Daily schedules: Circadian rhythms in athletics, learning and medicine

Proposal

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Topic. Although often in the popular media, the science of circadian biology has had little impact on policy or lifestyle choices. Recent discoveries in the mechanisms underlying daily rhythms in physiology and behavior have the potential to inform practice and performance on the athletic field, in the classroom, and in the clinic. For example, there is compelling evidence that disrupting daily sleep:wake rhythms with shift work can place pregnancies at risk. Likewise pharmacotherapies for cancer that are provided at specific times of day can improve outcomes. Remarkably, starting high school classes later in the day enhances attendance and improves learning outcomes. Our group seeks to create new academic courses to frame current research and ideas on this topic. Specifically, the courses will consider how circadian and sleep science can guide policy and lifestyle choices that impact athletic, cognitive and healthcare outcomes. One course will be aimed at undergraduates, and another aimed at graduate/medical students.

Importance for emphasis at Washington University. Research at Washington University on sleep and circadian rhythms effectively spans a wide variety of disciplines including neuroscience, endocrinology, reproductive biology, social work, physical therapy, psychology, computational modeling and drug development. These efforts are relevant to students across disciplines interested in translating research to lifestyle choices (e.g. how to improve sleep quality) and professional practice (e.g. how to improve learning in the classroom, athletic performance, or treatment outcomes in the clinic). In designing policies that could impact society (e.g. school start times), we must consider several factors, foremost among these is socio-economic background. The BYOI program is an ideal opportunity to bring together faculty and, ultimately, students and, perhaps community groups, as we review the literature and formulate proposals for future research and policy endeavors. These conversations will a foundation for courses that feature a balance of sub-topics (speakers, assignments and panel discussions) which will best draw participation from the Washington University community. Moreover, these informal meetings will allow discussion on curriculum enhancement by integrating efforts on sleep and circadian science at the University. Finally, these gatherings should spark productive collaboration on these important topics of sleep, clocks and society.

Invited Participants

1. Deanna Barch (Professor, Department of Psychological and Brain Sciences, College of Arts and Sciences)
2. Carlos Bernal-Mizrachi, (Associate Professor, Department of Endocrinology, School of Medicine)

3. Ross Brownson (Professor, School of Social Work)
4. Gammon Earhart (Professor, Department of Physical Therapy, School of Medicine)
5. Sarah England (Professor, Department of OB-Gyn, School of Medicine)
6. Jeff Haspel (Assistant Professor, Department of Internal Medicine, School of Medicine)
7. Erik Herzog (Professor, Department of Biology, College of Arts and Sciences)
8. Michael Hughes (Assistant Professor, Department of Pulmonary and Critical Care, School of Medicine)
9. Yo-El Ju (Assistant Professor, Department of Neurology, School of Medicine)
10. Dmitri Nusinow (Assistant Professor, Donald Danforth Plant Science Center, Dept of Biology, School of Arts and Sciences)
11. Jr-Shin Li (Associate Professor, Department of Electrical and Systems Engineering, School of Engineering)
12. Paul Taghert (Professor, Department of Neuroscience, School of Medicine)

Preferred style of gathering: We propose to assemble the organizing committee and potential instructors during working meetings around breakfast and/or lunch.