# *World Sleep 2022, Rome, Italy - ISSTA Sleep Science, Technology and Economy Online Symposium*

## *2022 Annual Assembly of ISSTA and 8th iFESS*

## *2022 World Sleep Day Activity*

# Conference Brochure

## *03/13/2022*

**ISSTA, Berlin Headquarter and Taiwan Chapter**

## Co-Organizers:

I.    **ISSTA, Berlin Headquarter and Taiwan Chapter**
II.    **Innovative Medical and Health Technology Center (IMHTC) U.K. and Taiwan**
III.    **Sleep Technology Consortium (STC), Ministry of Science and Technology, Taiwan**
IV.    **China Medical University, Taichung, Taiwan**

**About ISSTA**

The International Sleep Science and Technology Association (ISSTA) was founded in 2012 in Berlin, Germany and is headed by distinguished sleep science and sleep medicine experts from all over the world. The ISSTA goal is to integrate various disciplines in sleep medicine and science and combine modern research with emerging technologies to further raise the educational levels on sleep medicine. ISSTA aims to improve the quality of sleep, daytime function and overall quality of life of not only groups with sleep disorders, but also the population with sleep complaints and disturbances. It is comprised of a board of directors and six committees: International Committee, Popularizing Committee, Research & Development Committee, Industrialization Committee, Education Committee, and the Global Policy & Regulation Committee.

Sleep medicine will advance not only through incremental improvements of traditional sleep technology which focuses on the utilization of polysomnography for the diagnosis and management of sleep disorders, but also on how new and emerging technologies can assist in preventing sleep disorders, decreasing morbidity, and improving quality of sleep, daytime function and the overall quality of life. Through the co-operation between the governments, academia and industries in different countries, ISSTA should be able to foster sustainable economic growth and shared interests globally by raising the living standards and promoting the sleep-related industrial development.

ISSTA seeks to improve healthcare and decrease morbidity and mortality by working to develop new technologies directly relevant to all aspects of sleep medicine. By proposing the topics of "Sleep Technology" as the agenda in the international organizations, such as APEC (Asia-Pacific Economic Cooperation), EU (European Union), NAFTA (North American Free Trade Agreement) and WHO (World Health Organization) etc., so ISSTA could achieve the vision mentioned above.

## Agenda

10am-4pm in Rome/Berlin

**Moderators: Prof. Dr. med Murat Ozgoren, Prof. Dr. med Rayleigh Chiang**

**Narrators: Cindy Choo, Ya-han Chuang**

| | |
|---|---|
| 10.00 – 10.10 | Opening Remarks |
| 10.10 – 10.35 | **Patrick Strollo (U.S.A)** |
| | Hypoxic Burden and Cardiovascular Risk |
| 10.35 – 11.00 | **Christoph Janott (Germany)** |
| | Acoustic Analysis of the Anatomical Causes of Snoring and OSA |
| 11.00 – 11.10 | **Tea break** |
| 11.10 – 11.35 | **Hiroshi Kadotani (Japan)** |
| | Sleep Epidemiological Studies with Portable Devices |
| 11.35 – 12.00 | *Panel Discussion I* |
| | **Patrick Strollo (U.S.A)** |
| | **Christoph Janott (Germany)** |
| | **Kiroshi Kadotani (Japan)** |
| 12.00 – 12.50 | Lunch break |

**Moderators: Prof. Dr. med Adile Oniz Ozgoren, Prof. Dr. med Ofer Jacobowitz**

**Narrators: Dr. Sigrid Chen**

| | |
|---|---|
| 12.50 – 13.15 | **Harald Hrubos-Strøm (**Norway**)** |
| | Sleep Technology in the World Sleep Academy |
| 13.15 – 13.40 | **Murat Ozgoren (Nicosia)** |
| | Sleep Specific Tactile Dynamics Revealed |
| 13.40 – 14.05 | **David Lin (Taiwan)** |
| | Bio-signal Collection Points at Home and Challenges |
| 14.05 – 14.20 | **Tea break** |
| 14.20 – 14.45 | **Sigrid Chen (Taiwan)** |
| | Sleep and Chronic Condition |
| 14.45 – 15.10 | **Bruce Bateman (Taiwan)** |
| | Wearables for Sleep Monitoring |
| 15.10 – 15.35 | **Michael V. Vitiello (U.S.A)** |

Efficacy of Remote Delivery of Cognitive Behavioral Therapy for Insomnia

15.35 – 15.55     ***Panel Discussion II***

**Murat Ozgoren (Nicosia)**

**David Lin (Taiwan)**

**Sigrid Chen (Taiwan)**

**Bruce Bateman (Taiwan)**

**Michael V. Vitiello (U.S.A)**

15.55– 16.00     Future Collaborative Research Planning

Closing Remarks

# *Prof. Rayleigh Chiang*

## President of ISSTA, Co-Chair of Conference Organizer, Moderator

Prof. Dr. med. Chiang is the Co-Founder of Innovative Medicine and Health Technology Center (IMHTC, www.imhtc.co.uk) and CEO of Asia-Pacific Branch of IMHTC. He served as the director in Sleep Technology Special Interest Group (SIG) of the Center of Innovation and Synergy for Intelligent Home and Living Technology (iNSIGHT) at National Taiwan University in Taipei, where he and his team defined a brand new field by publishing the first textbook on "Sleep Technology" with Springer in 2012. In 2016, he was elected as a president of International Sleep Science and Technology Association (ISSTA, www.isstasleep.org ) in Berlin Headquarter after the 4-year-turn of secretary general during which he launched the "Global Sleep Technology Industry Standards Establishment" and "APEC Sleep Technology Agenda Proposal". He was also invited to write a Letter-to-Editor by the "Sleep Medicine Review", the highest-ranked academic journal of global sleep medicine field, in 2018 due to the widely impacts among the 21 economies of APEC. In June 2010, he got the honor of "Investigator Award" from American Academy of Sleep Medicine (AASM), and the artificial intelligence project - "Cross-ethnic Outcome Management Model for OSAS based on Artificial Intelligence" led by him has been invited to submit a full application for Strategic Research Award (SRA) of AASM.

Till now, prof. Chiang is the only Asian scholar who got the honor from ESRS (European Sleep Research Society) Board Certificated Grandparent Somnologists and therefore is joined by the company of 121 other world class sleep experts in the exclusive 2-year of 2012 and 2013. In 2013, ISSTA have made a proposal - "Sleep Science and Technology Research and Education Infrastructure" to the European Commission Research Infrastructure with ESRS. Prof. Chiang also coordinated the ISSTA Consortium for the application of Horizon 2020, the largest E.U. government project, together with 12 other prestigious institutes in E.U. and Asia. In Taiwan, he had been invited to be the Deputy Superintendent of Kang-Ning General Hospital in Taipei since 2016 after stepping down the vice-CEO of the Center of Sleep Medicine from one of the three best hospitals - the Taipei Veterans General Hospital. In the same year, Prof. Chiang became the Director of Sleep Technology Consortium (STC, http://sleeptechconsortium.org ) under Ministry of Science and Technology (MOST), Taiwan government. Sitting as the reviewing board of tFDA since 2009, Prof. Chiang was invited into the "Long-Term Care Technology Committee" under Executive Yuan in 2017 based on his previous experiences as the governor general of a national project – "International Smart Wellness Park" under National Development Council between 2013 and 2015. Prof. Chiang started his life-long career in sleep medicine after finished the fellowship in Sleep Center of Stanford University in 2006, and he served as the board of directors and the supervisor of Stanford-Taiwan Club. He was also contributing to the Asia-Silicon Valley Project for Taiwan by launching the Asia-Pacific Branch

of Innovative Medicine and Health Technology Center (IMHTC, www.imhtc.co.uk ) in Taipei. He led the project - "Medical IoT and Health Blockchain" co-sponsored by Ministry of Health and Welfare as the Infrastructure of Medical New Southbound Policy of Taiwan in 2018. He is currently the CEO of IMHTC Asia-Pacific Branch, the Hospital-Level Expert and Chairman of Sleep Center, TEDA (Tianjin Economic Technology Development Area) Hospital, Tianjin, China, and full faculty of School of Medicine,  China Medical University, Taichung, Taiwan. Due to the urgent needs to advance the health policies in Taiwan and for the international connections on above "Health Blockchain" project, Prof. Chiang has devoted himself to the health policies and management from the perspectives of global economics and has been enrolled in the DrPH program in Department of Health Policy and Management of Johns-Hopkins University in Baltimore, U.S.A since 2019.

# *Prof. Patrick Strollo*

**Personal Statement**

I have over 20 years' experience as an investigator in pulmonary sleep disorders. My research has involved team science with an emphasis on translational investigations. My work along with my collaborators has focused on three broad areas of investigation: 1) New strategies / tools for the diagnosis of sleep disordered breathing, 2) Management of sleep disordered breathing 3) The impact of sleep disordered breathing on cardiovascular function. Specific projects have involved clinical trials (prospective cohort studies and randomized controlled trials) and population research. This work has been supported by federal, state, private foundations, as well as industry funding.

Ongoing and recently completed projects that I would like to highlight include:

R01 HL131587
Luyster (PI), Role: Co-Investigator
08/20/17-07/31/21
Improving Asthma Control Using Internet-Based Cognitive-Behavioral Treatment for Insomnia

R01 AG053504-02
Thurston, (PI) Role: Co-Investigator
8/15/16-6/30/26
Menopausal Vasomotor Symptoms and Brain Aging in Women

1UG3Ns120191-0
Weber, (PI) Role: Co-Investigator
8/15/21-7/31/22
SWITCH trial: Early feasibility study of Stentrode BCI for augmentative communication

## EDUCATION/TRAINING

| INSTITUTION AND LOCATION | DEGREE *(if applicable)* | Completion Date MM/YYYY | FIELD OF STUDY |
|---|---|---|---|
| Washington College, Chestertown, MD | BS | 8/1976 | Chemistry (Cum Laude) |
| Wagner College, Staten Island, NY | MS | 5/1977 | Biomedical Sciences |
| Uniformed Services University of the Health Sciences, Bethesda, MD | MD | 5/1981 | Medicine |
| Wright Patterson Medical Center, Wright-Patterson AFB, OH | Other training | 7/1981-6/1982- | Internship-Internal Medicine |
| Wilford Hall, USAF Medical Center, Lackland AFB, TX | Resident | 7/1982-6/1985 | Resident/Chief Resident-Internal Medicine |

| INSTITUTION AND LOCATION | DEGREE *(if applicable)* | Completion Date MM/YYYY | FIELD OF STUDY |
|---|---|---|---|
| Wilford Hall, USAF Medical Center, Lackland AFB, TX | Fellow | 7/1985-6/1987 | Fellow-Pulmonary/Critical Care |

## *Abstract*

### *Sleep Disordered Breathing and Cardiovascular Disease – "This time it's personal"*

The Apnea Hypopnea Index (AHI) has been associated with cardiovascular morbidity and mortality in large epidemiology studies. Recently, there has been concern raised that this measure lacks precision in identifying individual risk for these important outcomes related to sleep disordered breathing. The assessment of hypoxic burden may provide a better assessment of cardiovascular risk. In this presentation, the measurement of hypoxic burden will be described and how it performs relative to the AHI. In addition, measures of hypoxic burden and the impact on blood pressure and daytime sleepiness will be discussed.

# *Dr. Christoph Janott*

Christoph Janott coaches and advises inventors, founders and young companies in the field of medical devices in market and business development.

In the past 20 years he has held several leadership positions in international product management, business development, marketing, and sales in different medical companies — from start-up to big international groups. He has vast knowledge of the medical devices business worldwide, with a focus on Europe and USA. He successfully developed the business for innovative solutions and achieved market leadership positions for his products within the international medical community.

## Professional Experience

| | |
|---|---|
| 2020 - present | Diametos GmbH, Potsdam (Germany) |
| | Development and sales of intelligent diagnostic technologies for sleep medicine Chief Scientific Officer and Co-Founder |
| 2011 – present | Independent Interim Manager, Adviser, Mentor |
| | Business development, sales and marketing for start-ups and emerging companies in the medical devices industry |
| 2009 - 2011 | Olympus Surgical Technologies Europe, Hamburg (Germany), |
| | Development, production and service of endoscopes and surgical devices |
| | Department Manager Product Management |
| 2003 - 2009 | Celon AG medical instruments, Teltow (Germany) |
| | Development, production, service and sales of electrosurgical devices |
| | Head of Product Management |
| 1998 - 2003 | Sennheiser electronic GmbH & Co. KG, Wedemark (Germany) |
| | Development, production and sales of electroacoustic products |
| | Product Manager Audiology |

# Abstract

***Acoustic analysis of the anatomical causes of snoring and OSA***

Determination of the anatomical causes for snoring is an essential tool in the diagnostic workup of sleep-disordered breathing patients in order to allow for a targeted intervention with the aim to increase success rates and to reduce invasiveness and intervention-related morbidity.

The diagnostic standard for snoring cause determination in non-awake stage is drug-induced sleep endoscopy (DISE). While it has been demonstrated that DISE influences the treatment decision and can improve success rates, it has a number of disadvantages, as it is time consuming, costly, puts the patient under strain, and cannot be performed in natural sleep.

Snoring cause determination by acoustic analysis of snoring noise can overcome these disadvantages and has therefore been a topic of research in the past 30 years.

Our group has followed a machine learning approach using a multi-parametric acoustic feature model to determine the excitation locations and vibration patterns of snoring sounds. The model has been trained on a corpus derived from DISE recordings which have been labeled by at least two blinded sleep experts in order to create a reliable ground truth. Based on the popular VOTE classification, several classification schemes have been developed and tested for their usefulness.

A brute force approach has been chosen to select suitable acoustic features for the task at hand from a multitude of more than 7.000 features. Using several classifier types, it has become evident that features describing the spectral properties of the articulation tract are most suitable to distinguish between different excitation locations within the upper airways.

In this session, our approach will be discussed with its strengths and limitations, with a view on its practical application, reliability, consequences for therapy, and its potential future place within the diagnostic workup of snoring and OSA patients.

# Prof. Murat Ozgoren

His research interests include human factor, applied brain biophysics, signal processing, information processing in the brain, multidisciplinary and translational studies in the cognitive science incorporating memory, sleep and pathological processes. He is the national delegate of European Strategic Forum on Research Infrastructures (ESFRI), as well as having served as chair of Health and Food Strategy Working Group. He is the associate editor of "Sleep and Biological Rhythms" Journal and is the member of the Editorial Board of "World Journal of Anesthesiology". He is the vice president of the "International Sleep Science and Technology Association (ISSTA)". He is also the vice president of Asian Sleep Research Society. Hehas been the board member of European University Association Council of Doctorate Education. He is responsible for innovation and establishment of technology development zone. He is affiliated with neuroscience Msc as well as being the chair of Biophysics Dept in Near East University, Cyprus.

## Abstract

### Sleep Specific Tactile Dynamics Revealed

Murat Ozgoren[1,3] MD PhD, Gonca Inanc[1,2,3] PhD and Adile Oniz Ozgoren[2,3] MD PhD

[1]Near East University, Faculty of Medicine, Department of Biophysics, Nicosia / Cyprus

[2]Near East University, Faculty of Health Sciences, Nicosia, Cyprus

[3]Near East University, Department of Neuroscience, Nicosia / Cyprus

Sleeping brain is one of the most intrigued biological complexities in nature. Not only the brain shifts into a different state, but it also alters its sensory processing. While this processing changes hence also the cognitive dynamics alter. We have formerly shown the dynamics of brain functioning under complex auditory stimulation. Recently we have shifted our focus into other modalities including tactile. This tactile modality displays a different pattern in the handling of sensory input during and in between sleep stages.

When brain responses to painless tactile stimuli were examined, it was observed that eight response components (P50, N100, P200, N300, P450, N550, P900 and Nlate) appeared in all sleep stages (N1, N2, N3 and REM) after stimulation. The early component (P50) response (of the dominant hand)) increased as sleep deepened in all measurement regions. P50 was smaller in the REM sleep phase

than in other regions (central, parietal and occipital) in the frontal region. When the duration (latency) of the response component in question was examined, it was observed that it appeared later in N1 in the frontal region than other stages. In the non-dominant (left) hand, the amplitude of the P50 response component was found to be largest in N3 in the measuring regions - contralateral (C4, T4) of the stimulating hand. Regardless of hand dominancy, P50 was smaller in the frontal region than in other regions.

Late brain responses such as P900 and Nlate were larger in both dominant and non-dominant hand than other stages in deep sleep (N3). Another late component, the P900 response component, appeared later in the contralateral measurement regions (C4, P4, T4) of the hand applied to the dominant hand, while in the non-dominant hand, N1 appeared later than other stages in all measurement regions. These results display the dynamic nature of different modalities and different sleep stages.

# *Prof. Hiroshi Kadotani*

1990: Graduated from Kyoto University Faculty of Medicine.
1997: PhD, Graduate Scool of Medicine, Kyoto University
1997-2001 : Postdoctoral Research Fellow, Stanford University School of Medicine
2001-2005 : PRESTO, JST (Japan Science and Technology Agency)
2002-2007: Associate Professor, HMRO, Kyoto University Graduate School of Medicine
2007- 2013: Associate Professor, Center for Genomic Medicine, Kyoto University Graduate School of Medicine
2013-2016: Professor, Department of Psychiatry, Shiga University of Medical Science
2016-2021: Professor, Department of Sleep and Behavioral Sciences, Center for Sleep Sciences and Medicine, Shiga University of Medical Science
2021-now: Professor, Department of Psychiatry, Center for Sleep Sciences and Medicine, Shiga University of Medical Science

2001/6 American Academy of Sleep Medicine, Young Investigator Award
2011/10 World Sleep Federation, Award of Appreciation
2021/3 36th Telecommunications Advancement Foundation, Incentive award

Editor-in-Chief: Journal of Oral Sleep Medicine
Deputy Editor-in-Chief, Associate Editor: Sleep and Biological Rhythms
Guest Editor: clocks & sleep ( special issue "Role of Sleep and Circadian Rhythms in Health" in 2020-2021); International Journal of Environmental Research and Public Health ("Sleep Apnea Syndrome" in 2018-2019, "Sleep Quality and Health-Related Outcomes" in 2020-2022)
Review Editor: Frontiers in Neurology; Frontiers in Psychiatry
Editorial board: Sleep Medicine Reviews; Sleep Science and Practice; World Journal of Neurology

## *Abstract*

### *Sleep Epidemiological Studies with Portable Devices*

The use of the laboratory polysomnogram (PSG) as the gold standard has limited validity because subjects tend to have a worse quality of sleep in the laboratory than at home. PSG may be not suitable for a large epidemiological study, because it is expensive, labour-Intensive, and time-consuming. We have conducted sleep studies using portable devices that can be performed at home.

We have verified the accuracy of portable monitors and conducted epidemiological studies using them. First, we compared portable monitors with other portable monitors or PSG. As a result, we found that pulse oximeters are useful for screening sleep apnea but do not discriminate sleep apnea severity and that 1- or 2-channel electroencephalographs have reasonable validity to monitor sleep stages. We performed an epidemiological study on Japanese male employees using portable monitors in Osaka, Japan to present sleep apnea prevalence. We are currently conducting a cohort study among city government employees in Koka, Japan, using a 1-Ch electroencephalograph to analyze sleep status at home.

It is relatively easy to acquire data on heart rate variability using a small wearable device. We developed algorithms to screen sleepiness, sleep apnea, and orthostatic hypotension using machine learning. We plan to continue our sleep research projects using portable devices at home.

# General Manager David Lin

General Manager, Inventec Appliances Corp., Taipei, Taiwan

## *Abstract*

### *Best Bio-signal Collection Points - at Home and Challenges*

Traditionally there were very limited bio data collection devices at home: body temperature mostly, some families are equipped with blood pressure meter or glucose meters. As technology evolves more bio- taking products join and enable more collection points at home, such as wearable devices like Apple watch for sleep, heart rate, breath rat, patch for glucose monitoring etc. However challenges still remain from issues like usability, battery life, sensor accuracies. In particular usability is the main challenge as the user groups who are not tech savvy such as the elderly or as the nature of products, including product charging issues. Therefore this study aims to analyze pros and cons for various products including the following:

1. Smart watch:

    Pros: Messaging and information at day time

    Cons: High percentage of users take it off at sleep,

    High percentage of users stop using after weeks

    short battery life

2. Headband:

    Pros: High precision

    Cons Users are not used to wear the band at sleep

    Battery life and charging issue

3. Bed side devices:

Pros:  No change to user behavior

Cons: Radio wave technologies are inaccurate and also limited data can be collected.

4. Smart mattress

Pros: No change to user behavior.  Accurate sensors for more overall bio collection. Supports sleep quality improvement by structure movement, temperature control and materials.

Cons: Higher cost.


In real world, hardware remains to be critical to connect users and internet.  Therefore it is critical to address the hardware for bio data collection and then sleep analysis. All successful Internet hardware products at home, or so called IoT, are evolved from traditional products such as smart speakers, smart door bell, smart TV etc.  One of the major reasons for these products to be successful was to eliminate the huge cost to educate the market. Smart mattress is known to all consumers without market education, and can be the ideal platform for sleep analysis with less entry barriers.

# Dr. Sigrid Chen

Dr. Sigrid is a certified physician, occupational therapist, personal trainer who helps patients with cardiovascular, pulmonary, metabolic diseases and cancer to establish customized and comprehensive treatment plan and reverse the progress of disabilities, through digital solutions.

Before starting a healthcare start-up, Sigrid worked four years as a general practitioner and a medical consultant. After a successful career helping patients with chronic conditions and sub-health populations, Sigrid now coaches and advises them on how to improve and maintain their health status via hybrid virtual and on-site therapeutics.

Sigrid is available for health promotion and disease prevention planning, as well as private consultations. You can reach Sigrid at sigrid.chen@errkhealth.com.

## Abstract

### Sleep and Chronic Condition

**Background:** Decreased sleep duration or quality has been linked to the development and management of a number of chronic diseases and conditions, including pain, type 2 diabetes, cardiovascular disease, obesity, and depression. We aimed to develop a home-based sleep intervention and lifestyle coaching program for patients with sleep disorders as well as chronic conditions, to be delivered using a messenger application.

**Methods:** A comprehensive service for evaluation and treatment of sleep disorders integrated with behavioral coaching conversational system addresses different facets of etiologies and consequences regarding insufficient and poor sleep, such as obesity and hypertension. Available 24/7, we deliver customized integrative support, health education, and interventions through brief conversations via existing communication channels, according to personal sensed data, specifically laboratory data, physical activity data, self-reported symptoms, and objective sleep-related records collected with polysomnography and actiwatch sleep monitor.

**Results:** Our patients experienced significant improvements in sleep quality from baseline to post-treatment, with chronic conditions improved among follow-up examinations, which were associated with improved sleep quality. We engaged patients via a preferred method of communication in individualized push alarms and conversations to promote treatment adherence, behavior change, and overall health. The 5,427 messages exchanged and patients' reported usefulness ratings (93% of the time) illustrate that patients engaged with and viewed our chatbot as helpful.

**Conclusions:** Identifying co-existing sleep problems among patients with chronic conditions and treating them simultaneously may lead to better treatment outcome. Our results suggest that our programs aiming at tackle sleep and chronic disease altogether hold promise for sustainably improving sleep quality and chronic condition. Moreover, as a partner to clinicians, our service can continue the therapeutic interaction outside office hours while maintaining patient satisfaction and providing personalized health information as needed.

# *Prof. Harald Hrubos-Strøm*

Harald Hrubos-Strøm is research group leader at the Ear-Nose- Throat Department at Akershus University Hospital and a member of the research group "Psychosocial aspects of somatic disease" at the Department of Behavioral Sciences.

He is head of Akershus Sleep Apnea Epidemiological and Clinical Cohort and national coordinator for the following projects:

- Obstructive sleep apnea - personalized medicine - Akershus University Hospital (ahus.no) (funded by Nordforsk)
- Sleep apnea - technological treatment study - Akershus University Hospital (ahus.no) (funded by Horizon 2020)
- Project Hypnos (funded by Eurostars)

## HIGHER EDUCATION:

2011-2018 The Norwegian Medical Association: Specialization in otorhinolaryngology

2015-2016: University of Oslo: Course in research management and supervision.

2014: European Sleep Research Society: Somnologist accreditation.

2005-2013: University of Oslo, Faculty of Medicine, PhD education

1997-2003: University of Bergen, Faculty of Medicine Exchange: Three months of field work in Mozambique (1999-2000) and ERASMUS exchange for three months at Universidade Nova de Lisboa

## EXPERIENCE

October 2021- Associate professor 20%, University of Oslo, institute for clinical medicine, Campus Akershus University Hospital

September 2021- Task leader, Innovative Medicines initiative project "Beamer"

May 2021- Work package leader, Eurostars project "Hypnos"

March 2021- National coordinating investigator, Horizon 2020 project "Sleep Revolution"

Aug 2019- Acting leader of the research group at the department of otorhinolaryngology, Akershus University Hospital.

January 2019- National coordinating investigator, Nord Forsk project "Nord Sleep", including leadership of the "ASAP cohorts"

October 2019- The Norwegian association for otorhinolaryngology, head and neck surgery, leader of "sleep advisory board"

Aug 2018- 2021 University of Oslo, Institute for Basic Medical Sciences, Department of Behavioural Sciences: Senior lecturer, 10%

Oct 2017- Akershus University Hospital: Senior consultant, 100%

April 2016-2017 Oslo University Hospital, department of otorhinolaryngology: physician in specialization, 100%

April 2015- University of Oslo: Appointed main supervisor

Sept. 2014-2016 ESRS Early Career Researcher Network (ECRN): Vice coordinator and member of the ESRS educational committee

## *Abstract*

**Sleep Technology in the World Sleep Academy**

Background: The World Sleep Organization is launching the World Sleep Academy (WSA) with first students enrolled in the fall of 2022. The WSA will be presented on March 16th, 7:30am-7:55am, room 31.

Aim: To present an overview of the sleep technology curriculum at the WSA.

Methods: In the fall of 2021, Jun Au, Steve Carstensen, Rachel Sherman and Harald Hrubos-Strøm wrote the technology section of the WSA curriculum.

Results: The 40 page document is curriculum for students attending the WSA. The content is organized in a diagnostic section and a treatment section. A brief overview of the content will be presented.

# *Chairman Bruce Bateman*

Futurist, Quantified Selfer, and Connected Cities Builder, Bruce has been a Serial Entrepreneur, Mentor Constant Traveler, Angel Investor, Startup Advisor, Speaker, Lover of Life.

For past 15 years focused on wearables and sensors to collect and track personal and environmental data. Assisted multiple startups to bring wearable technologies to market. Combining a unique blend of technical, sales, marketing and customer service skills to help companies define, launch and support products / projects for the telecom, AI, wearables, IoT, VR, M2M and enterprise industry. A pure technical guy with extensive international experience in manufacturing and distribution, with an understanding of different cultures and business practices. Having started or been involved early stages of 9 startups, the experiences of success and failures has given Bruce an open and enlighten view of the startup world.

As a quantified selfer, collected almost daily health data for the past 10 years. As technologies improve, so has data collection and analysis. Using ML and big data approaches to analysis I have gained insights into my lifestyle and body.

## *Abstract*

### Wearables for Sleep Monitoring

Many patience's today use consumer available wearable technologies Apple, Fitbit or Samsung to name a few, to track their sleep and activities. But many practitioners are not not sure of the reliability and quality of this data. The author is an engineer who has for the past 12 years has engineered, designed and has been an end user of wearable technologies, the author will present his findings and show test results from 5 different wearable tracking devices which are easily purchased and applications that can be easily downloaded, and present my findings, showing 5 consecutive days report. Comparing each device or applications data and comparing to medical office equipment. The report will show the reliability of the data and the consistency of the data. Comparing home data to FDA approved devices. By comparing home acquired data 2 FDA approved products I would like to show how though not 100% accurate wearable technology can give a practitioner insight to variable changes overtime. In this report I would like to compare Apple watch, Fitbit, Samsung watch and phone, Oura 3 ring plus additional data from top-of-the-line consumer devices, including blood pressure, SPO2, ECG and EKG sensors. Today's fitness trackers latest software and hardware versions can monitor sleep duration, falling asleep time, wake

up time, REM, Deep sleep, sleep movement, resting heart rate, hourly heart, SPO2, activities including exercise and amount of time active.  Additionally, will show apps that can monitor snoring, food intake room sound room light and temperature. The talk will conclude with the authors evaluation of the current trends, issues and considerations with consumer devices and these personal monitoring data to be a more useful technology for practitioners.  Understanding the current state of consumer monitoring devices will help can assist in 24/7 monitoring, to collect more data and environmental data to help in decision making.   It is the authors desires that this short talk will inspire more practitioners getting involved with startups and manufactures of consumer devices to help improve the industry.

# Prof. Michael Vitiello

Michael V. Vitiello, PhD is Professor of Psychiatry & Behavioral Sciences, University of Washington, Seattle. He is an internationally recognized expert in sleep, circadian rhythms and sleep disorders in aging. His research, funded by the National Institutes of Health, focus on the causes, consequences and treatments of disturbed sleep, circadian rhythms and cognition in older adults. He is the author of over 500 scientific articles, reviews, chapters, editorials and abstracts and his work has been cited over 25,000 times. His current research focuses on improving the sleep of osteoarthritis patients to reduce their osteoarthritis-related symptoms such as pain, fatigue and depression, and their healthcare utilization and related costs. He is the Editor-in-Chief of Sleep Medicine Reviews and a fellow of the American Academy of Sleep Medicine and the Gerontological Society of America. Dr. Vitiello has served as: President of the Sleep Research Society and of the Sleep Research Society Foundation; Chair of the Sleep Disorders Research Advisory Board, National Institutes of Health; Scientific Program Chair of the Associated Professional Sleep Societies;  a board member of the Sleep Research Society, the Society of Behavioral Sleep Medicine, the National Sleep Foundation, and numerous editorial boards.

## *Abstract*

**Efficacy of Remote Delivery of Cognitive Behavioral Therapy for Insomnia**

Michael V Vitiello

Psychiatry and Behavioral Sciences, University of Washington, Seattle WA, USA

The short and long term efficacy of Cognitive behavioral therapy for insomnia (CBT-I) a multi-modal theraputic approach to the treatment of chronic insomnia has convincingly been demonstrated for both uncomplicated insomnia and insomnia co-morbid with a wide range of physical and mental illnesses. CBT-I was recently recognized as the gold-standard treatment approach for chronic insomnia buy the American College of Physicians and the US Departments of Veteran's Affairs and Defence. Efforts are now focused on dissemination of CBT-I and developing scaleable protocols that facilitate its broad access. Initially developed as an individual or group based face-to-face multisession theraputic approach, such efforts include identification of key components to reduce treatment duration and exploration of alternative modalities of treatment including internet/smartphone delivered and telephone delivered protocols. Internet/smartphone

based approaches are typically digital, involving information technology platform with a relatively fixed theraputic approach. Telephone delivered approaches in their simplist format involve voice only realtime individual sessions with a live therapist. Here we report recent literature summarizing the efficacy of digitally based CBT-I and compare such to a recently completed telephone based appoach. The relative advantages and disadvantages of each approach and their potential roll in a stepped care model for the treatment of chronic insomnia will be discussed.

# NOTE