of them!

You should also be aware that in the coming weeks the Board will put before the membership recommendations for possible revisions to the Society by-laws. Please look for this online ballot in your email in the near term and be sure to vote.

I also want to note a change in the staffing of the SRS. Mr. John Slater who has been SRS Coordinator for the last several years has moved on to a new position with the AASM. John’s service to the SRS has been invaluable. I take this opportunity to thank him for all he has done for the Society and to wish him well in his new position. Mr. Nicholas Cekosh, who was originally hired to facilitate the SRS’s research funding advocacy efforts will be both maintaining those duties and stepping in as the new SRS Coordinator. Welcome Nicholas!

I close with a reminder that any society is only as strong as the collective contributions of its membership and invite you, if you haven’t already, to get involved in the activities of the SRS. We will all benefit from those efforts.

I wish you all a happy and successful New Year!

Sincerely,

Michael V. Vitiello, PhD
President
Sleep Research Society
This report briefly summarizes the financial status of our organization. The SRS, like many other entities, has felt the impact of the recent volatility in financial markets and the downturn in the economy.

As of October 31, 2008, the unaudited financials for 2008 show total assets of $2,317,853, as compared to $2,697,269 at this same time in 2007. The decrease in assets of $379,416 is primarily due to loss in value of the Society’s investment portfolio and a decrease in interest income from those investments compared to 2007. The SRS also experienced an overall increase in expenses, year-to-date, compared to 2007. These expenses reflect higher production, printing, operational and course costs. The SRS made a donation of $188,816 to the SRS Foundation in 2008, which is approximately $108,000 more than recent annual donations. The increased amount of the donation to the SRS Foundation consisted of the proceeds from the “Development of Sleep Promoting Agents” Course offered in New York City last April.

The SRS Board of Directors is working judiciously to secure the financial future of the SRS during these difficult times. In addition to adjusting the organizational budget, the Board of Directors will continue working to identify sources of revenue independent of the APSS LLC partnership. Diversification of the revenue stream for the SRS and increasing society membership remain high priorities vital to the long-term financial health of our Society. Currently the Educational Programs Committee is working on a revision of the Basics of Sleep Guide. The first version of the Basics of Sleep Guide was completed in May 2005. The revised version of the Basics of Sleep Guide is scheduled to be ready for sale at SLEEP 2009 in Seattle, WA. In August and September 2009, the SRS plans to offer a ½ day “Basic Mechanisms of Sleep” review course in conjunction with the AASM Sleep Medicine Board review course.

Membership Report

Membership numbers were a bright spot heading into the end of 2008. As of December 3, 2008, membership in the SRS stood at 1,367 members, compared to 1,297 members at this same time in 2007, representing a 5% increase.

Respectfully submitted,

Ronald Szymusiak, Ph.D.
SRS Secretary/Treasurer
The European Sleep Research Society hosted a very successful biannual meeting in Glasgow in September. The ESRS meetings are well known for their high standard of scientific presentations, and this year was no exception. Indeed, this 19th Congress broke all records: the highest attendance rate at over 1,400 people, coming from 54 different countries, and also the largest number of scientific abstracts submitted, almost 800. Thus, the ratio of abstracts to attendees was extremely high.

As one might expect, the programme comprised invited lecturers, symposia, and interactive poster sessions, as well as industry sponsored satellite meetings. Topics covered spanned the full range from the basic science of sleep to sleep medicine practice. This year’s keynotes were:

**State of the Art of Sleep Research as told by a Glaswegian**  
Allan Pack (USA)

**Cardiovascular impacts of sleep apnoea**  
Virend Somers (USA)

**RLS-PLMS Genetics**  
Juliane Winkelmann (Germany)

**Insomnia: Symptom vs Disorder**  
Michael Perlis (USA)

Also in the programme were sessions taking the form of discussion meetings, video-based case presentations, and debates. A novel feature this year was the inclusion of a Datablitz session, where presenters had one minute and one slide to present some central aspect of their research. This was both entertaining and informative, and facilitated with wine and canapés!

Abstracts from the ESRS meeting are published in the *Journal of Sleep Research*, and were made available at the meeting in a CD-ROM.

As well as the scientific programme, the City of Glasgow offered many social highlights. The Scottish Exhibition & Conference Centre itself sits on the banks of the River Clyde and the opening
reception was held across the river in the Glasgow Science Centre. There was a ceilidh party on the Renfrew Ferry, which is berthed at the quayside, and a congress gala night in the Kelvingrove Art Gallery & Museum. Many delegates took the opportunity to see the fine architecture in the city and some participated in pre and post congress events including walking trips on the West Highland Way and rounds of golf.

Professor Colin Espie of the University of Glasgow Sleep Centre who chaired the Organising Committee for ESRS 2008 said:

“I am delighted to say on behalf of the British Sleep Society and the ESRS that the Glasgow meeting went extremely well. It is great to see so many advances in our field, and the opportunity to meet with so many colleagues from across the world was stimulating and encouraging. We now look forward to the next ESRS meeting in Lisbon in 2010.”

Colin Espie, Ph.D.
Chair, ESRS 2008 Organising Committee

The 19th Congress of the European Sleep Research Society held in Glasgow (9-13th September, 2008) was again preceded by a Teaching Course organized by the ESRS Board (Co-ordinator Prof Debra Skene). The full day course (9th September, 2008) was attended by over 200 registered participants. In the morning session, trainees had the option of registering for either Hot Topics in Sleep Research or Professional Development. Hot Topics covered were Circadian Rhythms (Prof. Christian Cajochen); Imaging (Prof. Pierre Maquet) and Genetics (Dr Paul Franken). Areas covered in professional development were Career Development (Dr Tarja Porkka-Heiskanen), Grant Writing (Prof Debra Skene) and Working in Industry (Dr Emma Braithwaite). In the afternoon a Hot Topics in Sleep Medicine session was held and areas addressed were Hypocretin/orexin and Narcolepsy (Prof. Claudio Bassetti); Insomnia (Prof Colin Espie) and REM sleep behaviour disorder (RBD) (Dr. Isabelle Arnulf). There was also a session for Trainees of the ESRS-EU Marie Curie Programme “Training in Sleep Research and Sleep Medicine, 2007-2010” (Co-ordinator Prof Roberto Amici) http://www.esrs.eu/cms/front_content.php?idcat=109

The lectures and the teaching course overall were very well evaluated by the trainees. Suggested subjects areas for future training courses were also received.

As an additional programme, eight free Breakfast Sessions were offered, over three mornings. These were each limited to 12 attendees to encourage an opportunity for informal discussion. Speakers presented sessions on topics within the themes ‘Sleep and Disease’ (Sameer Zuberi, Mary Harrington, Claudio Bassetti); Sleep through the lifespan (Greg Stores, Sara Arber, Kevin Morgan) and Sleep and wellbeing (Michael Perlis, Jim Horne). Despite the early start, these were fully subscribed and provoked lively participation from delegates. Delegates reported that the opportunity to learn about cutting edge research in a small-group environment, from internationally renowned experts, was both stimulating and informative.

ACKNOWLEDGEMENTS

The European Sleep Research Society (ESRS) Board designed the Teaching Course (Co-ordinator Debra Skene) and the British Sleep Society organised the Breakfast sessions (Co-ordinators: Cathy Hill and Jason Ellis). Thank you to Brigitte Knobl, Maria Wiechmann and Jane Houston and her team for the administrative work. And finally a big thanks to all the speakers.

Debra Skene, Ph.D.
Coordinator, ESRS Teaching Course
Recaps of International Sleep Science Meetings

20th Annual Australasian Sleep Society Meeting

The 20th Annual Scientific Meeting of the Australasian Sleep Association (ASA) and Australasian Sleep Technologists’ Association (ASTA) was held in Adelaide, South Australia, October 2-4, 2008. The meeting was themed Sleep on It: Healthy Function of Sleep which explored the vital role sleep plays in all aspects of health and the impact of sleep disorders on health. The keynote speakers at the meeting were Professor Robert Stickgold (Harvard Medical School) and Professor Mary Ip (University of Hong Kong). Bob Stickgold’s plenary lecture on the role of sleep in memory and memory consolidation generated an unprecedented amount of media attention throughout the region. His message was featured in all major newspapers, current affairs and news broadcasts which was tremendously effective in delivering the public message of the value of sleep health. There were already several hundred internet citations of the meeting by the end of the conference. Mary Ip provided the meeting with an excellent update on the cardiometabolic associations of sleep disordered breathing – a most topical issue for all in the field of sleep medicine. There were a number of other highlights in the meeting. Dr Ed Weaver (University of Washington) conducted a breakfast session with a very balanced discussion on the surgical management of obstructive sleep apnea which was attended by over 100 registrants. There was enormous interest in another breakfast session on unattended monitoring in the diagnosis of sleep apnea. Professor Lyle Palmer, world renowned geneticist based in Perth Western Australia, demonstrated to the congress that genetic assessment will play a real-world contribution to the practice of sleep medicine in the very near future. Professor Peter Eastwood, also from Perth, discussed ground breaking research on the impact of obesity on upper airway anatomy and physiology.

The Conference was honoured to have Professor Masako Okawa, President of the Asian Sleep Research Society, as its special guest. Professor Okawa and Dr David Hillman, President of the ASA, both expressed the desire for closer cooperation and friendship between the societies.

The ASA/ASTA Annual Scientific Meeting is the premier scientific meeting in Australasia for the presentation of original research in sleep health and sleep science. This year there were a record number of submissions of original research papers presented in both oral and “poster” form. The profile of the “poster” presentations is highly valued in this meeting and these researchers also have an opportunity to present their work as a brief oral summary. The meeting has grown dramatically in the last few years. The attendance at this year’s meeting was the largest to date with over 550 registrants, including a very welcome contingent from Japan. This was the first of our meetings to involve the Chronobiology Special Interest Group in addition to the other Special Interest Groups of Respiratory, Insomnia and Sleep Health, Paediatrics and Neurology. There was also a very popular sleep technology symposium organised by ASTA which this year reviewed the potential impact of the revised AASM criteria for sleep and respiratory scoring on local services, noting that laboratories in Australia and New Zealand have no financial requirement to adopt the new guidelines. At this time, there are very few services in this region that will change to the latest AASM criteria, which may lead to some confusion with publication of research in international journals. The content of the meeting reflects the diverse interests that make up sleep science and research. The abstracts of all original research and many invited lectures have been published in the Journal of Sleep and Biological Rhythms (Volume 6, Supplement 1).

The aim of the meeting extends beyond just the sleep science and research. The meeting retains its collegiality despite the rapid increase in size in the past few years. This was well displayed at the Conference Dinner, which was included in the general registration. South Australia is renowned for its fine wines and therefore the Conference Dinner was themed around this area’s great wines. However, the standout event at this dinner was the Inaugural Distinguished Achievement Award which was awarded to Professor Colin Sullivan (pictured above). This award is designed to recognize and honor exceptional achievements in the fields of sleep health and sleep science by ASA members. Professor Sullivan provided a touching reminiscence of his involvement with the ASA since its inception more than 20 years ago. Another inaugural award was the President’s Award presented at the discretion of the ASA President to recognize and honor a significant and sustained contribution to the work of the Australasian Sleep Association in achieving its aims and objectives. The President’s Award was given posthumously to Dr Harry Teichtal who passed away this year after a prolonged illness.

The 21st Annual Scientific Meeting will be held in Melbourne, Victoria, October 8-10, 2009. The theme is Visions of the Night: Sleep, Science and Research on the World Stage. Melbourne is the cultural capital of Australia and this meeting promises to balance original research, expert opinion and opportunity for professional and social networking involving all aspects of sleep science and health. The programme is under development and details are available on www.sleep.org.au.

Craig Hukins, MD, FRACP
Australasian Sleep Association
A recent publication from the Wisconsin Sleep Cohort study (WSCS) concluded that people with sleep apnea, particularly untreated sleep apnea at a severity level of 30 or more pauses per hour of sleep (apnea-hypopnea index, AHI), have a 3-5 times increased mortality risk over an 18 year follow-up.1

The Wisconsin Sleep Cohort Study is a longitudinal population-based study of adults ages 30-60 (in 1988) that follows the natural history of sleep apnea and other sleep disorders over time. Participants complete an overnight baseline sleep protocol, including polysomnography, and are re-studied at 4-year intervals. The study began in 1988 and has been funded continuously by the National Heart Lung and Blood Institute (NHLBI) of the NIH for 20 years. The first landmark publication of the WSCS was a report on the high prevalence of sleep apnea in both men and women.2 Until then, sleep apnea was considered a disorder of men, and the prevalence was thought to be rare. Young and coauthors reported a wide spectrum of severity, and over 90% of the cases of sleep apnea detected had never been diagnosed. Nine percent of women and 24% of men were found to have mild sleep apnea, with 5 or more apneas or hypopneas per hour of sleep (AHI>5), and 4% of women and 9% of men had an AHI of >=15. This study was listed among the 10 most cited classic articles (over the past 15 years) by the New England Journal of Medicine. The study was important in showing that a significant number of men and women were affected by sleep apnea and that the condition was largely undiagnosed.

The next step was to determine if having sleep apnea was related to serious outcomes and whether it caused a societal burden. This aspect of the research was important in determining whether new resources should be allocated to sleep apnea research and education. Studies from the WSCS and other US population based studies—including the Pennsylvania Cohort,3 Bay Cohort,4 San Diego older cohort,5 and the multicentered Sleep Heart Health Study6—showed that sleep apnea was associated with hypertension, cardiovascular disease, and cognitive problems including daytime functioning. The Wisconsin Cohort has published longitudinal data showing sleep apnea predicts new hypertension7, stroke,8 and abnormal nighttime blood pressure9 (lack of nocturnal “dip”), among other outcomes.

The latest finding of linking sleep apnea with premature mortality is perhaps the most convincing evidence that people with sleep apnea should be identified and treated. In the study, 1,522 participants in the ongoing cohort were studied at baseline and grouped into sleep apnea severity categories of none (AHI<5), mild (AHI 5-15), moderate (AHI 15-30), and severe (AHI>30). All mortality records from social security matches for the USA and Wisconsin records were searched, and date and cause of death were abstracted. The all-cause and cardiovascular mortality with SDB were not statistically significant (Table 3). Although cardiovascular death rates were elevated for those with SDB after stratification on several sleepiness variables defined by frequency of “feeling excessive daytime sleepiness,” “very sleepy, we compared the adjusted hazard ratios for morbidity and mortality with SDB at baseline, the adjusted hazard ratios for cardiovascular mortality were 2.7 (1.3, 5.7) and 2.7 (1.3, 5.7) for the “not sleepy” strata.

Although there were statistically significant associations between untreated sleep-disordered breathing severity and mortality, they were not as strong after excluding CPAP users from the sample. The adjusted hazard ratio for all-cause mortality, CI denotes confidence interval

AHI denotes number of apnea and hypopnea episodes per hour of sleep.

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**Figure 1**—Kaplan-Meier estimates of survival probability according to sleep-disordered breathing severity for A) Total sample and B) Sample excluding 126 CPAP treated participants.

A. Kaplan-Meier estimates of the probability of survival (shown with y-axis truncated at 50% survival) according to sleep disordered breathing severity: none (AHI < 5), mild (AHI > 5, < 15), moderate (AHI > 15, < 30) and severe (AHI > 30), total sample (n = 1522); long-rank test for differences in survival by SDB category: P < 0.00001; AHI is mean number of apnea and hypopnea episodes/hr of sleep.

B. Kaplan-Meier estimates of the probability of survival (shown with y-axis truncated at 50% survival) according to untreated* sleep-disordered breathing category (none (AHI < 5), mild (AHI > 5, < 15), moderate (AHI > 15, < 30) and severe (AHI > 30), *participants who had used CPAP were excluded (n = 1396); long-rank test for differences in survival by SDB category: P < 0.00001; AHI is mean number of apnea and hypopnea episodes/hr of sleep.

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**Table 1**—Hazard Ratios for Mortality Risk with Sleep-Disordered Breathing (n = 1522): Influence of Comorbidity 

<table>
<thead>
<tr>
<th>Severity Category</th>
<th>Hazard Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None (AHI &lt; 5)</td>
<td>1.0 (Reference)</td>
</tr>
<tr>
<td>Mild (AHI 5-15)</td>
<td>1.3 (0.5, 3.2)</td>
</tr>
<tr>
<td>Moderate (AHI 15-30)</td>
<td>2.7 (1.3, 5.7)</td>
</tr>
<tr>
<td>Severe (AHI &gt; 30)</td>
<td>5.2 (1.4, 19.2)</td>
</tr>
</tbody>
</table>

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**Sleep Disordered Breathing and Risk for Morbidity and Mortality: A Synthesis of Findings from the Wisconsin Sleep Cohort Study**
mortality rate increased with severity of sleep apnea. In regression models that controlled for confounding factors, the increased risk of death was determined for each sleep apnea severity level compared to no sleep apnea (See Figure 1). Both men and women with sleep apnea at AHI>30 at baseline had a 3.2 times greater risk of mortality due to any cause, controlling for age, sex, BMI, and many other potential confounders. Of particular note, after excluding cohort participants who reported regular CPAP treatment for sleep apnea, those with AHI >30 at baseline, compared to those with no sleep apnea, had 4.3 times the all-cause mortality rate and 5.2 times the mortality rate for cardiovascular disease. Comorbidity was investigated as an explanation or mechanism by which sleep apnea contributed to early death. Hypertension, cardiovascular disease, diabetes, and stroke at baseline explained a small portion of the overall risks. Thus, it is likely that adults with sleep apnea who had not yet developed clinically diagnosed cardiovascular or other diseases, may have progressed in sleep apnea severity, and this may have led to worsening preclinical cardiovascular and other diseases over time.

There was no evidence that people with sleep apnea and excessive daytime sleepiness had higher mortality risk than those with sleep apnea alone. This finding adds to the controversy of what symptoms are critical to the diagnosis of sleep apnea. The Wisconsin research suggests that people with AHI >=30, regardless of whether they report sleepiness, should be diagnosed and treated.

The high prevalence of untreated sleep apnea, in conjunction with evidence that this condition leads to significant health outcomes and death, comprises a public health burden. Recent demographic trends indicate an increase in longevity and increased prevalence of people over age 65 (including the aging of the “Baby Boomers”) and particularly, a rise in overweight children and adults. Aging and weight gain are the strongest predictors of increased sleep apnea incidence, prevalence, and progression. Consequently, we face a growing proportion of children and adults with undiagnosed sleep apnea, and evidence that this condition is NOT benign. Increased resources for professional and public education, and heightened attention to breathing problems during sleep among primary care providers will be critical in reducing the burden of sleep apnea in the near future.

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From the Desk at NIH:
NIH Statement on Insomnia Research

Eleven percent of U.S. adults and as many as 20% of children and adolescents report recurring difficulties initiating and maintaining sleep, with approximately half of them reporting associated distress and impairment consistent with a chronic insomnia disorder. Although more research is needed, the degree of daytime impairment from chronic insomnia and its implications for health, quality of life impairments appear to be comparable to other chronic medical conditions, such as arthritis. The economic burden of chronic insomnia is substantial, with annual direct and indirect costs based on 1990s figures estimated at $30-$35 billion, including lost productivity, absenteeism, accidents, alcoholism, pharmaceutical use and abuse, and increased medical care utilization.1, 2

Given the immense opportunity to improve public health through insomnia research, the National Institutes of Health (NIH) awarded over $31 million to insomnia-focused investigator-initiated research grants during the period 1996 to 2005. Overall, the number of sleep and circadian NIH research grants has more than doubled since 1996, and new opportunities and directions for insomnia research are emerging. Insomnia researchers have the opportunity to translate our increasing understanding of the molecular biology of sleep and circadian systems to improve our fundamental understanding of insomnia in terms of its pathophysiology, diagnosis, prognosis, associated risk factors, and health consequences.

Insomnia and related sleep disturbances are coupled to the disease and mission priorities of several NIH Institutes. The National Institute of Mental Health (NIMH), for instance, has research interests in insomnia as a risk factor for mental disorders such as depression and bipolar disorder. Recent research suggests that our understanding and treatment of other mental disorders including PTSD, ADHD, autism, and schizophrenia could be improved through greater attention to the role of insomnia and other sleep disturbances. Childhood insomnia also appears to be a risk factor or prodrome for psychiatric disorders (e.g., substance abuse and affective disorders) as well as chronic sleep disturbance. Other Institutes have interest in insomnia as a contributing risk factor or consequence of cardiopulmonary diseases (NHLBI), “age-related diseases” (NIA), substance abuse disorders (NIDA), neurological disorders (NINDS), metabolic and endocrine disorders (NIDDK), and cancer (NCI). Researchers interested in comorbid insomnia, therefore, should consider the comorbid condition in determining which NIH institutes may have interest in their research and discuss potential research priorities with sleep program officers at these Institutes.

In contrast to comorbid insomnia, research on primary insomnia has only a few NIH institutes with potential funding interests. Because primary insomnia is a mental disorder comparable in terms of contributing mechanisms and treatment approaches to other mental disorders, NIMH is the primary funding source for primary insomnia research; however, applicants should appreciate that the relatively flat NIH budget over several years has resulted in greater prioritization of research on mental disorders that are highly prevalent (e.g. depression, ADHD), disabling (e.g. schizophrenia, autism), and well-characterized. Researchers proposing studies of primary insomnia should consider the recently released NIMH strategic plan (http://www.nimh.nih.gov/about/strategic-planning-reports/index.shtml) in developing their proposals and consult with NIMH program staff on whether the research proposal is consistent with published priorities. For instance, basic science studies at the systems level and translational studies aimed at applying recent advances in understanding the mechanisms of sleep initiation, maintenance, and regulation to the development of insomnia, either primary or in the context of another mental disorder, would be consistent with NIMH strategic objectives.

Beyond NIMH, primary insomnia research is also of interest to the non-disease-oriented institutes such as the National Institute of Aging (NIA), the National Institute of Child and Human Development (NICHD), and the National Institute of Nursing Research (NINR). Of these, the NIA has considerable primary and comorbid insomnia interests due to the higher prevalence rates of insomnia in elderly populations and the various health risks resulting from inadequate sleep, including injuries and accidents in this population. It has been estimated that insomnia affects about one-third of the older population in this country. This inability to have restful sleep at night can result in excessive daytime sleepiness, attention and memory problems, depressed mood, falls, and lowered quality of life. Other factors associated with aging, such as disease, changes in environment, or concurrent age-related processes also may contribute to problems of sleep. Data indicate that age by itself does not predict incident complaints of insomnia, even in the presence of age-related lowered sleep efficiency and decreased proportion of slow-wave sleep. Rather, the prevalence of insomnia and other sleep disorders is high in the geriatric population due to the associated co-morbidities common in late life. It is now evident that disturbance in sleep can also lead to adverse changes in functioning of a number of body systems. The potential effect of insomnia on clock-controlled molecular pat-
ways and disease in non-neural tissues may emerge as an exciting new direction and opportunity for sleep research relevant to NHLBI. The brain mechanisms underlying age-dependent changes in the sleep homeostatic mechanisms are also beginning to be understood. More consistently applied neuroscience methods (e.g., neurophysiology, neuroanatomy, neuroimaging, and neuropharmacology) in animal and human aging studies are needed in order to define the basis of age-related sleep changes better. New studies are needed to define the genetic mechanisms of sleep-wake regulation and timing and their relationship to insomnia. The relevance of the genetics and epigenetics of sleep to the problems of the older individual also needs further investigation.

Across the NIH, there appears to be translational research gaps that insomnia researchers should consider. The NIH supports considerable basic sleep research but only a small proportion of this research has been translated into understanding the mechanisms contributing to the onset and/or maintenance of insomnia. For example, there have been considerable advances over the past decade in our understanding of the neurobiology of sleep-wake and circadian processes, but relatively little is known about these processes in insomnia, pathophysiological responses to insomnia, or biological markers to facilitate insomnia diagnosis, disorder sub-categorization, severity, prognosis, or treatment benefit. Multidisciplinary studies using systems level approaches, more face valid animal models of both sexes, and investigation of sleep changes during sensitive and transitional developmental periods will improve understanding of vulnerability and protective factors during development that lead to insomnia and co-morbid disorders.

Research on many diseases has benefited from the explosion of genetic research findings in recent years, thus studies on the genetic epidemiology and gene-environment interactions would facilitate understanding of genetic risk factors for insomnia. Translational research that utilizes basic behavioral and biomedical research as the basis for better understanding of sleep would fill an important gap and provide evidence that could result in better and more personalized treatment for insomnia disorders.

Overall, there are a number of NIH Institutes where proposals for molecular, behavioral, and intervention insomnia research may be considered. Generally speaking, proposals for hypothesis-driven studies of co-morbid insomnia may be easier to match with the programmatic priorities and scientific mission of various Institutes. Translational research, either bench to bedside (T1) or bedside to practice (T2), is an important direction for improving our understanding of insomnia and its treatment.

REFERENCES

SRS Communications Committee Report

The Communications Committee is continually exploring new ways to interact with and provide information to members and to expand communications within the society. We welcome any suggestions on ways to improve our service.

Our major goal for this year is to improve the visibility of trainees in the Society by highlighting their work on a regular basis and providing a permanent link to their thesis work. In partnership with the Trainee and Education Advisory Committee, we will begin publishing the titles and links to Trainee undergraduate, Masters and Doctoral theses in the coming months. In addition to announcing graduate successes, we hope that this initiative will provide trainees with the opportunity to gain greater recognition within the Society and to come to the attention of senior colleagues who may be interested in their work. We hope that senior colleagues will also use this forum to publicize the work of their trainees and to highlight the success of their training programs. Over time, we will develop a library of trainee theses, which will become a rich scientific and historical resource for the field. Eventually, we hope to expand the library to include the theses of current SRS members. Please support this initiative and encourage your trainees to submit their thesis details.

A major part of the Committee’s work is in the production of the SRS bulletin and the Bulletin Editor, J. Todd Arnedt, undertakes a great deal of work to prepare each issue. I would like to thank him and the SRS administrative team for their continued hard work. Finally, this issue is the second fully-electronic bulletin, an initiative developed by the Communications Committee in the past year in order to save resources, energy, and costs. Please let us know if it meets your needs.

Steven Lockley, Ph.D.
Chair, Communications Committee

SRS Educational Programs Committee

2008 has been an exciting and productive year for the Educational Programs Committee (EPC).

Early in 2008, the EPC was pleased to announce the completion of the Basics of Sleep Guide Single Slide Sets version 1.1. Strong sales have underscored the popularity of this slide set format. We are grateful to our former EPC member, Dr. Orfeu Buxton, for his tremendous efforts in the development of this fantastic pedagogic tool.

Another major emphasis for the EPC over the past year has been the development of an updated version of the highly successful Basics of Sleep Guide, first completed by Dr. Mark Opp, past president of the Sleep Research Society. While not yet completed, the second version of the Basics of Sleep Guide will be expanded in both scope and content, including the addition of 10 new chapters authored by esteemed experts in the field of sleep research. The entire EPC membership has contributed greatly to this service-based endeavor. Indeed, we have almost 50 authors and co-authors for the 24 chapters outlined for the new edition. We anticipate and indeed are planning to launch the 2nd Edition of the Basics of Sleep Guide at the upcoming SLEEP Meeting in Seattle.

The EPC is continually striving to enhance the educational tools and mission of the SRS and we welcome any feedback or comments from our colleagues.

Yours in service,

Charles Amlaner, D. Phil.
Chair, Educational Programs Committee

Patrick Fuller, Ph.D.
Assistant Chair, Educational Programs Committee

SRS Membership Committee Report

In the last several years, the SRS has experienced steady growth of its membership. Currently, the total membership is 1367, up from 1297 at this time in 2007. This total includes 88 new members.

The annual SRS Membership renewal is also well under way. Current members are encouraged to renew their membership promptly to help reduce costly mailings. Current members need to renew before February 28, 2009 in order to have their names included in the SRS Directory. Please tell your international colleagues about a new category of discounted SRS membership for investigators in developing countries called “Corresponding Memberships”. Details about this membership category can be found at: http://www.sleep-researchsociety.org/AnnouncementDetails.aspx?id=302

Recent recruitment efforts have included an email sent to all SRS full members asking them to encourage students and colleagues engaged in sleep research to consider joining the SRS. Finally, we want to remind pre-doctoral and post-doctoral members that their status needs to be renewed annually with the national office to receive discounted membership rates. This can be accomplished by having your advisor send a short email directly to srsmembership@srsnet.org confirming your continued eligibility for the pre- or post-doc membership rate.

Robert Strecker, Ph.D.
Chair, Membership Committee
NIH Vacancy Announcement - Health Scientist Administrator

The NIH National Institute on Aging, Division of Neuroscience will announce a vacancy shortly for Health Scientist Administrator in the Neurobiology of Aging Branch. The incumbent will be responsible for program development and the administration of grants concerned with Integrative Neurobiology, Sleep and Biological Rhythms, and the Role of Environmental Factors.

Please note that a formal vacancy announcement will appear on USAJOBS shortly. [http://www.usajobs.gov/]

Select the appropriate vacancy announcement when searching USAJOBS. The two announcements represent a single vacancy:

- NIA-09-309190-CR-DE (all US citizens)
- NIA-09-309190-CR-MP (some current/former federal employees)

If you have questions regarding this vacancy, please contact Farhan Qureshy at 301-594-2163.

New NHLBI Program Officers

Two new Program Officers have joined the National Center on Sleep Disorders Research and will work under Director Michael Twery, Ph.D. to facilitate both basic and clinical sleep research.

Aaron D. Laposky, Ph.D., Program Director, Sleep and Neurobiology previously held a research faculty position at Northwestern University, Department of Neurobiology and Physiology, Center for Sleep and Circadian Biology, where his research focused on identifying physiological and molecular links involved in the coordination of sleep, circadian rhythms, and energy metabolism.

Daniel Lewin, Ph.D., Program Director, Sleep Disorders Medicine was most recently an Associate Professor of Psychiatry and Pediatrics at the George Washington University School of Medicine and Director of Behavioral Sleep Medicine at Children’s National Medical Center where he directed clinical and research programs that focused on the neurobehavioral sequela of sleep disturbances in children.

Both Drs. Laposky and Lewin can be reached by phone at 301-435-0199 or by email at laposkya@nhlbi.nih.gov and LewinDS@nhlbi.nih.gov.

Cardiac Translational Research Implementation Program (C-TRIP) (P20) (RFA-HL-10-001)


Letters of Intent Receipt Date: April 28, 2009
Application Receipt Date: May 28, 2009

The National Heart, Lung, and Blood Institute has announced a new initiative for exploratory planning (P20) applications to accelerate translation of promising new therapeutic interventions derived from fundamental discoveries for treatment and prevention of heart failure or arrhythmias. The goal of the “planning applications” would be the development of clinical trials.

This initiative may be of interest to sleep and circadian collaborating with researchers in cardiology and cardiovascular disease prevention.

For additional information on the scope of the initiative, research samples, and program specifics please see the full text of the RFA first. Applicants should discuss their plans with the NHLBI program contact listed in the announcement.


Kleine Levin Syndrome (KLS) Medical Foundation Research Grants

Kleine-Levin Syndrome (KLS) primarily strikes adolescents. It is characterized by clearly demarcated periods of excessive amounts of sleep and altered behavior for weeks at a time. The cause of KLS is unknown but both genetic and infectious processes have been implicated.

The KLS Foundation is awarding grants to fund innovative ideas on basic scientific and medical research directed at finding the cause and better treatments for KLS.


Grants will be awarded annually at a maximum of $40,000 per year for up to two years, subject to a project report at year 1. Grants are primarily designed to provide seed funding to PhD and MD researchers for pilot projects or to supplement existing funding. Applications are welcomed worldwide and from collaborative efforts. Funds cannot be used for indirect costs.

A 2-4 page Letter of Intent should be submitted by January 16th, 2009. All proposals will be treated confidentiality by the Foundation and reviewers. Please include PI contact information, rationale and scientific approach, aim of the Project, and potential impact on KLS. For further information, visit www.KLSFoundation.org.

4th Congress of the Canadian Sleep Society (CSS) Eaton Marriott Hotel, Toronto, April 26-28, 2009 [http://www.css-meeting.ca/]

On behalf of the Canadian Sleep Society / Société Canadienne du Sommeil (CSS/SCS) we are pleased to invite you to attend the 4th congress of our society, “Waking Up to Sleep Disorders”, to be held in Toronto.

Pre-conference events include a CME day for physicians and public lectures on Saturday, April 25th. The program will begin on the afternoon of Sunday April 26th with sessions for technologists
and students, as well as applied workshops. The scientific program on April 27-28th will include an international line-up of keynote speakers, scientific symposia, technical workshops, posters, and industry exhibits.

For detailed program information please visit our website http://www.css-meeting.ca/. The deadline to submit abstracts for the general poster session, and for student and technologist prizes, is January 17, 2009.

21st Annual Meeting of the Society for Light Treatment and Biological Rhythms (SLTBR)

The 21st Annual Meeting of the Society for Light Treatment and Biological Rhythms (SLTBR) will be held in Berlin, Germany from June 24th-June 27th, 2009.

SLTBR’s meeting is an official satellite to that of the World Federation of Societies of Biological Psychiatry (WFSBP), which will convene in Paris, France immediately following the conference.

Our 2009 international meeting will feature a CME course on chronobiology, cutting-edge research presented in oral and poster sessions, and 3 symposia featuring leading experts in the field:

- “Sleep Deprivation, Light Therapy, Phase Advance: Chronotherapeutic Adjuncts to Medications in Major Depression”
- “EUCLOCK: Entrainment in Humans and Animals”
- “Lighting and Architecture: What can Chronobiology Offer Architects and Lighting Designers?”

Additional meeting information can be found at www.sltbr.org. Meeting inquiries should be sent to sltbrinfo@gmail.com.

Institute of Medicine Releases Report on Fatigue and Medical Resident Duty Hours

On Tuesday, Dec. 2, 2008, the Institute of Medicine of the National Academies (IOM) released its new report, “Resident Duty Hours: Enhancing Sleep, Supervision, and Safety,” which was sponsored by the U.S. Agency for Healthcare Research and Quality.

The independent report addresses the issue of fatigue-related medical errors by proposing revisions to existing duty-hour regulations for medical residents. The American Academy of Sleep Medicine will conduct a thorough review of the report and will actively support IOM recommendations that both enhance patient safety and promote quality physician training.

More details about the report are available on the IOM Web site at www.iom.edu/?ID=60449.

SRS Website to Publish Trainee Thesis Information

The Communications Committee, in partnership with the Trainee and Education Advisory Committee, and with the unanimous approval of the SRS Board of Directors, is creating a venue on the SRS web site to highlight the thesis work of SRS Trainees. On a new section of the SRS website, we will begin publishing the titles and links to SRS Trainee Doctoral and Master’s theses in the coming months.

This initiative will increase recognition of Society Trainee members and make their work visible to prospective employers and others who may want to learn about their accomplishments. We hope that senior colleagues will also use this forum to publicize their trainees’ work and highlight the success of their training programs. Over time, we will develop a library of Trainee theses, which will become a rich scientific and historical resource for the field. Eventually, we may expand the library to include the theses of current SRS members.

To have a successfully defended or approved thesis listed on this new section of the SRS web site, please submit the following information to Nicholas Cekosh, SRS Coordinator at ncekosh@srsnet.org:

1) Title of thesis
2) Name of trainee
3) Type of thesis (Master’s or Ph.D.)
4) Degree granting institution
5) a) Date the thesis was successfully defended; or
   b) Date the thesis was completed and approved
6) Name(s) of responsible supervisor or committee chair
7) Web link (URL) to the electronic version of the full thesis, if available
8) Published or approved abstract or executive summary of the thesis (must be available in the public domain)
9) Copy of a letter or certificate stating that the thesis has been officially approved (alternatively, ask supervisor or committee chair to confirm this by e-mail)
Research Interests

Sleep research is currently undergoing a dramatic paradigm shift and we are excited to be amidst this flurry of activity. Our research program has two major components. First, we are keenly interested in sensory processing, including the effects of behavioral state and sleep. Advances in this area have major implications for understanding how the nervous system functions and also have direct relevance to studies of sensation and perception, the regulation and functions of sleep, and the mechanisms, effects and maintenance of anesthesia. Second, many important questions that we want to address require new technologies to make novel measurements. These include new imaging techniques to record neural activity in order to assess their state across time with high spatial and temporal resolution and data systems that are implantable, wireless, and can acquire, process, and integrate large amounts of data from different sources.

New Perspectives on Sleep

The next advances in sleep research require a significant paradigm shift because the current views cannot explain the function and control of sleep at a mechanistic level. Sleep is traditionally considered a property of the whole organism, in part, because quiescent behavior is often the defining criterion of sleep. However, many recent studies suggest that sleep and sleep intensity can be localized to particular brain regions, and vary independently from whole animal behavior. We are developing theoretical and experimental approaches to brain organization of sleep suggesting that sleep is a distributed process and a fundamental property of neural assemblies represented by cortical columns. Our experiments demonstrate that neural assemblies have profound and localized functional states that are related to whole animal sleep but can vary independently. Our lab aims to define the relationships, function and importance of assembly functional state to whole animal sleep. Using electrical and optical mapping techniques, we have developed evoked response signatures that define functional sleep- and wake-like states for individual cortical columns. We have shown that separate cortical columns wax and wane through at least 2 distinct states, semi-independently from organism sleep and dependent on prior activity. These experiments will provide insights into mechanisms of local neural assembly sleep and the brain organization of sleep.

Advanced Electrophysiology and Optical Imaging in Awake and Sleeping Animals

In order to test hypotheses about the control and function of sleep on individual cortical columns, we require an experimental animal model in which we can map the electrical and metabolic activity of the cortex with high resolution while the animal progresses through natural sleep and waking cycles. We have developed miniature electrode arrays and imaging devices that can be implanted into rats and tethered recordings made over periods of one to two years. To measure task performance, we have also been training rats to perform conditioned lick responses during whisker stimulation while simultaneously recording somatosensory cortex field potentials. To stimulate a particular whisker in a defined pattern, rats are restrained with their head immobilized. We have implemented the behavioral and electrophysiological recording system on a vibration isolation table in order to make intracellular measurements from cortical and thalamic cells during these behaviors.

Sleep and Neurovascular Coupling within Cortical Columns

Local metabolic and blood flow measurements may also provide markers of cortical column functional state and neurovascular coupling. Our studies showed that brain optical signals correlate well with electrophysiological state, and when used non-invasively with imag-
ing capabilities, could provide topographical maps of the brain and the relative fatigue experienced by each part of the brain. Measures of local blood oxygenation, flow, and volume may also provide markers of cortical column functional state based on metabolite delivery. We have developed several methods for non-invasive measurement of blood oxygenation, flow, and volume, including near-infrared optical tomography and electrical impedance tomography. By shining light on the head and recording the resulting light-reflectance patterns, we can create functional images of the brain with spatial and temporal resolution similar to EEG, and do so continuously for many days. Applying this novel technique successfully requires significant improvement in the amplifiers and digitizers used to capture electrophysiological signals. Accordingly, we are developing a 256 channel, 24-bit DC-coupled EEG telemetry system using custom integrated circuits of our own design.

**Technology Development**

Paradigm shifts in science are usually accompanied by development of revolutionary technology to gain new insights and perspectives into the physical world. Our lab has developed advanced technology for sleep research. Our experience in electrical and computer engineering has helped us to develop miniature implantable video cameras to image scattered light changes from the cortical surface of freely behaving animals, and we have simultaneously developed high-density surface electrode arrays to image cortical surface electrical activity. High-density electrode recordings require dense amplifier systems, with 256 or more channels of electrophysiology and the capability for recording a variety of signals, including EKG, EEG, evoked responses, and single unit action potentials. Recording video at high speed (>1000 frames per second) simultaneously with over 1000 channels of electrophysiology requires data systems that can stream data from multiple sources into file structures that can be easily and efficiently parsed. Recent NIH funding has allowed us to extend this technology in collaboration with Electrical Engineering faculty to develop miniature Systems-On-A-Chip that include amplifiers, multiplexers, digitizers, and transmitters, eliminating the need for tethers, and thus allowing the animals to move freely during experiments. Building our own hardware and software means that we are not limited to off-the-shelf devices, because we can easily modify our equipment for the experiment at hand. Also, it gives us the freedom to experiment with new technologies and explore new ways of collecting data.

**Resources and Technical Capabilities**

Our lab is a member of the Human Sleep and Performance Research Center at Washington State University, directed by Greg Belenky. Other faculty members include James Krueger, Hans Van Dongen, Lynn Churchill, Steve Simasko, Jonathan Wisor and Jaak Panksepp. The center allows us to explore sleep research on a number of levels including cellular, molecular, biochemical, behavioral and physiological. Within the center, research subjects range from invertebrates to humans, allowing a unique integrative approach to sleep research. A four bed human sleep research laboratory in Spokane, Washington runs long term studies on sleep deprivation and sleep restriction, with 32 channel EEG and 4 channel near infrared optical equipment for non-invasive brain hemodynamic measurements.

Within our own laboratory, we have three animal recording rooms including two full surgery suites for chronic implantation. Our data collection and maintenance is supported by a 50 processor Linux cluster for data acquisition and analysis, including more than 100 terabytes of data storage. We maintain our own mechanical shop for constructing electrodes and other equipment associated with the recordings, and our electronics shop is used to build and test the data acquisition systems used in our experiments. Our data acquisition systems are capable of acquiring 64-256 channels of electrophysiological signals digitized at 20KHz per channel simultaneously with full frame video or optical data at 100 to 1000 frames per second.

**TRAINING OPPORTUNITIES**

Our group has a number of training opportunities available including: undergraduate, graduate, post-doctoral and fellowships. We are currently funded by two grants from the National Institute of Mental Health: MH60263 and MH71830 and by the W.M. Keck Foundation. For more information please contact David M. Rector, Ph.D. (drector@wsu.edu).

**REPRESENTATIVE PUBLICATIONS:**


COLLABORATIONS

Maria Nordin PhD (University of Umeå), Prof Lars Alfredsson (Karolinska Institutet), Associate Professor Invanka Savic MD, PhD (Karolinska Institutet), Professor Pierre Philip MD PhD (Université de Bordeaux), Associate Professor Mattias Wåhde (Chalmers School of Technology, Gothenburg), Professor Simon Folkard (Université de Paris), Professor Björn Bjorvatn MD PhD (Bergen), Professor Mikko Härmä MD PhD (Finnish Institute of Occupational Health)

RESEARCH INTERESTS

The laboratory is one part of the Stress Research Institute and as such focuses on the relationship between stress (in a wide sense) and sleep. This includes the effect of mental stress on sleep, the interaction between stress and sleep in the causation of disease, the effects of sleep loss on safety, the recuperative value of sleep countermeasures against stress and impaired sleep or alertness. Also, irregular work hours are included in the stress concept and their relationship to disturbed sleep and fatigue and accident risk is a second line of research.

One major characteristic of our approach is that we combine laboratory experiments with quasi-experimental field studies. The latter means that we strive to achieve PSG recordings in the home of the participant in order to avoid confounding by the artificial environment of the sleep laboratory. The effects of naturally occurring stress, for example, is one topic that is not well-suited for laboratory approaches. Another aspect that is important for us is the use of sleep diaries with 2-3-hourly ratings of sleep and stress across one to four weeks. We believe that high frequency measurement of sleepiness and stress during real life conditions reveals much of the dynamics in the relationship between sleep and stress/shift work.

Burnout, stress and sleep

Burnout and sleep

This longitudinal project has described the PSG characteristics of individuals with high burnout scores (but still at work) and in burnout patients. At present we are finalizing PSG studies after treatment and recovery from burnout as well as looking for predictors of new cases of burnout. With these studies we hope to find sleep-related explanations to the extreme fatigue that characterizes burnout individuals. The series also includes studies of immune and other parameters that might be involved in the fatigue problems. An ongoing study, using PET techniques, that just started is focused on 5-HT1a receptors and sleep in burnout patients.

Stress and sleep - PSG

Another important area is the description of PSG, salivary cortisol and diary ratings before and during periods of naturally occurring everyday stress. One study in this series was recently published and another one is under analysis. We hope that with these studies we should be able to describe whether normal moderate stress has any effects on the recuperative value of sleep.

Stress and sleep – epidemiology

This stress topic also includes several longitudinal, epidemiological studies in which we use Swedish national registers with many years of representative sampling of the population in terms of stress and sleep, together with the registers of accidents, hospitalizations, causes of death, and others. The main purpose in these studies is to identify the longitudinal relationship between stress and sleep, as well as the effects of those variables on health, safety and mortality.
Mobile phones and sleep

High exposure to mobile phone radiation may be regarded as a physical stressor. In one study we have looked at the effect of 2h exposure to mobile phone radiation before sleep and used PSG to evaluate the effects. The results are presently being published. A new study is presently being planned.

Shift work and sleep / fatigue

Shift work and sleep, fatigue and health – national studies

At present 3 different epidemiological studies (around 2000 participants in each) are being conducted:
• One concerns the prevalence of shift work sleep disorder in the Swedish population. In this study we have recently collected a nationally representative sample of work hours and sleep/fatigue problems and are now analyzing the data.
• In a second national representative study, which is presently being carried out, we focus on the prevalence of early morning work and health. This is a problem that is increasing and is as severe as that of night work. However, almost no data exist.
• In a third study using a national sample we are planning the collection of data for a national survey of “good” and “bad” shift schedules (as per the opinion of the respondent). The central idea is to attempt to identify the common denominator of both types of schedules.

Shift work and self-determined work hours

This study, which is just underway, is trying to find out how employees in typical shift work occupations construct their work schedules when using computerized self-scheduling techniques. Is night work avoided or sought? Are long sequences of work shifts or days off sought, or are short ones preferred? How does gender, age, family situation, etc affect self-scheduling choices?

Light treatment on the night shift

We have recently finished a study of light treatment of nurses during night work and day work (to improve re-adaptation). At present we are starting studies of light treatment for nuclear control room workers, with the intent of optimizing night shift alertness.

Safety & sleepiness

Sleepiness at the wheel in simulators

In a series of studies we are addressing various issues related to sleepiness at the wheel:
• In one 45-partner EU-financed project, we have been searching for sensors of sleepiness and sleep, using EEG, EOG, driving behavior, and subjective ratings. The results are presently under publication.
• In another series of studies (Swedish IVSS) we are continuing the work from the EU-project, trying to combine various parameters for the prediction of sleepiness. This also includes studies of the alerting effects of rumble strips and attempts to understand individual differences.

Sleepiness at the wheel in real driving

At present we just finished the data collection in field studies (on the road) of fatigued drivers to determine physiological and behavioral indicators when risk levels become high and driving has to be terminated. This work will continue with detailed studies of warning devices.

Mathematical model for predicting sleep, sleepiness and accident risk

Our laboratory has for 20 years been developing a mathematical model for the prediction of sleep, sleepiness and accident risk. Part of this work has been in collaboration with Prof Simon Folkard, Paris. Recently, several real-life validations have been carried out. New work is under way on validations, individual differences and integrating model predictions into sleepiness warning devices.

Regulation of sleep and sleepiness

In several studies we have tried to understand how sleep and sleepiness are determined by homeostatic, circadian and other factors. Recent studies of partial sleep deprivation are under analysis and new studies are planned. Is SWS and sleepiness affected by partial sleep loss is one of the questions. Another concerns whether subjective sleepiness is a good indicator of sleepiness and whether subjective ratings may reveal differences in sleepiness also inter-individually.

TECHNICAL CAPABILITIES

The laboratory is centered around an isolation unit with three bedrooms and uses portable, digital recording equipment, actigraphs, facilities for continuous blood sampling, an endocrine laboratory (for analysis of cortisol, testosterone, melatonin and other markers), and cognitive performance test batteries.

TRAINING OPPORTUNITIES

We have the possibility of receiving PhD students for training in applied polysomnography. We sometimes also have openings for technicians.

SELECTED PUBLICATIONS FROM THE LAST FOUR YEARS


A selection of older representative papers

New Members

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).

Regular Members:

- David A Axelson, MD Western Psychiatric Institute & Clinic, Pittsburgh, PA
- Devin L Brown, MD University of Michigan, Ann Arbor, MI
- Kenneth R Casey, MD University of New Mexico Sleep Disorders Center, Albuquerque, NM
- Nancy L Chamberlin, PhD Beth Israel Deaconess Medical Center, Boston, MA
- Hal Droogleever Fortuyn, MD Radboud Medical Center, Nijmegen, Netherlands
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The 7th Annual Discovering the Secrets of Sleep Fundraising Dinner will be held Sunday, June 7, 2009, at the Sheraton Seattle Hotel in Seattle, Washington. This event provides you with the opportunity to give back to your profession through support of the Sleep Research Society Foundation (SRSF) and the American Sleep Medicine Foundation (ASMF) whose efforts aim to promote the advancement of knowledge in the fields of sleep research and sleep medicine.

Enjoy an evening of networking, dining and entertainment as the sleep community recognizes the achievements of SRSF and ASMF grant recipients. Through this annual event, funds are raised to support grants including:

- The SRSF J. Christian Gillin, MD Research Grant
- The SRSF Elliott D. Weitzman, MD Research Grant
- The ASMF Education Projects Award
- The ASMF Strategic Research Award
- And more

For more information about the SRSF or the ASMF, visit their Web sites at www.sleepresearchsociety.org/foundation and www.discoversleep.org.

To register for the 7th Annual Discovering the Secrets of Sleep Fundraising Dinner, indicate the number of seats that you would like to reserve when registering for SLEEP 2009: online at www.sleepmeeting.org or by fax or mail using the registration form in the SLEEP 2009 Preliminary Program. QUESTIONS? Contact the APSS Meetings Department at 708-492-0930.

The proceeds of the fundraising dinner are managed through the Sleep Research Society Foundation and the American Sleep Medicine Foundation. The Sleep Research Society Foundation is a 501(c)(3) charitable organization; the federal tax ID number is 41-1687236. The American Sleep Medicine Foundation is a 501(c)(3) charitable organization; the federal tax ID number is 41-1920576. For tax purposes, the estimated value of the dinner is $90 per person.