

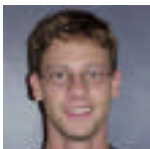


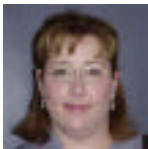
William C. Dement
Sleep and Chronobiology Behavioral
Science Research Apprenticeship

Retreat Colloquium

21-23 August 2001

Whispering Pines Conference Center
URI Alton-Jones Campus
West Greenwich, RI

Tuesday	Event	Speaker	Topic
1200	Lunch		
1315		Rod Hughes, Ph.D. Young Investigator	To be announced
1430	Break		
1500		Josh Sleprow	A Gender Comparison of Dreaming
1515		Sara Penchinar	Fatal Familial Insomnia
1530		Kris Ohaus	Gender Differences in Dreaming
1545		Harley Hamilton	Personality and Sleep
1600	Break		
1615		Tracy Rupp	Exercise and Sleep
1630		Vivian Tang	Effects of Sleep Deprivation
1645	Break		
1700	Hors d'oeuvres		
1800	Dinner		
1930	Event	Carskadon	

Wednes.	Event	Speaker	Topic
0800 0915	Breakfast	Orfeu Buxton, Ph.D. Young Investigator	The Effects of Sleep Loss on Metabolism and Endocrine Function
1030	Break		
1045		Awen Knowles	Characteristics of Sleep In People With Major Depression: A Look at Polysomnographic Findings
1100		Juhi Pandey	The Relationship Between Autism and Sleep Disturbances
1115		Eliza Van Reen	The Relationship Between Parkinson's Disease and REM Sleep Behavior Disorder
1130		Jason Hahn	Performance of Students Under Sleep Deprivation
1200	Lunch		
1330		Liz Kyonka	Something for Nothing? An Analysis of Modafinil Use In Healthy Individuals
1345		S. Justin Thomas	REM Sleep Behavior Disorder and Its Clinical Treatment
1400 1530 1700		Anne-Marie Chang Young Investigator All	Genetic Analysis of a Familial Case of Advanced Sleep Phase Syndrome Faculty-Staff "Walk in the Woods"
1800	Hors d'oeuvres		
1930	Dinner FUN NIGHT		

Thurs.	Event	Speaker	Topic
0800	Breakfast		
0915		Jennifer Martin, Ph.D. Young Investigator	Sleep Disruption in Older Adults
1030	Break		
1045		Alex Korb	PTSD and Sleep
1100		Dawn McDaniel:	The Nightmare: A Coping Mechanism for Psychopathology?
1115		Shannon Carter	Drowsy Driving
1130		Robert Park	The Effect of Exercise on Sleep
1145		Mary A. Carskadon	Farewell
1200	Lunch		

Young Investigator Presentations

Rod Hughes, Ph.D., Scientist, Cephalon, Inc.

Dr. Hughes was unable to send information about his topic in time to include it in the program.

Orfeu Buxton, Ph.D., Postdoctoral Fellow, Endocrinology and Sleep, University of Chicago

The Effects of Sleep Loss on Metabolism and Endocrine Function

The concepts that "sleep is for the brain, not for the rest of the body" and that sleep loss has little or no effect on peripheral function has prevailed until recently, despite the profound influences sleep exerts on metabolic, endocrine, and cardiovascular functions. The known effects of acute total sleep deprivation on physiological function (e.g., endocrine secretion) correspond to the immediate responses to sleep-wake transitions. Because subsequent recovery sleep on the following night is associated with increased rebound secretions of hormones normally released during sleep and the restoration of normal endocrine changes across sleep-wake transitions, it had been implicitly assumed that there is no net effect of sleep loss on endocrine function.

Recent "sleep debt" studies now demonstrate that the impact of one night of acute sleep deprivation is quite different from sleep curtailment, i.e., semi-chronic partial sleep loss. In healthy young adult males, one week of bedtime curtailment to 4 hrs/night was found to be associated with alterations in glucose regulation consistent with diagnostic criteria for impaired glucose tolerance. Among the observed neuroendocrine and metabolic alterations that could underlie reduced glucose tolerance in a state of "sleep debt" were elevated evening cortisol levels, alterations of nocturnal GH secretion, elevated sympathetic activity, neurobehavioral deficits consistent with reduced cerebral glucose uptake, and decreased concentrations of leptin. Remarkably, paying the "sleep debt" by subsequently extending the bedtime period for one week normalized glucose tolerance and associated neuroendocrine alterations. Separate studies also indicate that an habitual sleep period of < 6.5 hours/night is associated with reduced insulin sensitivity. Taken together, these findings suggest that sleep loss may be a previously unrecognized risk factor for conditions of abnormal glucose regulation such as impaired glucose tolerance (IGT), insulin resistance, and Type 2 Diabetes Mellitus (DM2). To extend from these results, an ongoing study tests the hypothesis that, in patients with IGT or DM2 and chronic sleep loss (i.e., an habitual sleep period of less than 7 hours per night), extending the bedtime period by 3 hrs/night for two weeks will improve measures of glucose tolerance.

Anne-Marie Chang, Predoctoral Student, Department of Neurobiology and Physiology, Northwestern University

Genetic Analysis of a Familial Case of Advanced Sleep Phase Syndrome

The timing of sleep/wake across the 24-hour day is thought to be regulated by circadian and homeostatic mechanisms. The circadian pacemaker determines the phase of the rhythm of sleep propensity, whereas the sleep homeostatic process regulates sleep propensity in response to the amount of time spent awake. Following the discovery and cloning of a number of circadian genes, the molecular mechanisms underlying the central circadian pacemaker have been characterized in several model systems. Mutations in some of these genes have revealed phenotypes of altered circadian timing, including the phase of the sleep/wake rhythm. Advanced Sleep Phase Syndrome (ASPS) is a human circadian phenotype characterized by a relatively early phase of the sleep period. Unlike situations such as jet lag, this phenotype is not a transient response to changes in entrainment cues or perturbations of normal sleep and wake times but a chronic advanced phase of the sleep time. Since the sleep duration and architecture of ASPS subjects appear normal, ASPS may represent an alteration of the circadian regulation of sleep timing. The identification of familial cases of ASPS suggests a genetic basis (1,2).

We have characterized the ASPS phenotype in a large family in which some members exhibit ASPS. The present goal of this study is to identify circadian genes responsible for the ASPS phenotype using three approaches: linkage analysis, haplotype analysis, and candidate gene sequencing. The elucidation of the genetic mechanisms of ASPS may lead to a better understanding of the basic circadian control of sleep and wake states, as well as possible treatments for those with ASPS.

1. Jones CR, Campbell SS, et al. Familial advanced sleep-phase syndrome: A short-period circadian rhythm variant in humans. *Nat Med.* 1999 Sep; 5(9):1062-5.
2. Reid KJ, Chang AM, et al. Familial advanced sleep phase syndrome. *Arch Neurol.* 2001 Jul;58(7):1089-94.

Jennifer Martin, Ph.D., Clinical Psychology Intern, Behavioral Medicine Track, Brown Medical School

Sleep Disruption in Older Adults

With advancing age, sleep disturbance becomes increasingly common, and epidemiological studies suggest older adults frequently complain of difficulties with sleep. Sleep disruption in older adults should not be viewed as a natural consequence of aging, but rather a symptom of a number of treatable underlying conditions. These treatable conditions can include medical illnesses, psychiatric disorders, circadian rhythm disruption and primary sleep disorders. Studies have shown that sleep disruption can lead to increased morbidity and mortality in older adults, and therefore should be targeted for treatment.

2001 DEMENT FELLOWS

Shannon Carter

2001 graduate, Saint Anselm College

Jason Hahn

Rising junior, Brown University

Harley Hamilton

Rising senior, University of Southern Mississippi

Awen Knowles

2001 graduate, Lesley University

Alex Korb

Rising senior, Brown University

Elizabeth Kyonka

Rising sophomore, Brown University

Dawn McDaniel

Rising sophomore, Brown University

Kristin Ohaus

Rising senior, Brown University

Juhi Pandey

2001 graduate, University of Rochester

Robert Park

Rising junior, Brown University

Sara Penchinar

Rising senior, Oberlin College

Tracy Rupp

2000 graduate, Duke University...entering Brown University Graduate Program in Psychology, fall, 2001

Josh Sleprow

Rising junior, Gettysburg College

Vivian Tang

Rising junior, Brown University

S. Justin Thomas

Rising senior, University of Alabama at Birmingham

Eliza Van Reen

Rising junior, University of Rhode Island