State of the Science:
Circadian Rhythm and Chronomedicine for Cancer and Other Diseases
in the Era of Precision Medicine

September 27-28, 2017

NCI-Shady Grove Campus,
Day 1, September 27, Room 2W910-912 (2nd floor)
Day 2, September 28, TE 406 (T-Level)
9609 Medical Center Dr., Rockville, MD 20850

Agenda

Goals/Objectives:
• Assess the current status of circadian rhythm and sleep research in cancer research, other diseases, and
  chronotherapy, from basic biology to population, translational and clinical research
• Discuss the scientific gaps, needs, and opportunities
• Provide input to NCI/NIH regarding future initiatives and priority research areas
Aiming to improve fundamental understanding of human circadian clock biology and to improve translational
application in public health, disease diagnosis, prevention, treatment and health disparities and across the lifespan
from children to elderly.

Outcome:
White Paper

Format:
Each session: each speaker gives 15 min/scientific presentation with 30 min discussion (40% biology, 60% translational
research and clinical trial) at the end of session.

Day 1: September 27, 2017 - Room 2W910-912

8:00-8:15 am  Welcome and Meeting Introduction
(Jeffrey Abrams, MD, Associate Director, CTEP; Acting Director, Clinical Research, Division of Cancer
Treatment and Diagnosis, NCI;
Michael Twery, PhD, Director, National Center on Sleep Disorders Research, Division of Lung Diseases,
NHLBI;
Chair: Dan Xi, PhD, Program Director, Division of Cancer Treatment and Diagnosis, NCI)

8:15-8:35 am  Keynote: "Cancer Clock Connections: Progress and Provocative Questions”
(Chi Dang, MD, PhD, Ludwig Institute for Cancer Research and The Wistar Institute)
(Introduction: Jeffrey Abrams, MD, NCI)

8:35-10:05 am  Session 1. Molecular Biology of Circadian Rhythm and Cancer Development
(Moderators: Michael Sesma, PhD, NIGMS and Joseph Takahashi, PhD,
University of Texas Southwestern Medical Center)

8:35 am  Molecular Architecture of the Circadian Clock in Mammals
Joseph Takahashi, PhD, University of Texas Southwestern Medical Center

9:00 am  Circadian Dysfunction Promotes Spontaneous Carcinogenesis  
Loning Fu, PhD, Baylor College of Medicine

9:15 am  Elucidating the Role of Circadian Rhythm Disruption in Lung Cancer Using Genome Engineering  
Thales Papagiannakopoulos, PhD, New York University

9:30 am  Circadian Clocks Modulate Metabolism and Cellular Transformation via Complex Transcription Networks  
Katja Lamia, PhD, The Scripps Research Institute

9:45 am-10:05 am  QA session

10:05-10:15 am  Break (10 min)

10:15 -11:35 am  Session 2. Circadian Clock, Sleep on Health and Diseases, Biomarkers, Big Data and Systems Modeling  
(Moderators: Marishka Brown, PhD, NHLBI and David Spiegel, MD, Stanford University School of Medicine)

10:15 am  Circadian/Sleep Disruption and Cancer/Neurodegenerative Disease Risk: The Epidemiological Evidence  
Eva Schernhammer, MD, PhD, Harvard School of Public Health

10:30 am  Impact of Sleep and Circadian Disturbances on Physiology and Health  
Frank Scheer, PhD, Harvard Medical School

10:45 am  Rhythm and Blues: Sleep Dysregulation, Depression, and Cancer Survival  
David Spiegel, MD Stanford University School of Medicine

11:00 am  Circadian Melatonin Disruption by Exposure to Light at Night Promotes Tumor Progression and Resistance to Endocrine Therapy and Chemotherapy  
Steven Hill, PhD, Tulane University

11:15-11:35 am  QA Session

Working Lunch 11:35 am-13:15pm  
(group photo)

13:15-14:10 pm  Session 2 -Continue  
(Moderator: Dan Xi, PhD, NCI and Satchidananda Panda, PhD, Salk Institute for Biological Studies)

13:15 pm  Smartphones and Sensors in Circadian Research – Challenges  
Satchidananda Panda, PhD, Salk Institute for Biological Studies

13:25 pm  Mathematical Modeling of Sleep and Circadian Rhythms  
Elizabeth Klerman, MD, PhD, Harvard Medical School

13:40 pm  Developing a Circadian Wellness Tool for Cancer Patients  
Daniel Forger, PhD, University of Michigan

13:55-14:15 pm  QA Session

Break (5 min)

14:20-15:45 pm  Session 3. Circadian Clock, Nutrition and Metabolism  
(Moderators: Nancy Emenaker, PhD NCI; Karen Teff, PhD NIDDK and Chi Dang, MD, PhD, Ludwig Institute for Cancer Research and The Wistar Institute)

14:20 pm  MYC Disruption of the Circadian Clock  
Chi Van Dang, MD, PhD/Brian J. Altman, PhD, The Wistar Institute

14:35 pm  Aging: Rewiring the Circadian Clock  
Danica Chen, PhD, University of California at Berkeley

14:50 pm  SIRT3 as a Downstream Target of Circadian Rhythms and Breast Carcinogenesis
Day 2: September 28, 2017 Room-TE 406

8:00-9:25 am  Session 5. Circadian Rhythm and Sleep effect on Inflammation and Immune System
(Moderators: Halonna Kelly, PhD, NIAID; Aaron Laposky, PhD, NHLBI and Ajay Chawla, MD, PhD, University of California San Francisco)

8:00 am  Immunity Around the Clock
Ajay Chawla, MD PhD, University of California San Francisco

8:15 am  Circadian Regulation of Immune Function – Known, Unknown, and the Future
Satchidananda Panda, PhD, Salk Institute for Biological Studies

8:30 am  Circadian Immunology of Allergic Disease
Anna Fishbein, MD, Northwestern University

8:45 am  Circadian Regulation of Neuroinflammation
Erik Musiek, MD, PhD, Washington University School of Medicine

9:00-9:25 am  QA Session

Break (5 min)

9:30-11:15 am  Session 6. Chronomedicine and Clinical trial
(Moderators: Dan Xi, PhD, NCI and Francis Lévi, MD, PhD, University of Warwick, UK)

9:30 am  Some Results, Questions and Directions Emerging from Cancer Chronotherapy Trials
Francis Lévi, MD, PhD, University of Warwick, UK

9:50 am  Circadian Regulation in and by Astrocytes
Erik Herzog, PhD, Washington University School of Medicine

10:05 am  Circadian Regulation of Temozolomide Sensitivity in Glioblastoma
Rubin Joshua, MD, Washington University School of Medicine

10:20 am  A Randomized Feasibility Study of Temozolomide Chronotherapy for High Grade Glioma
Campian, Jian, MD, PhD, Washington University School of Medicine

10:35 am  Chronobiology Applied to Radiation Oncology
Tyvin Rich, MD, University of Virginia (WebEx)

10:50-11:20 am  QA Session

Break (5 min)

11:25 am-12:30 pm  Session 6-continue
Emerging Opportunities in Cancer Chronotherapy  
Carla Finkielstein, PhD, Virginia Polytechnic Institute

Chronotherapy  
John Hogenesch, PhD, Cincinnati Children's Hospital Medical Center  
(WebEx)

Using Reconstructed Rhythms to Guide Cancer Chronotherapy  
Ron Anafi, MD, PhD, University of Pennsylvania

12:10-12:30 pm  
QA Session

12:30-13:30 pm Working Lunch

Meeting Adjourn for Attendees

(13:30 -15:30 pm) Summary and Outlining White Paper -all speakers and moderators
6 sessions, summary from all sessions, overall discussion and white paper outline

September 27, 2017 Working Lunch Presentations

12:45-12:55pm  
Circadian Disruption, Metabolic Alterations and Cancer  
Neil E Caporaso, MD, National Cancer Institute

September 28, 2017 Working Lunch Presentations

13:15-13:30 pm  
Preventing versus Reacting: Exploring Risk and Mechanisms of Hypersomnia  
Terri S. Armstrong, PhD, National Cancer Institute