



NATIONAL CANCER INSTITUTE
DCTD Division of Cancer Treatment & Diagnosis

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

David Gius, MD, PhD, Northwestern University
15:05 pm Genome Regulation by the Circadian System in Behavior and Metabolism
Joseph Bass, MD, PhD, Northwestern University (webEx)

15:20-15:45 pm QA Session

15:45 pm Break (10 min)

15:55-17:00 pm Session 4. Circadian Rhythm and Microbiota

(Moderator: Riscuta, Gabriela, PhD, NCI)

15:55 pm Gut Microbes and Functional Luminal Dynamics

Amir Zarrinpar, MD, PhD, University of California, San Diego

16:10 pm The Microbial Clock: What Keeps It Ticking?

Vanessa Leone, PhD, University of Chicago

16:25-16:55 pm QA Session

Dinner on Your Own

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

(Moderators: Dan Xi, PhD NCI and Carla Finkielstein, PhD, Virginia Polytechnic Institute)

11:25 am Emerging Opportunities in Cancer Chronotherapy
Carla Finkielstein, PhD, Virginia Polytechnic Institute

11:40 am Chronotherapy
John Hogenesch, PhD, Cincinnati Children's Hospital Medical Center ([WebEx](#))

11:55 am 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