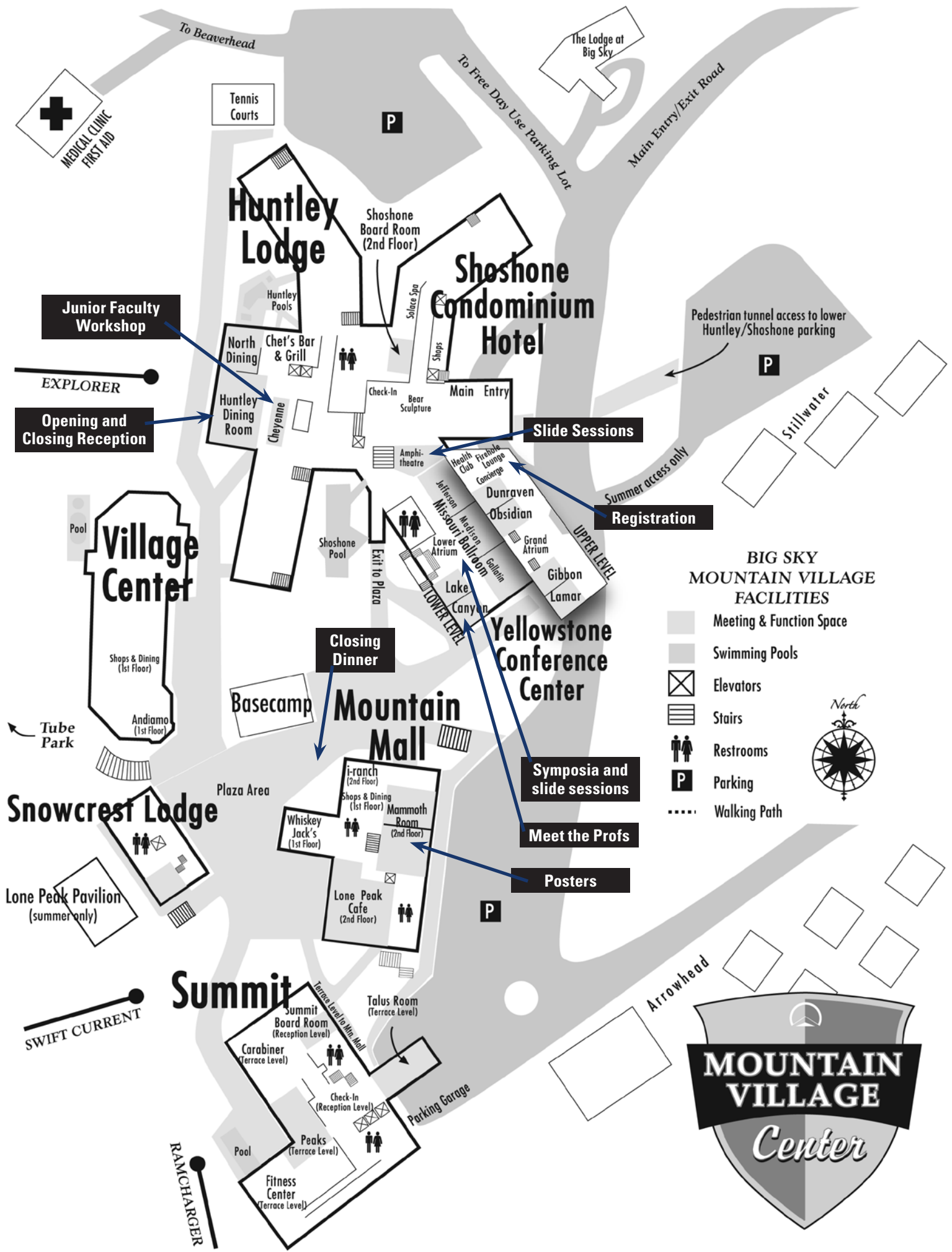


SRBR 2014

SOCIETY FOR RESEARCH ON BIOLOGICAL RHYTHMS
JUNE 14-18 **BIG SKY, MONTANA**



**MEDICAL CLINIC
FIRST AID**

Tennis Courts

P

The Lodge at Big Sky

To Beaverhead

To Free Day Use Parking Lot

Main Entry/Exit Road

Huntley Lodge

Shoshone Board Room (2nd Floor)

Shoshone Condominium Hotel

Junior Faculty Workshop

Pedestrian tunnel access to lower Huntley/Shoshone parking

P

EXPLORER

Opening and Closing Reception

Slide Sessions

Health Club
Firehole Lounge
Concierge
Dunraven
Obsidian

Registration

Village Center

Shops & Dining (1st Floor)

Closing Dinner

Yellowstone Conference Center

BIG SKY MOUNTAIN VILLAGE FACILITIES

-  Meeting & Function Space
-  Swimming Pools
-  Elevators
-  Stairs
-  Restrooms
-  Parking
-  Walking Path



Tube Park

Snowcrest Lodge

Basecamp

Mountain Mall

Symposia and slide sessions

Meet the Profs

Posters

Lone Peak Pavilion (summer only)

Plaza Area

i-ranch (2nd Floor)
Shops & Dining (1st Floor)
Mammoth Room (2nd Floor)

Whiskey Jack's (1st Floor)

Lone Peak Cafe (2nd Floor)

P

Summit

Summit Board Room (Reception Level)

Carabiner (Terrace Level)

Check-In (Reception Level)

Peaks (Terrace Level)

Fitness Center (Terrace Level)

Talus Room (Terrace Level)

Parking Garage

Arrowhead



SWIFT CURRENT

RANCHARGER



14th Biennial Meeting
Conference Program

SRBR Thanks Our Sponsors



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Sched.org

Want to generate a personalized meeting itinerary for your phone, laptop or tablet? Follow these three easy steps:

- 1. Create an account.** Go to <http://srbrmeeting2014.sched.org/> on any device with internet access. Click "sign up" in the top right of the screen. Choose "sign up with e-mail." Follow the short instructions to become a member of the official SRBR online scheduler. Your account information and email are private and not shared with anyone.
- 2. Create your profile.** Follow the instructions to add your name. You can also include a picture, your company/school name, a description of yourself, and/or interests. Save your profile and you are instantly added to the list of attendees. You now have access to meeting information including: Events, Speakers, Slide and Poster Abstracts (located as links on the bottom of the page for the Slide Session and Poster Session events) and Big Sky Resort activities and restaurants (listed under Free Time Events).
- 3. Create your schedule.** Each event in the schedule is color-coded. To add an event to your schedule mouse over the event and click or check the event. To check *your* customized schedule at anytime click the **P** in the upper right hand and choose "*my sched.*" Here, you can also change your settings. For further information or support please click [here](#).

Please go to <http://support.sched.org/customer/portal/articles/1346902-bookmark-the-mobile-web-app> for instructions on how to add an SRBR 2014 icon to your iPhone or android.

Exhibitors

Exhibitor tables will be set up in the Lower Atrium throughout the entire meeting. Please take some time to visit with our exhibitors, as they have provided generous support of the meeting.



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Welcome to Montana!

After enjoying the sunny beaches of Florida for the past four consecutive SRBR meetings (2006–2012), the Executive Committee and I decided that it was time to experience a different environment, and therefore we've moved to the mountains for this year's SRBR meeting. And not just any mountains! I hope you've already experienced the superb scenery of Montana on your journey from the airport to the Big Sky site. If you traveled along Highway 191 from the Bozeman (or another airport), you followed the course of the Gallatin River, along which many of the scenic shots were filmed for the movie, "A River Runs Through It." As you know, we are very close to a fascinating biological/geological phenomenon, Yellowstone National Park, and I hope that you will take this opportunity to explore it if you have not done so previously. The wildlife and environment of this year's site should resonate with the biologist within all of us.

On the other hand, hopefully the grandeur of our environs will not detract from what we are REALLY here to experience, namely the terrific science that Erik Herzog and his Program Committee have organized for us. We will have the opportunity to hear the latest and greatest clock research from atomic structures to population biology, from electrophysiology to metabolism, from "Clocks in the Clinic" to clocks in a test tube, from bacteria to humans. The breadth of present-day biological clocks research is stunning, and this breadth is superbly reflected in this year's program. I have been involved in biological clock research for over 35 years, and it has been very exciting to observe how Chronobiology has reinvented itself over the years. No one could have anticipated at SRBR's first meeting in 1988 (which I attended) how our field would flourish. Clock/sleep research is now an established clinical practice, but we have also contributed watershed insights to basic neurogenetics, biochemistry, and more. Despite tough times for funding basic research worldwide, we chronobiologists continue to publish in high-visibility journals and obtain research support.

I am grateful to have been a part of Chronobiology's vibrant activity over these 35 years. The trajectory of our field's expansion confirms that Chronobiology will continue to blossom, providing fascinating puzzles to decode and challenges to surmount for the next generation of scientists. Encouraging that new generation has led "Trainee Day" to become an essential component of the SRBR meeting; this year's Trainee Day was organized by Karen Gamble and her able committee. While the most obvious contributions to the excellence of our meeting's agenda are the Program and Trainee Day Committees, in any endeavor of this magnitude, there are many other people to thank. Foremost among those are Michelle Chappell and her staff at Conference Services who ensure that our meetings run smoothly. Moreover, we are grateful to our government and corporate sponsors who—despite tough financial times—make this meeting possible.

But most important is to thank YOU, presenters and/or participants, for sharing your knowledge and passions that make our SRBR meeting a biennial success!

Carl Hirschie Johnson, SRBR President, 2012–2014

General Information

Headquarters is at the Yellowstone Conference Center, Firehole Lounge, which is conveniently located within walking distance of all hotel rooms.

SRBR Information Desk and Message Center is in the Yellowstone Conference Center, Firehole Lounge.

The desk hours are as follows:

Friday 6/13	3:00–6:00 pm	
Saturday 6/14	8:00 am–12:00 pm	2:00–8:00 pm
Sunday 6/15	7:30 am–11:30 am	4:00–6:00 pm
Monday 6/16	7:30 am–11:30 am	4:00–6:00 pm
Tuesday 6/17	8:00 am–11:30 am	4:00–6:00 pm
Wednesday 6/18	8:00 am–11:30 am	

Messages can be left on the SRBR message board next to the registration desk. Meeting participants are asked to check the message board routinely for mail, notes, and messages.

Hotel check-in will be at the individual properties.

Posters will be available for viewing in the Mountain Mall (Mammoth rooms).

Sunday, June 15, 10:00 am–10:30 pm	Poster numbers 1–109
Monday, June 16, 10:00 am–10:30 pm	Poster numbers 110–215
Tuesday, June 17, 10:00 am–10:30 pm	Poster number 216–323

Poster set up is between 8:00 and 10:00 am on the day of your poster session. Posters must be taken down at the conclusion of your poster session.

*Trainees that received an Excellence Travel Award (**) or a Merit Travel Award (*) are recognized in the Program.*

Lunch Time Tables We are organizing lunch tables for informal discussions of selected chronobiology topics nominated from the membership. We have arranged for a daily lunch buffet in the Huntley Dining Room at the Conference Center and have reserved tables for lunchtime chat participants.

These tables are meant to bring together researchers with common interests for informal introductions and discussions. To prepare for a lunchtime table, you could think about questions that you would like to ask or resources you would like to share with your colleagues.

Special Events

Saturday, June 14

9:00 am–5:00 PM • **Trainee Professional Development Day** • *Yellowstone Conference Center*

1:00–4:55 PM • **Junior Faculty Workshops** • *Cheyenne*

Attendance is open to investigators within ~8 years of obtaining a faculty position.

The goal of the Junior Faculty Workshops is to foster the growth and success rate of the next generation of biological rhythm researchers by learning from and interacting with established faculty members. A panel of experienced members of the field will participate in each meeting to provide tips and advice to junior faculty members and answer questions. Only those who have pre-registered will be allowed to participate. A list of registered faculty will be posted on the message board in the conference center prior to the first session.

7:00–9:00 PM • **Welcome Reception** • *Huntley Dining Room*

Sunday, June 15

10:30–11:00 AM • **Meet the Professors** • *Lake / Canyon* • All trainees welcome to attend

(See “Program Overview” pages 22, 28, 34 and 40 for the list of participating professors)

Meet the Professor Sessions are meant to provide trainees (students and postdocs) the opportunity to interact with experienced faculty members in the field and to foster scholarly conversation. Each day a number of faculty researchers will be available to talk with trainees. Any trainee interested in meeting these investigators can go to the Lake/Canyon Room and take part in this informal gathering.

12:30 PM • **Lunch Time Tables** • *Huntley Dining Room*

Chronobiology education: Sharing lesson plans and teaching resources

Optogenetics of clocks: Activating and silencing clock neurons

Neurodegenerative disease and circadian clocks

8:00–8:30 PM • **Data Blitz I** • *Madison/Gallatin*

Each Datablitz will showcase the research accomplishments of the 2014 SRBR Trainee Excellence and Merit Award recipients and of other selected trainees. Each speaker will have one minute to introduce data that they will present at the poster session that evening.

8:30–10:30 PM • **Poster Session I (Posters #1–109)** • *Mountain Mall*

Monday, June 16

10:30–11:00 AM • **Meet the Professors** • *Lake / Canyon* • All trainees welcome to attend

12:30 PM • **Lunch Time Tables** • *Huntley Dining Room*

Chronobiology advocacy: Addressing school times or daylight saving time in your neighborhood
Modelers unite! How mathematical models can facilitate chronobiology

2:00–3:00 PM • **JBR Editors Meeting, SAGE Publishers** • *Lamar / Gibbon*

3:15–4:15 PM • **Workshop I • *Clocks in the Clinic—Should we have Chronobiology Clinics?*** • *Jefferson/ Madison*

4:30–6:30 PM • **Presidential Special Symposium** • *Missouri Ballroom*

8:00–8:30 PM • **Data Blitz II** • *Madison/Gallatin*

8:30–10:30 PM • **Poster Session II (110–215)** • *Mountain Mall*

Tuesday, June 17

10:30–11:00 AM • **Meet the Professors** • *Lake / Canyon* • All trainees welcome to attend

12:30 PM • **Lunch Time Tables** • *Huntley Dining Room*

Chronobiology advocacy: Interfacing with the public (Web, blogs, media...)

Impact of circadian rhythms on athletic performance

12:45–2:45 PM • **SRBR Executive Committee Meeting** • *Lamar / Gibbon*

3:15–4:15 PM • **Workshop II • *Clocks in the Society—Is there a Best Way to Assess Chronotype?*** • *Jefferson/Madison*

8:00–8:30 PM • **Data Blitz III** • *Madison/Gallatin*

8:30–10:30 PM • **Poster Session III (216–323)** • *Mountain Mall*

Wednesday, June 18

10:30–11:00 AM • **Meet the Professors** • *Lake / Canyon* • All trainees welcome to attend

12:30 PM • **Lunch Time Tables** • *Huntley Dining Room*

Working times: Circadian insights and field study challenges

Chronobiology of drug addiction

2:30–3:30 PM • **Business Meeting** • *Missouri Ballroom*

3:30–4:30 PM • **Workshop III • *Clock Reporters—Are we Being Misled by Reporters? What Reporters do we Need?*** • *Missouri Ballroom*

4:30–5:30 PM • **Pittendrigh/Aschoff Lecture** • *Missouri Ballroom*

5:45–6:30 PM • **Free Time & Cocktails** (cash bar) • *Huntley Dining Room*

6:30–7:30 PM • **Travel Awards / Entertainment / Cocktails** (cash bar) • *Huntley Dining Room*

7:30 PM • **Montana BBQ** • *Mountain Mall*

Guest banquet tickets need to be purchased in advance at the registration desk.

Meeting at a Glance

Saturday, June 14

- 9:00 AM–5:00 PM Trainee Professional Development Day • *Yellowstone Conference Center*
- 1:00–4:55 PM Junior Faculty Workshops • *Cheyenne*
- 7:00–9:00 PM Opening Reception • *Huntley Dining Room*

Sunday, June 15

- 8:00–10:00 AM Poster Session Setup (P1–109) • *Mountain Mall*
- 8:15–10:30 AM Symposium 1: *Cellular Metabolism* • *Jefferson*
Symposium 2: *Neural Circuits I* • *Gallatin*
Symposium 3: *Daily Demands and Defenses* • *Madison*
- 10:30–11:00 AM Refreshment Break • *Upper Atrium*
Exhibits • *Lower Atrium*
Meet the Professors • *Lake / Canyon*
- 11:00 AM–12:30 PM Slide Sessions
A (S1–S6) *The SCN—from genes to behavior and back* • *Jefferson*
B (S7–S12) *Metabolic Regulation of and by Clocks* • *Madison*
C (S13–S18) *Clocks and Cancer* • *Gallatin*
D (S19–S24) *Clock Genomics* • *Amphitheatre*
- 12:30–4:15 PM Free Time
- 4:15–6:30 PM Symposium 4: *Entrainment I* • *Jefferson*
Symposium 5: *New Drugs for Chronobiology* • *Gallatin*
Symposium 6: *Clocks in Fitness and Aging* • *Madison*
- 8:00–8:30 PM Data Blitz I • *Madison/Gallatin*
- 8:30–10:30 PM Poster Session I (P1–P109) • *Mountain Mall*

Monday, June 16

- 8:00–10:00 AM** Poster Session Setup (P110–P215) • *Mountain Mall*
- 8:15–10:30 AM** Symposium 7: *Posttranscriptional Clock Mechanisms* • *Jefferson*
Symposium 8: *Neural Circuits II: From Clocks to Sleep* • *Gallatin*
Symposium 9: *Clocks, Cell Cycle, Growth and Differentiation* • *Madison*
- 10:30–11:00 AM** Refreshment Break • *Upper Atrium*
Exhibits • *Lower Atrium*
Meet the Professors • *Lake / Canyon*
- 11:00 AM–12:30 PM** Slide Sessions
E (S25-S30) *Entrainment I* • *Jefferson*
F (S31-S36) *Networked Clocks* • *Madison*
G (S37-S42) *Sleep and Wake* • *Gallatin*
H (S43-S48) *Clocks and Immune Function* • *Amphitheatre*
- 12:30–3:00 PM** Free Time
- 2:00–3:00 PM** JBR Editors Meeting, SAGE Publishers • *Lamar / Gibbon*
- 3:00–4:00 PM** Workshop I • *Clocks in the Clinic—Should we have Chronobiology Clinics?* • *Jefferson/Madison*
- 4:30–6:30 PM** Presidential Special Symposium • *Missouri Ballroom*
- 8:00–8:30 PM** Data Blitz II • *Madison/Gallatin*
- 8:30–10:30 PM** Poster Session II (P110–215) • *Mountain Mall*

Tuesday, June 17

- 8:00–10:00 AM** Poster Session Setup (P216–P323) • *Mountain Mall*
- 8:15–10:30 AM** Symposium 10: *Entrainment II* • *Jefferson*
Symposium 11: *Convergent Roles for Clocks and Sleep* • *Madison*
Supported, in part, by TEVA
Symposium 12: *Period, Precision and Amplitude* • *Gallatin*
- 10:30–11:00 AM** Refreshment Break • *Upper Atrium*
Exhibits • *Lower Atrium*
Meet the Professors • *Lake / Canyon*
- 11:00AM–12:30 PM** Slide Sessions
I (S49-S54) *Fly Clocks* • *Jefferson*
J (S55-S60) *Fungal Clocks* • *Amphitheatre*

K (S61-S66) *Clocks and Feeding* • Madison

L (S67-S72) *Entrainment II* • Gallatin

12:30–3:15 PM

Free Time

12:45–2:45 PM

SRBR Executive Committee Meeting • Lamar / Gibbon

3:15–4:15 PM

**Workshop II • *Clocks in the Society—Is there a Best Way to Assess Chronotype?*
• Jefferson/Madison**

4:15–6:30 PM

Symposium 13: *Metabolism II* • Jefferson

Symposium 14: *Circadian Neurodegeneration* • Gallatin

Symposium 15: *Circadian Clock Structures* • Madison

8:00–8:30 PM

Data Blitz III • Madison/Gallatin

8:30–10:30 PM

Poster Session III (P216-P323) • Mountain Mall

Wednesday, June 18

8:15–10:30 AM

Symposium 16: *Consequences of Circadian Disruption* • Jefferson

Symposium 17: *Neural Circuits III* • Gallatin

Symposium 18: *Clocks in the Wild* • Madison

10:30–11:00 AM

Refreshment Break • Upper Atrium

Exhibits • Lower Atrium

Meet the Professors • Lake / Canyon

11:00 AM–12:30 PM

Slide Sessions

M (S73-S79) *Green Clocks* • Amphitheatre

N (S80-S85) *Human Clocks* • Jefferson

O (S86-S91) *Ontogeny of Clocks* • Madison

P (S92-S97) *Fish Clocks* • Gallatin

12:30–2:30 PM

Free Time

2:30–3:30 PM

Business Meeting • Missouri Ballroom

3:30–4:30 PM

Workshop III • *Clock Reporters—Are we Being Misled by Reporters? What Reporters do we Need?* • Missouri Ballroom

4:30–5:30 PM

Pittendrigh/Aschoff Lecture • Missouri Ballroom

5:45–6:45 PM

Free Time & Cocktails (cash bar) • Huntley Dining Room

6:45–7:30 PM

Travel Awards / Entertainment / Cocktails (cash bar) • Huntley Dining Room

7:30 PM

Montana BBQ • Mountain Mall

Trainee Professional Development Day

Saturday, June 14

The Trainee Professional Development Day is an entire day devoted to scientific and career development activities for trainees. The day consists of a keynote address, an activity consisting of one-on-one blitz discussions, and a series of workshops on various topics. The goal of the Trainee Professional Development Day is to allow the next generation of biological rhythm researchers to learn from and interact with faculty members in a more informal and intimate setting than that allowed by the main conference.

Only those who have pre-registered will be allowed to participate. Registered trainees should attend the workshops they selected when registering. This information will be posted on the message board in the conference center prior to the first session.

9:00–9:20 AM **Welcome and Orientation • Jefferson/Madison**
Karen Gamble, University of Alabama at Birmingham
Carl H. Johnson, Vanderbilt University

9:20–10:20 AM **Keynote Address • Jefferson/Madison**
Michael H. Hastings, MRC Laboratory of Molecular Biology

10:35–11:25 AM **Session 1**
Developing and Maintaining Records of Research Performance + Interview Skills • Dunraven/Obsidian

John O’Neill, MRC Laboratory of Molecular Biology
Eric Mintz, Kent State University

This workshop will cover some key ways to market yourself effectively, including how to create and maintain a strong CV, record academic performance and outreach activities, use of professional social media and how to make a great impression at interviews.

Post-doc Training: Choosing the Right Place and Environment to Achieve Your Goals • Gallatin

Christine Merlin, Texas A&M University
Rae Silver, Columbia University

This workshop will discuss how to examine and select a research laboratory and the appropriate mentor for postdoctoral training: (a) how to contact the prospective mentor, (b) consider productivity and funding of a laboratory, and (c) the purpose of postdoctoral training. Options of switching research area and the choice of a good scientific field will also be addressed.

Ⓢ Indicates workshops delivered twice

The Transition from Postdoc to Independent Research • Lake/Canyon

Joanna Chiu, University of California, Davis

Valerie Mongrain, Université de Montréal

This workshop will discuss the following questions: 1) How do you prepare for the smoothest transition between postdoc and independent research positions? Grants and laboratory organization will be introduced. 2) What are the crucial steps to initiate an independent project and how do you prepare for it?

☉ *Current Theory of Genetic/Molecular Feedback Mechanisms • Lamar/Gibbon*

Nicolas Cermakian, McGill University

This 50-min workshop will give an overview of the up-to-date model of “transcriptional/translational feedback loops” in cellular clocks and review major discoveries that lead to the formation of this model. Focus will be placed on the mammalian system but a brief comparison with the *Drosophila* system will also be included.

Basics of Chronobiology • Amphitheatre

Mike Menaker, University of Virginia

Confused about CTs and ZTs? Unsure of the difference between Ts and τ s? In this workshop we will explore and discuss some of the fundamental principles of chronobiology, including entrainment, temperature compensation, masking, and free-running rhythms. A great place to start if you’re new to the field.

11:45–12:35 PM

Session 2

How to Get the Best Out of Your Supervisor and Mentors • Dunraven/Obsidian

Christopher Colwell, University of California, Los Angeles

Diane Boivin, McGill University

A good relationship with those around you is crucial to maintain a productive working environment. This workshop will cover the importance of good mentoring, help you identify responsibilities of both mentors and trainees, and discuss how to deal with problems in the mentor-trainee relationship from both angles.

Grantsmanship: Do’s and Don’ts in Grant Writing • Gallatin

Doug McMahon, Vanderbilt University

Learn the ropes of how to write a competitive grant. Special attention will be paid to the specific aims page, presentation of rationale, results, and alternative interpretations, and development of a training timeline.

☉ ***Imaging of Luminescent and Fluorescent Reporter Models • Lamar/Gibbon***

David Welsh, University of California, San Diego

This workshop will introduce experimental methods and theory of imaging of luminescence and fluorescent reporter models. Circadian research often takes advantage of imaging techniques to monitor circadian rhythms over many cycles. The microscope settings, cameras, and reagents will be presented. How such technology can be applied to the field of chronobiology will also be described.

☉ ***Statistical Methods for Time Series Analysis of Rhythms • Lake/Canyon***

Horacio de la Iglesias, University of Washington

Ken Wright, University of Colorado

Analyses of time-series data sets, as frequently required in chronobiological research, can be a daunting task. This workshop will cover various methods that can be used to detect and analyze periodic patterns in biological time-series data (e.g. rhythmicity, period, amplitude, phase, phase shifts), sketch their strengths and limitations as well as provide an overview of available software useful for such analyses.

Entrainment of the Circadian Clock • Amphitheatre

Ralph Mistlberger, Simon Fraser University

This 50-min workshop will introduce the basic concepts and theories of entrainment of the circadian clock as well as the methodology that are commonly used to study entrainment in rodents and flies. It will mainly include two parts: photic entrainment and food entrainment. Focus will be placed on the general principles rather than detailed techniques.

12:40–1:40 PM

Lunch • Jefferson/Madison

1:45–2:40 PM

Positive Feedback Looping • Jefferson/Madison

This activity will consist of random one-on-one blitz discussions. Participants are asked to pair randomly and discuss for 7 minutes, after which they are asked to pair with another participant, and so on, for ~50 min. The aim of this activity is to stimulate interaction and exchanges, to allow participants to meet new people, and to “break the ice” before the SRBR conference starts.

3:00–3:50 PM

Session 3

Work in the Industry and Other Non-Academic Settings as an Alternative Career • Amphitheatre

Michael Sesma, NIH, National Institute of General Medical Sciences

Chris Steele, Program Officer at U.S. Office of Naval Research

This workshop will give an overview of working in the industry following completion of your graduate/postdoc work, and a comparison of research in an industry situation vs. an academic situation. In addition, insights into the work in a non-profit research institute will be provided in contrast to the industry and academia background.

© **Current Theory of Genetic/Molecular Feedback Mechanisms** • Lamar/Gibbon

Nicolas Cermakian, McGill University

This 50-min workshop will give an overview of the up-to-date model of “transcriptional/translational feedback loops” in cellular clocks and review major discoveries that lead to the formation of this model. Focus will be placed on the mammalian system but a brief comparison with the *Drosophila* system will also be included.

Asking the Right Questions & Designing the Right Experiments in a Biological Rhythms Project • Gallatin

Till Roenneberg, Ludwig-Maximilians University

This workshop will focus on optimizing experimental design to fit a hypothesis pertinent to rhythms research. Discussion on selecting the most appropriate controls, lighting conditions (light-dark cycle vs. skeleton photoperiod vs constant conditions), the number of time points, and the means of measurement (behavioral vs physiological vs molecular) will take place.

Circadian Physiological and Behavioral Methods in Flies • Obsidian/Dunraven

Alex Keene, University of Nevada

Amita Sehgal, University of Pennsylvania

This 50-min workshop will introduce experimental methods for monitoring circadian rhythms in *Drosophila melanogaster*. Commonly used physiological and behavioral parameters will be reviewed and experimental protocols will be discussed.

Circadian Physiological and Behavioral Methods in Rodents • Lake/Canyon

Urs Albrecht, University of Fribourg

This workshop will describe experimental setups for the monitoring of circadian physiology in rodent models (mouse, rat, hamster, and diurnal rodents). Basic physiological and behavioral parameters and underlying protocols will be presented and discussed.

4:10–5:00 PM

Session 4

Making Effective Scientific Presentations • Dunraven/Obsidian

Martha Gillette, University of Illinois at Urbana-Champaign

Presenting scientific data well can be difficult and daunting, but this workshop will cover some key points to consider in order to improve your skills. From planning the content and structure to the delivery itself, including use of technology, humour & anecdotes, how to adapt to your audience and coping with difficult questions, this workshop should leave you more confident in your ability to present your data effectively.

Ⓢ ***Statistical Methods for Time Series Analysis of Rhythms • Lake/Canyon***

Horacio de la Iglesias, University of Washington

Ken Wright, University of Colorado

Analyses of time-series data sets, as frequently required in chronobiological research, can be a daunting task. This workshop will cover various methods that can be used to detect and analyze periodic patterns in biological time-series data (e.g. rhythmicity, period, amplitude, phase, phase shifts), sketch their strengths and limitations as well as provide an overview of available software useful for such analyses.

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Basic Methodology to Study Human Circadian Rhythms • Gallatin

Debra Skene, University of Surrey

The field of human chronobiology is continually growing. This workshop is geared toward those new to or not familiar with human chronobiology studies, and will provide an overview of the experimental paradigms and techniques currently used to investigate circadian rhythms in humans.

Translational Chronobiology • Amphitheatre

Steven Brown, University of Zurich

Phyllis Zee, Northwestern University

How, where and when does basic chronobiological research translate to the clinic and everyday life? This workshop will strive to provide an overview as well as several in-depth examples of current applications of chronobiology in human well-being and disease.

5:00 PM

Conclusion of Trainee Professional Development Day

Ⓢ *Indicates workshops delivered twice*

Junior Faculty Workshops

Saturday, June 14

The goal of the Junior Faculty Workshops is to foster the growth and success rate of the next generation of biological rhythm researchers by learning from and interacting with established faculty members in a more informal and intimate setting than that allowed by the main conference. A panel of experienced members of the field will participate in each meeting, to provide tips and advice to junior faculty members and answer questions.

Attendance is open to investigators within ~8 years of obtaining a faculty position.

1:00–2:00 PM • **Workshop 1** • *Cheyenne*

Leading your Lab: Mentoring, Management, Organization, Personnel

Jeanne Duffy, Harvard Medical School

Horacio de la Iglesias, University of Washington

Bambos Kyriacou, University of Leicester

2:20–3:20 PM • **Workshop 2** • *Cheyenne*

Securing Research Funding: Agencies, Industry, Foundations

Andrew Loudon, University of Manchester

Samer Hattar, The Johns Hopkins University

Erik Herzog, Washington University in St. Louis

Takashi Yoshimura, Nagoya University

3:40–4:40 PM • **Workshop 3** • *Cheyenne*

Short-Term and Long-Term Research Program Planning

Rob Lucas, University of Manchester

Mary Harrington, Smith College

Elizabeth Klerman, Harvard Medical School

SRBR 2014 Program Overview

Saturday, June 14

- 9:00 AM–5:00 PM Trainee Professional Development Day • *Yellowstone Conference Center*
- 1:00–5:00 PM Junior Faculty Workshop • *Cheyenne*
- 7:00–9:00 PM Opening Reception • *Huntley Dining Room*

Sunday, June 15

- 8:15–10:30 AM **Symposium 1: Cellular Metabolism** • *Jefferson*
Chair: Amita Sehgal, University of Pennsylvania
- 8:15 Introduction
- 8:30 ***Nutrition, epigenetics and the clock***
Paolo Sassone-Corsi, University of California, Irvine
- 9:00 ***Bioenergetic mechanisms of molecular clock regulation***
Joseph Bass, Northwestern University
- 9:30 ***Diurnal rhythms of physiology and metabolism in cyanobacteria***
Susan Golden, University of California–San Diego
- 10:00 ***New inter- and intracellular regulations of the circadian pacemaker***
Hitoshi Okamura, Kyoto University
- Symposium 2: Neural Circuits I: Networked Clocks** • *Gallatin*
Chair: Elizabeth Maywood, MRC-Laboratory of Molecular Biology
- 8:15 Introduction
- 8:30 ***Do glia shape SCN circuits?***
Martha Gillette, University of Illinois at Urbana-Champaign
- 9:00 ***dTRPA1 for temperature entrainment: Lab vs nature***
Vasu Sheeba, Jawaharlal Nehru Centre for Advanced Scientific Research
- 9:30 ***The SCN—an adaptive system of coupled oscillators***
Hans-Peter Herzel, Institute for Theoretical Biology
- 10:00 ***Beyond Transcription: Identification of Novel Biophysical Mechanisms that Generate Daily Differences in SCN BK currents***
Andrea Meredith, University of Maryland School of Medicine

Symposium 3: Daily Demands and Defenses • Madison

Chair: Takato Imaizumi, University of Washington

- 8:15 Introduction
- 8:30 ***Molecular clocks in adaptation: from homeorhetic to acute inflammatory response***
Marina Antoch, Roswell Park Cancer Institute
- 9:00 ***The interplay between the circadian clock and plant immunity***
Xinnian Dong, Duke University
- 9:30 ***Contribution of interlocked feedback loops to circadian timekeeping and output***
Paul Hardin, Texas A & M University
- 10:00 ***Circadian macrophage immunity***
Bert Maier, Charité Universitätsmedizin Berlin

10:30–11:00 AM

Refreshment Break • Upper Atrium

Exhibits • Lower Atrium

Meet the Professors • Lake / Canyon

- Carl Johnson (Cyanobacteria, mammals, clock genes)
- Ken Wright (humans, shift-work, metabolism, sleep)
- Paolo Sassone-Corsi (rodents, clock genes, metabolism, epigenetics)
- Carolina Escobar (rodents, food entrainment, behavior, circadian desynchrony)
- Steven Brown (rodents, human peripheral clocks, clock genes)
- Martha Gillette (rodents, SCN, signaling/plasticity, coupling peptides)
- Michael H. Hastings (rodents, SCN, molecular mechanisms)

11:00 AM–12:30 PM Slide Session A • The SCN—from genes to behavior and back • Jefferson

Chair: Hai-Ying Mary Cheng, University of Toronto Mississauga

- 11:00 ***S1 • Linking Molecular, Electrical, and Behavioral Rhythms in the Brain's Biological Clock***
*Jeff Jones, Vanderbilt University
- 11:15 ***S2 • One channel to entrain them all: GIRK channels mediate multiple time-of-day cues***
*Lauren Hablitz, University of Alabama at Birmingham
- 11:30 ***S3 • A non-conventional nuclear import pathway***
Sandra Korge, Charité-Universitätsmedizin Berlin
- 11:45 ***S4 • On the relationship between a central clock and peripheral clocks***
Mariko Izumo, UT Southwestern Medical Center
- 12:00 ***S5 • Feedback actions of exercise on the suprachiasmatic nuclei and circadian system***
Alun Hughes, University of Manchester
- 12:15 ***S6 • Short-circuit: A circadian mutant in a novel suprachiasmatic nucleus transcription factor***
Michael Parsons, MRC Harwell

11:00 AM–12:30 PM Slide Session B • Metabolic Regulation of and by Clocks • Madison

Chair: Karyn Esser, University of Kentucky

- 11:00 **S7 • Diurnal variation of drug transport in the central nervous system**
*Laura Kervezee, Leiden University Medical Center
- 11:15 **S8 • Metabolic modulation of circadian transcriptional oscillations**
**Guillaume Rey, University of Cambridge
- 11:30 **S9 • A transcriptional metabolic sensor for studying dynamics of NADH/
NAD⁺ redox homeostasis in mammalian cells**
Guocun Huang, Soochow University
- 11:45 **S10 • Rev-erb α is a critical regulator of feeding behaviour and adaptive
thermogenesis**
Peter Cunningham, University of Manchester
- 12:00 **S11 • Circadian and metabolic changes associated with seasonal
physiological states in a night-migratory songbird, the blackheaded
bunting (*Emberiza melanocephala*)**
*Devraj Singh, McGill University
- 12:15 **S12 • Mathematical modeling and experimental validation of glucose
and temperature compensation in the *Neurospora* circadian clock**
Andrey Dovzhenok, University of Cincinnati

11:00 AM–12:30 PM Slide Session C • Clocks and Cancer • Gallatin

Chair: Nicolas Cermakian, McGill University

- 11:00 **S13 • Circadian Homeostasis of Liver Metabolism Suppresses
Tumorigenesis**
Nicole Kettner, Baylor College of Medicine
- 11:15 **S14 • DNA damage drives Cry1/2 posttranslational modification**
Katja Lamia, The Scripps Research Institute
- 11:30 **S15 • The circadian clock in B16 melanoma cells controls their
proliferation**
Silke Kiessling, McGill University / Douglas Mental Health University
- 11:45 **S16 • The Circadian Factor Period 2 Modulates p53 Stability and Function
in DNA-Damage Signaling**
Carla Finkielstein, Virginia Tech
- 12:00 **S17 • Phase-locking and multiple oscillating attractors for the coupled
mammalian clock and cell cycle**
Celine Feillet, CNRS/INSERM/Université Nice
- 12:15 **S18 • Robust synchronization of coupled circadian and cell cycle
oscillators in single mammalian cells**
Rosamaria Cannavo, Ecole Polytechnique Fédérale de Lausanne

- 11:00 AM–12:30 PM Slide Session D • Clock Genomics • Amphitheatre**
 Chair: Jason DeBruyne, Morehouse School of Medicine
- 11:00 **S19 • *Genome-wide characterization of the molecular response of the circadian clockwork to temperature in Drosophila***
 Naveh Evantal, Hebrew University of Jerusalem
- 11:15 **S20 • *Rhythmic degradation explains and unifies circadian transcriptome and proteome data***
 Sarah Lueck, Charite–Universitätsmedizin Berlin
- 11:30 **S21 • *RNA methylation shows its mettle***
 Jean-Michel Fustin, Kyoto University
- 11:45 **S22 • *A Licensing Mechanism in the Mammalian Circadian Clock Feedback Loop***
 Alfred G. Tamayo, Harvard Medical School
- 12:00 **S23 • *CLOCK is not required for peripheral circadian oscillators***
 *Dominic Landgraf, UCSD
- 12:15 **S24 • *Transcriptional regulation mechanisms that allow clocks in higher organisms to tick and synchronize***
 Jae Kyoung Kim, The Ohio State University

12:30–4:15 PM Free Time

12:30 PM Lunch Time Tables • Huntley Dining Room

Chronobiology education: Sharing lesson plans and teaching resources
 Optogenetics of clocks: Activating and silencing clock neurons
 Neurodegenerative disease and circadian clocks

4:15–6:30 PM Symposium 4: Entrainment I • Jefferson
 Chair: Samer Hattar, Johns Hopkins University

- 4:15 Introduction
- 4:30 ***The building blocks of entrainment: properties of cellular circadian synchronisation***
 Martha Merrow, University of Munich
- 5:00 ***Timing plant defense: Attention herbivores***
 Janet Braam, Rice University
- 5:30 ***Entrainment of the human circadian clock***
 Kenneth Wright, University of Colorado
- 6:00 ***Timing takes teamwork: Chaperones and co-chaperones in the plant circadian system***
 Dave Somers, Ohio State University

Symposium 5: New Drugs for Chronobiology • Gallatin

Chair: Andrew Loudon, University of Manchester

- 4:15 Introduction
- 4:30 ***Casein Kinase 1 Inhibitors (CK1i): Circadian Rhythm Disorders***
Travis Wager, Pfizer
- 5:00 ***Finding specific ligands for REVERB and using them to regulate inflammation***
David Ray, University of Manchester
- 5:30 ***Small molecule modulators for clock biology and disease***
Zheng (Jake) Chen, UT Health Science Center at Houston
- 6:00 ***Small molecule antagonist of melanopsin function***
Satchin Panda, Salk Institute for Biological Studies

Symposium 6: Clocks in Fitness and Aging • Madison

Chair: Johanna Meijer, Leiden University

- 4:15 Introduction
- 4:30 ***Aging of the central circadian clock in mammals***
Stephan Michel, Leiden University Medical Center
- 5:00 ***Multiscale influences of circadian regulation on physiology and behavior***
Kun Hu, Brigham & Women's Hospital/Harvard Medical School
- 5:30 ***Interaction between aging and the circadian and sleep homeostatic systems in Drosophila***
Amita Sehgal, University of Pennsylvania
- 6:00 ***Hypothalamic regulation of physiological rhythm, aging, and longevity in mammals***
Shin-ichiro Imai, Washington University in St. Louis

8:00–8:30 PM

Datablitz I • Madison / Gallatin

Chair: Roelof Hut, University of Groningen

*Excellence Award recipients are indicated with ** before their name and Merit Award recipient names are preceded with *.*

Light-regulated blood-feeding and flight activity behavior and a light phase response curve for the Anopheles gambiae malaria mosquito

*Aaron Sheppard

Physical and psychological stress as potent synchronizers of mouse peripheral circadian clocks

*Yu Tahara

Trypanosoma brucei accelerates the mouse circadian clock

*Filipa Rijo-Ferreira

Phase-mapping the mouse brain with a CRY1::mCherry fluorescent reporter

Arthur Millius

Characterising of the role of Cryptochromes in Retinal Responses to Light

*Jovi Chau-YeeWong

Altered cryptochrome degradation influences GABAergic signaling and excitation of suprachiasmatic nucleus neurons

Sven Wegner

Roles of C-terminal truncated Bmal1 on circadian rhythm

Noheon Park

A slow conformational change in the C-terminus of BMAL1 modulates binding to transcriptional coactivators

*Chelsea Gustafson

Structure/function interrogation of mCRY1 defines a distributed binding interface with the CLOCK/BMAL1 heterodimer

*Clark Rosensweig

Development of circadian pacemaker cells in the Drosophila brain

Tianxin Liu

ipRGC neurotransmitters, glutamate and PACAP, are distinct in their contributions to non-image forming behaviors

*William Keenan

Perinatal photoperiod affects the serotonergic system

*Noah Green

Association of Depression with Variations of Melatonin and Cortisol Rhythms in Delayed Phase Sleep Disorder (DSPD) Patients

Seong Jae Kim

Circadian abnormalities in the Myshkin mouse model of mania

*Joseph Timothy

Brain circadian clocks in a mouse model of depression

Dominc Landgraf

Genome-wide analysis of circadian clock properties in human fibroblasts

*Ludmila Gaspar

The circadian clock in the Antarctic krill Euphausia superba

*Benjamin Hunt

Sustained inhibition of Na⁺/K⁺/Cl⁻ co-transporter 1 (NKCC1) enhances the magnitude of light-induced phase delays of the circadian clock

*John McNeill

Clock Silencing in Adulthood Impairs Rhythmic Insulin Release and Reprograms Protein Secretion Transcription Networks

Mark Perelis

Circadian clocks and Polyamines—a metabolic feedback loop

*Ziv Zvighaft

Food-entrainable circadian oscillations of PER2:LUC in the mouse olfactory bulb: critical role for olfactory input

Ilya Pavlovski

Circadian properties of food-anticipatory activity re-examined: entrainment limits and scalar timing in operant and general activity

*Christian Petersen

MicroRNAs cooperate with rhythmic transcription to shape circadian gene expression

*Ngoc-Hien Du

New insight into post-transcriptional regulation of circadian rhythms using a system wide identification of RNA-binding proteins

Pauline Gosselin

Drosophila mechanosensory organs and Ionotropic Receptors (IRs) contribute to clock synchronization by temperature cycles and proprioceptive feedback

*Chenghao Chen

8:30–10:30 PM

Poster Session I (P1–109) • Mountain Mall

Monday, June 16, 2014

8:15–10:30 AM

Symposium 7: *Posttranslational Clock Mechanisms* • Jefferson

Chair: Carla Green, UT Southwestern Medical Center

8:15 Introduction

8:30 ***Circadian rhythms are turning heads: clock regulation of solar tracking in sunflower***

Stacey Harmer, University of California, Davis

9:00 ***Post-transcriptional regulation in the Drosophila circadian pacemaker***

Patrick Emery, University of Massachusetts Medical School

9:30 ***Posttranscriptional control of circadian dynamics in mammals***

Achim Kramer, Charité Universitätsmedizin Berlin

10:00 ***Sense and antisense, the Yin and Yang of circadian gene expression***

Yi Liu, UT Southwestern Medical Center

Symposium 8: *Neural circuits II: From Clocks to Sleep* • Gallatin

Chair: Michael Nitabach, Yale School of Medicine

8:15 Introduction

8:30 ***Regulation of sleep by microRNAs in Drosophila***

Leslie Griffith, Brandeis University

9:00 ***Melatonin is required for the circadian regulation of sleep but not for circadian rhythms***

David Prober, California Institute of Technology

9:30 ***WIDE AWAKE Mediates the Circadian Timing of Sleep Onset***

Mark Wu, Johns Hopkins University

10:00 ***Neuropeptides regulating C. elegans sleep***

David Raizen, University of Pennsylvania

Symposium 9: Clocks, Cell Cycle, Growth and Differentiation • Madison

Chair: Kazuhiro Yagita, Kyoto Prefectural University of Medicine

- 8:15 Introduction
- 8:30 **Timing the cell cycle in zebrafish larvae and cell lines**
David Whitmore, University College London
- 9:00 **Plasticity in time: pathways from the environment to the clock, and from the clock to the maturing brain**
Steve Brown, University of Zurich
- 9:30 **Systematic analysis of the role of core clock genes in cancer cells**
Gijsbertus Van derHorst, Erasmus University Medical Center
- 10:00 **Circadian Clock Control of MAPK Activation**
Deborah Bell-Pedersen, Texas A & M University

10:30–11:00 AM Refreshment Break • Upper Atrium

Exhibits • Lower Atrium

Meet the Professors • Lake / Canyon

Johanna Meijer (mice, SCN, light, work/life balance)

Martha Merrow (entrainment and rhythms in humans, research transitions to Europe, Neurospora)

Michael Rosbash (Drosophila, clock genes, genetics)

Christopher Colwell (rodents, neurodegenerative disorder, physiology)

David Welsh (single cells, SCN, neuronal circuits, rodents)

Debra Skene (humans, aging, treatment of circadian disruption, light, melatonin)

Jay Dunlap (Neurospora, circadian output, transcriptional regulation)

Horacio de la Iglesia (mammals, crustaceans, SCN, circadian and circatidal rhythms)

11:00 AM–12:30 PM Slide Session E • Entrainment I • Jefferson

Chair: Howard Cooper, INSERM

- 11:00 **S25 • The retinal circadian clock entrains to light: Dark cycles in the absence of rods, cones, and melanopsin**
Ethan Buhr1, University of Washington
- 11:15 **S26 • Multiple functional retinal circuits drive circadian photoentrainment**
**Melissa Simmonds, Johns Hopkins University
- 11:30 **S27 • Colour-opponent twilight coding regulates the mammalian circadian clock**
Timothy Brown, University of Manchester
- 11:45 **S28 • Twilight and intensity effects of light entrainment on circadian amplitude in melatonin proficient Per2::Luc mice**
Sjaak (J.) Riede, University of Groningen

- 12:00 **S29 • Caffeine enhances light responsiveness of the circadian pacemaker**
**Hester van Diepen, Leiden University Medical Center
- 12:15 **S30 • Importance of CIRP in the synchronization of circadian liver gene expression**
Flore Sinturel, University of Geneva

11:00 AM–12:30 PM Slide Session F • Networked Clocks • Madison

Chair: Shelley Tischkau, Southern Illinois University School of Medicine

- 11:00 **S31 • Circadian gating of neuronal functionality: A basis for iterative metaplasticity**
Martha Gillette, University of Illinois at Urbana-Champaign
- 11:15 **S32 • Differential Rhythmicity: How to confidently detect changes in rhythmicity**
Paul Thaben, Charite–Universitätsmedizin Berlin
- 11:30 **S33 • Channelrhodopsin-2 assisted circuit mapping of functional GABAergic input originating from VIP-expressing neurons**
Junmei Fan, University of Texas Southwestern Medical Center
- 11:45 **S34 • Amplitude metrics for uncoupled cellular circadian bioluminescence reporters**
*Peter St. John, UC Santa Barbara
- 12:00 **S35 • The many roles of VIP and GABA signaling in regulating circadian rhythms in the SCN**
**Daniel DeWoskin, University of Michigan
- 12:15 **S36 • The SCN as the Brain’s Clock, Filter and Prognosticator**
Rae Silver, Columbia University

11:00 AM–12:30 PM Slide Session G • Sleep and Wake • Gallatin

Supported, in part, by Vanda Pharmaceuticals

Chair: Norman “Bud” Ruby, Stanford University

- 11:00 **S37 • Cortical excitability depends on time awake and circadian phase**
Gilles Vandewalle, University of Liège
- 11:15 **S38 • ROGDI is a Novel Negative Regulator in Dopamine Signaling to Promote Sleep in Drosophila**
Chunghun Lim, UNIST
- 11:30 **S39 • A role for a dopaminergic ultradian oscillator in arousal regulation**
Kai-Florian Storch, McGill University
- 11:45 **S40 • The circadian system sets the temporal organization of basic human neuronal function**
Sarah Chellapa, University of Liège
- 12:00 **S41 • Effect of sleep and sleep deprivation on the human metabolic profile**
Debra Skene, University of Surrey
- 12:15 **S42 • Bmal1 overexpression in skeletal muscle has sleep-dependent influences on metabolic processes**
Allison Brager, Morehouse School of Medicine

11:00 AM–12:30 PM Slide Session H • Clocks and Immune Function • Amphitheatre

Chair: Luciano Marpegan, Universidad Nacional de Quilmes

- 11:00 **S43 • When two clocks collide: Characterization of a circadian clock in the necrotrophic fungus *Botrytis cinerea* and its role in pathogenesis using *Arabidopsis thaliana* as a plant model**
Luis Larrondo, Pontificia Universidad Católica de Chile
- 11:15 **S44 • Circadian resonance between adrenal glucocorticoid signals and the target cell clock is essential for normal immunological responses**
*Louise Kearney, University of Manchester
- 11:30 **S45 • ViriOn Time: Interactions between the circadian clock and viral infection**
*Rachel Edgar, University of Cambridge
- 11:45 **S46 • Short Term Disruption of Diurnal Rhythms Following Murine Myocardial Infarction (Heart Attack) Adversely Affects Long Term Myocardial Structure and Function**
Tami Martino, University of Guelph
- 12:00 **S47 • Melatonin secretion is severely disrupted during frequent shifts of the light and dark cycle**
Jimo Borjigin, University of Michigan
- 12:15 **S48 • Regulation of NCC and the WNK cascade by the circadian clock protein *Per1* in murine distal convoluted tubule cells**
Michelle Gumz, University of Florida

12:30–3:15 PM Free Time

12:30 PM Lunch Time Tables • Huntley Dining Room

Chronobiology advocacy: Addressing school times or daylight saving time in your neighborhood

Modelers unite! How mathematical models can facilitate chronobiology

2:00–3:00 PM Editors Meeting, SAGE Publishers • Lamar / Gibbon

3:15–4:15 PM Workshop I: Clocks in the Clinic: Should we have Chronobiology Clinics? • Jefferson / Madison

Chairs: Debra Skene, University of Surrey and Joseph Bass, Northwestern University

Discussants: Phyllis Zee, Northwestern University, Louis Ptacek, University of California, San Francisco and HHMI, Charles Czeisler, Brigham and Women's Hospital, Harvard Medical School

4:30–6:30 PM Presidential Symposium • Missouri Ballroom

Till Roenneberg, Ludwig Maximilians University of Munich, Germany

Sato Honma, Hokkaido University Graduate School of Medicine, Japan

Charalambos (Bambos) Kyriacou, University of Leicester, U.K.

8:00–8:30 PM

Datablitz II • Madison / Gallatin

Chair: Debra Skene, University of Surrey

*Excellence Award recipients are indicated with ** before their name and Merit Award recipient names are preceded with *.*

Bifurcated rhythms lead to rapid circadian re-entrainment after simulated travel to anti-meridian time zones in mice

*Elizabeth Harrison

Overnight bright light accelerates re-entrainment to a 6h LD shift in *per2:luc* mice: photic, nonphotic and rhythm amplitude correlates

*Curtis Hazelwood

Morning and Evening oscillators cooperate to reset circadian behavior in response to light input

*Pallavi Lamba

Delineating the dopaminergic ultradian oscillator

*Ian Blum

CREB co-activator CRTC regulates the circadian clock in *Drosophila melanogaster*

*Minkyung Kim

The co-repressor RCO-1 modulates circadian gene expression in *Neurospora crassa*

*Consuelo Olivares-Yañez

Identification and characterization of phosphatases that regulate the pace of the *Drosophila* circadian oscillator

*Parul Agrawal

Modeling the circadian oscillator protein network in *Drosophila melanogaster*

Vu Lam

Melatonin as a phase marker in 187 subjects: which method works best?

*Emma Wams

Marked attenuation of circadian food-anticipatory activity in dopamine receptor 1 knockout mice

*Mateusz Michalik

Non-image forming temporal integration of ultra-short flashes of light

*Raymond Najjar

Controlling access time to high fat diet during inactive period protects against obesity and abnormal phase-shift of peripheral clock in mice

*Atsushi Haraguchi

AhR +/- mice are protected from the harmful metabolic consequences of circadian disruption induced by shift work and high fat diet

*Cassie Jaeger

Unveiling novel transcriptional networks behind the circadian clock of *Neurospora crassa*

*Felipe Muñoz-Guzmán

Daytime circadian food anticipatory activity is associated with suppression of SCN multiple unit activity and c-Fos expression in mice

**Teresa Dattolo

The Drosophila Brahma chromatin remodeling complex and its role in regulating circadian transcription: uncovering regulatory events at the per promoter

*Rosanna Kwok

Orchestrated Signal Transduction Unites Mammalian Circadian Metabolism across Tissues

*Heather Ballance

Rhythmic glycogen synthase kinase 3-beta (GSK3 β) inactivation regulates long-term potentiation and the molecular circadian clock period in the hippocampus

*Rachel Besing

Grades, sex, and seasons: diagnostics from 1,000+ student sleep logs

*Benjamin Smarr

Normal sleep architecture is critical for memory consolidation in hippocampus-mediated tasks but not in amygdala-dependent tasks

*ÂngelaKatsuyama

Impact of irregularity of sleep-wake schedules on circadian phase and amplitude in college undergraduates

*William Clerx

Repetitive firing rates are higher in Vasoactive Intestinal Peptide- (VIP-) expressing neurons during the day and night, driving coordinated electrical activity in the suprachiasmatic nucleus

*Tracey Hermanstyne

Photic entrainment and SCN neuronal excitability are modulated by glycogen synthase kinase 3 (GSK3)

*Jodi Paul

How does neuronal activity regulate gene expression in the circadian clock?

*Zhonghua Zhu

Optogenetic stimulation of SCN organotypic slices phase-shifts molecular circadian rhythms

*Mathew Edwards

Is activation of VIP Neurons in mammalian SCN sufficient to drive circadian rhythms in behavior?

**Cristina Mazuski

Neonicotinoid pesticide disrupts circadian locomotor behavior in Drosophila

*Michael Tackenberg

Diurnal and dopaminergic modulation of sleep-like oscillations in the striatum and cerebellum of the anesthetized rat

Ariana Frederick

8:30–10:30 PM

Poster Session II (P110–215) • Mountain Mall

8:15–10:30 AM

Symposium 10: *Entrainment II* • Jefferson

Chair: Ying-Hui Fu, UCSF

8:15 Introduction

8:30 ***Evolution and origin of vertebrate seasonal sensor***

Takashi Yoshimura, Nagoya University

9:00 ***Circadian rhythm of temperature preference and its neural control in *Drosophila****

Fumika Hamada, Cincinnati Children's Hospital Medical Center

9:30 ***Familial Advanced Sleep Phase: Searching for genes that alter entrainment and output coupling***

Louis Ptacek, UCSF/HHMI

10:00 ***Circadian visual illusions(?): Light influences on SCN activity other than irradiance***

Rob Lucas, University of Manchester

Symposium 11: *Convergent Roles for Clocks and Sleep* • Madison

Supported, in part, by TEVA

Chair: Ketema Paul, Morehouse School of Medicine

8:15 Introduction

8:30 ***Understanding how and why sleep promotes brain plasticity***

Sara Aton, University of Michigan, Ann Arbor

9:00 ***Sleep quality time and memory***

Horacio de la Iglesia, University of Washington

9:30 ***Untangling the effects of circadian misalignment and insufficient sleep in humans***

Elizabeth Klerman, Brigham and Women's Hospital, Inc

10:00 ***A Night to Remember: Understand the role of Sleep and Memory Consolidation***

Paul Shaw, Washington University in St. Louis

Symposium 12: *Period, Precision, and Amplitude* • Gallatin

Chair: Hiroki Ueda, RIKEN / University of Tokyo

8:15 Introduction

8:30 ***Chromatin Regulators and Regulatory Networks Governing Clocks***

Jay Dunlap, Geisel School of Medicine at Dartmouth

9:00 ***Post-translational regulation of the *Drosophila* clock***

Joanna Chiu, University of California, Davis

9:30 ***Circadian circuits, neurons and molecules in flies***

Michael Rosbash, Brandeis University

10:00 ***Functional structure of cyanobacterial clock protein KaiC***

Takao Kondo, Nagoya University

10:30–11:00 AM **Refreshment Break • Upper Atrium**

Exhibits • Lower Atrium

Meet the Professors • Lake / Canyon

Till Roenneberg (sleep, chronotypes, entrainment, Neurospora)
John O'Neill (cellular rhythms, signaling and metabolic regulation)
Amita Sehgal (Drosophila, clock genes, sleep)
Joe Bass (genetic approaches to study clocks and metabolism)
Joseph Takahashi (mouse genetics, clock genes)
Erik Herzog (in vitro, suprachiasmatic nucleus, clock communication)
Barbara Helm (birds, ecological clocks, seasonality)

11:00 AM–12:30 PM **Slide Session I • Fly Clocks • Jefferson**

Chair: Christine Merlin, Texas A & M University

- 11:00 **S49 • Identification of novel genes associated with CLK-CYC complexes that regulate circadian rhythms in Drosophila**
Guruswamy Mahesh, Texas A & M University
- 11:15 **S50 • Operating circuits in the Drosophila multi-oscillator system**
Francois Rouyer, INAF
- 11:30 **S51 • Bride of DBT is a noncanonical FK506-binding protein that forms cytosolic foci during the night and interacts with DBT to stimulate its circadian activity towards PER**
Jin-Yuan Fan, UMKC
- 11:45 **S52 • Rhythmic Rho1 activity regulates pacemaker neuron structural plasticity and seasonal adaptation**
Justin Blau, NYU
- 12:00 **S53 • The hierarchy of landmark and celestial cues in animal navigation: Insight through manipulating the circadian clock**
James Cheeseman, The University of Auckland
- 12:15 **S54 • Molecular mechanism of temperature input to the Drosophila circadian clock**
**Ozgur Tataroglu, UMass Medical School

11:00 AM–12:30 PM Slide Session J • Fungal Clocks • Amphitheatre

Chair: Luis Larrondo, Pontificia Universidad Católica de Chile

- 11:00 **S55 • A study of mRNA levels over circadian time using RNA-SEQ highlights the potential for additional circadian regulation between rhythmic transcriptional activation and total mRNA amounts**
Jennifer M. Hurley, Geisel School of Medicine at Dartmouth
- 11:15 **S56 • The Frequency Natural Antisense Transcript Promotes then Represses Expression via Facultative Heterochromatin**
William Belden, Rutgers University
- 11:30 **S57 • Refractory *frq* promoter is blocked at the level of transcription initiation**
Gencer Sancar, Heidelberg University
- 11:45 **S58 • A tale of two cycles: Metabolic redox cycles in yeast and circadian oscillations**
Helen Causton, University, New York
- 12:00 **S59 • Biochemical Basis for Circadian Oscillation by the C-terminal Regulatory Domain of BMAL1**
Andrew Liu, University of Memphis
- 12:15 **S60 • Circadian Regulation of Translation through the Eukaryotic Elongation Factor eEF-2 in *Neurospora crassa***
*Stephen Caster, Texas A & M University

11:00 AM–12:30 PM Slide Session K • Clocks and Feeding • Madison

Chair: Ralph Mistlberger, Simon Fraser University

- 11:00 **S61 • The transcription factor *cabut (cbt)* links the circadian molecular and behavioral systems with food intake and metabolism**
Sebastian Kadener, The Hebrew University of Jerusalem
- 11:15 **S62 • Myeloid cell-specific circadian clock disruption potentiates diet-induced inflammation and insulin resistance**
David Earnest, Texas A & M University
- 11:30 **S63 • The melanocortin-4 receptor integrates environmental light and metabolism**
*Deanna Arble, University of Cincinnati
- 11:45 **S64 • Time-restricted feeding is a simple preventative and therapeutic intervention against diverse nutritional challenges**
*Amandine Chaix, The SALK Institute for Biological Studies
- 12:00 **S65 • Altered circadian synchronization to light in genetically obese *ob/ob* mice: partial normalization with leptin**
Edith Grosbellet, Neurobiology of Rhythms, Institute of Cellular and Integrative Neurosciences
- 12:15 **S66 • Non-circadian and non-invasive biomarkers of circadian rhythm disruption**
Kirsten Van Dycke, National Institute for Public Health and the Environment

- 11:00 AM–12:30 PM Slide Session L • *Entrainment II* • Gallatin**
Supported, in part, by Reset Therapeutics
 Chair: Stephanie Taylor, Colby College
- 11:00 **S67 • *Social Jetlag, Obesity and Metabolic Disorder: Investigation in a cohort study***
 Michael Parsons, MRC Harwell
- 11:15 **S68 • *Prior light history impacts on higher order cognitive brain function***
 Sarah Chellappa, University of Liège
- 11:30 **S69 • *Clocks for All Seasons: Unravelling the Genetic Circadian and Interval Timing Mechanisms in the Mammalian Hypothalamus and Pituitary***
 Shona Wood, University of Manchester
- 11:45 **S70 • *Efficacy of Tasimelteon Treatment in Totally Blind Individuals with Non-24-Hour Sleep-Wake Disorder***
 Steven Lockley, Brigham and Women's Hospital
- 12:00 **S71 • Withdrawn**
- 12:15 **S72 • *CRY in the compound eyes mediates entrainment in Drosophila***
 *Matthias Schlichting, University of Wuerzburg
- 12:30–3:15 PM Free Time**
- 12:30 PM Lunch Time Tables • *Huntley Dining Room***
 Chronobiology advocacy: Interfacing with the public (Web, blogs, media...)
 Impact of circadian rhythms on athletic performance
- 12:45–2:45 PM SRBR Executive Committee Meeting • *Lamar / Gibbon***
- 3:15–4:15 PM Workshop II: *Clocks in Society: "Is There a Best Way to Assess Chronotype?"* • *Jefferson / Madison***
Chairs: Elizabeth Klerman, Brigham and Women's Hospital, Harvard Medical School, and Ying-hui Fu, University of California, San Francisco
Discussants: Derk-Jan Dijk, University of Surrey, Jeanne Duffy, Brigham and Women's Hospital, Harvard Medical School, and Till Roenneberg, University of Munich
- 4:15–6:30 PM Symposium13: *Metabolism II* • *Jefferson***
 Chair: Akhilesh Reddy, University Of Cambridge
- 4:15 Introduction
- 4:25 ***Regulation of metabolic pathways and growth by the circadian clock of Neurospora***
 Michael Brunner, Heidelberg University
- 4:50 ***Circadian Regulation of Hepatic Triglyceride Accumulation***
 Gad Asher, Weizmann Institute of Science, Israel

- 5:15 ***Interplay of Circadian and Metabolic Genomic Pathways***
Joseph Takahashi, UT Southwestern
- 5:40 ***The Sweet Tooth of the Circadian Clock***
Xiaoyong Yang, Yale University School of Medicine
- 6:05 ***Leveraging time: drug action, health, and dark matter***
John Hogenesch, University of Pennsylvania Perelman School of Medicine

Symposium 14: *Circadian neurodegeneration* • Gallatin

Chair: Phyllis Zee, Northwestern University

- 4:15 Introduction
- 4:25 ***Regulation of synaptic adhesion molecules by clock genes: a pathway relevant to sleep***
Valérie Mongrain, Université de Montréal
- 4:50 ***Clock genes, oxidative stress, and neurodegeneration***
Erik Musiek, Washington University School of Medicine in St. Louis
- 5:15 ***Circadian disruptions in Huntington's and Parkinson's disease i.e. can we fix a broken clock?***
Christopher Colwell, UCLA
- 5:40 ***Circadian genes, neuronal activity and psychiatric disease***
Colleen McClung, University of Pittsburgh
- 6:05 ***Circadian dysfunction in Huntington's disease***
Jenny Morton, University of Cambridge

Symposium 15: *Circadian Clock Structures* • Madison

Chair: Andy LiWang, University of California at Merced

- 4:15 Introduction
- 4:25 ***Flavoprotein light sensors that entrain circadian rhythms***
Brian Crane, Cornell University
- 4:50 ***Structure-function analyses of Cryptochromes***
Eva Wolf, JGU University Mainz and IMB Mainz
- 5:15 ***Wrestling for control: a dynamic competition between coactivators and cryptochrome regulates CLOCK:BMAL1 activity***
Carrie Partch, UC Santa Cruz
- 5:40 ***How Molecular Architecture Yields Mechanistic Insights into the Circadian Clock***
Martin Egli, Vanderbilt University
- 6:05 ***KaiC as Circadian Pacemaker of Cyanobacterial Circadian Clock***
Shuji Akiyama, Institute for Molecular Science, Research Center of Integrative Molecular Systems

8:00–8:30 PM

Datablitz III • Madison / Gallatin

Chair: Michael Nitabach, Yale University

*Excellence Award recipients are indicated with ** before their name and Merit Award recipient names are preceded with *.*

Post-operative Circadian and Sleep Disruption in Healthy Patients

*Nicola Ludin

Impact of Bmal1 on ischemic and sleep processes in mice

Allison Brager

Rev-ERB α : a novel chrono-pharmacological target to regulate inflammatory diseases

*Marie Pariollaud

Transcription-centric circadian generation of rhythmic transcripts in Neurospora crassa

Gencer Sancar

Silencing the molecular timekeeper in human cancer

*Alicia K. Michael

Husp transmits DNA damage signals to the circadian clock via Cry1 stabilization

*Stephanie Papp

Using circadian rhythms to optimize glioblastoma therapy

*Emily Slat

Feeding and adrenal entrainment stimuli are both necessary for normal circadian oscillation of peripheral clock in mice housed under different photoperiods

*Yuko Ikeda

Reproduction and fertility in the arrhythmic Siberian hamster (Phodopus sungorus)

*Erin Cable

The role of the pineal gland in the photoperiodic control of bird song frequency and repertoire in the house sparrow

Gang Wang

Interaction between the Circadian and metabolic systems controls thermoregulation

Mara Guzman-Ruiz

Effects of timing of saturated fat and liquid sugar intake on obesity in rats and circadian rhythms in hypothalamic cells

Joelle Oosterman

Food-intake at night on workdays is associated with cardiometabolic syndrome risk factors in night-shift nurses

*Hylton Molzof

Circadian clocks and feeding time regulate the oscillations and levels of hepatic triglycerides

*Yaarit Adamovich

Disturbances in the murine hepatic circadian clock in alcohol-induced hepatic steatosis

*Peng Zhou

Caloric Intake During the Biological Night and the Effect on 24h Energy Expenditure and Thermic Effect of Food

**Andrew McHill

Don't work around the clock—implementing a chronotype-based shift schedule

*Celine Vetter

The acute phase of moderate-severe traumatic brain injury: 24-hour melatonin and the rest activity-cycle

*Catherine Duclos

Circadian Modulation of Neuromotor Control

Jennifer Gile

Robust central molecular clock in the face of behavioural arrhythmia in a Drosophila model of Alzheimer's disease

*Ko-Fan Chen

Circadian Control of Gonadotropin-Inhibitory Hormone (GnIH) in the Preovulatory Luteinizing Hormone Surge

Kimberly Russo

The Drosophila circadian clock is a variably coupled network of multiple peptidergic units

Zepeng Yao

Cell specific regulation of Pigment Dispersing Factor (PDF) in Drosophila melanogaster

*Sudershana Nair

Reduced excitatory synaptic strength of nucleus accumbens neurons in the Clock Δ 19 mouse

Puja Parekh

Inhibiting matrix metalloproteinases 2 and 9 phase shifts neuronal activity rhythms in the suprachiasmatic nucleus

*Kathryn Abrahamsson

Role of Calcium and Camp Signaling in the Prothoracic Gland in the Circadian Timing of Drosophila Emergence

*Angelina Palacios-Muñoz

8:30–10:30 PM

Poster Session III (P216–323) • Mountain Mall

8:15–10:30 AM

Symposium 16: Consequences of Circadian Disruption • Jefferson

Chairs: Celine Vetter, Brigham and Women's Hospital and Harvard Medical School, and Michael Parsons, MRC Harwell

- 8:15 Introduction
- 8:30 ***Metabolic consequences of circadian disruption in humans***
Frank Scheer, Brigham and Women's Hospital, Harvard Medical School
- 9:00 ***A role for sleep timing in the regulation of circadian transcriptome rhythms in mice***
Henrik Oster, University of Lübeck
- 9:30 ***A chocolate a day keeps desynchrony away***
Carolina Escobar, Universidad Nacional Autónoma de México
- 10:00 ***Exploring the depth of behavioural deficits in mouse mutants with disrupted clocks: Cause and consequence***
Patrick Nolan, MRC Harwell

Symposium 17: Neural Circuits III: Clock Connectomics • Gallatin

Chair: Fernanda Ceriani, Fundación Instituto Leloir

- 8:15 Introduction
- 8:30 ***CRY expression in a subset of Drosophila clock neurons***
Taishi Yoshii, Okayama University
- 9:00 ***Connectivity Hierarchy and Coupling in a Circadian Clock Neuron Network***
Orie Shafer, University of Michigan
- 9:30 ***Clocks in Fish: New clues to unravel the circadian timing system***
Nick Foulkes, Karlsruhe Institute of Technology
- 10:00 ***Monitoring and manipulating circadian cells and circuits in the SCN***
Michael Hastings, MRC Laboratory of Molecular Biology

Symposium 18: Clocks in the Wild • Madison

Chair: Antonio Nuñez, Michigan State University

- 8:15 Introduction
- 8:30 ***Diurnality and depression—is there a connection?***
Noga Kornfeld-Schor, Tel Aviv University
- 9:00 ***The entrainment tug-of-war: the power of social and photic cues in young honey bees***
Guy Bloch, EEB
- 9:30 ***Complex genetic mechanisms underlie evolution of divergent circadian phenotypes in Drosophila***
Vijay Sharma, Jawaharlal Nehru Centre for Advanced Scientific Research
- 10:00 ***Timing matters in social life of birds***
Barbara Helm, University of Glasgow

10:30–11:00 AM Refreshment Break • Upper Atrium

Exhibits • Lower Atrium

Meet the Professors • Lake / Canyon

Bambos Kyriacou (Drosophila, seasonal, crustacean, circatidal, ecology, evolution)

Charles Czeisler (humans, sleep and circadian rhythms)

David Weaver (rodents, clock genes, molecular mechanisms of circadian rhythms)

Elizabeth Maywood (rodents, SCN, clock genes)

Carla Green (rodents, clock output, metabolism, post-transcriptional)

Hugh Piggins (rodents, SCN, electrophysiology, neuropeptides)

Phyllis Zee (clinical rhythms and sleep)

Douglas McMahon (rodents, physiology, retina)

11:00 AM–12:30 PM Slide Session M • Green Clocks • Amphitheatre

Chair: Michael Rust, University of Chicago

11:00 **S73 • *Mathematical modeling reveals additional links between the circadian clock and the redox rhythm in Arabidopsis through a master immune regulator***

Sargis Karapetyan, Duke University

11:15 **S74 • *Quantitative Genetic Analysis of Natural Variation of Circadian Rhythms in Arabidopsis thaliana and Brassica rapa***

C. Robertson McClung, Dartmouth College

11:30 **S75 • *The roles of FKF1 SCF complex and GIGANTEA protein in the stability regulation of CONSTANS for photoperiodic flowering***

Takato Imaizumi, University of Washington

11:45 **S76 • *Modeling the plant circadian system in Arabidopsis thaliana through system identification***

Mathias Foo, Asia Pacific Center for Theoretical Physics (APCTP)

12:00 **S77 • *Dynamic Localization of Cyanobacterial Circadian Clock Proteins***

*Susan Cohen, University of California

12:15 **S78 • *Mixtures of opposing phosphorylations within hexamers precisely time feedback in the cyanobacterial circadian clock***

Michael Rust, University of Chicago

11:00 AM–12:30 PM Slide Session N • Human Clocks • Jefferson

Chair: Iliia Karatsoreos, Washington State University

- 11:00 **S79 • *Detecting Sleep Architecture via Wrist-Actimetry***
Eva Winnebeck, Ludwig Maximilians University
- 11:15 **S80 • *Chicago to Kenya: Taus and phase shifts***
Charmane Eastman, Rush University Medical Center
- 11:30 **S81 • *The Effects of Chronotype, Sleep Schedule and Light/dark Pattern Exposures on Circadian Phase***
Mariana Figueiro, Lighting Research Center, Rensselaer Polytechnic Institute
- 11:45 **S82 • *Every breath you take: The Human Circadian Breathylome Around the Clock***
Robert Dallmann, Institute of Pharmacology and Toxicology, University of Zurich
- 12:00 **S83 • *Circadian rhythm endophenotypes for bipolar disorder***
Lucia Pagani, UTSW
- 12:15 **S84 • *Human peripheral circadian clocks respond to glucocorticoids independently of the central clock***
Marc Cuesta, McGill University

11:00 AM–12:30 PM Slide Session O • Ontogeny of Clocks • Madison

Chair: Andrew C. Liu, University of Memphis

- 11:00 **S85 • *MicroRNA-92a Acts as a Circadian Regulator of Neuronal Excitability in Drosophila***
Xiao Chen, Brandeis University
- 11:15 **S86 • *Epigenetic and transcriptional program regulates differentiation-coupled circadian clock development in mammalian cells***
Kazuhiro Yagita, Kyoto Prefectural University of Medicine
- 11:30 **S87 • *Development of the mouse liver clock***
Xiaodong Li, College of Life Sciences, Wuhan University
- 11:45 **S88 • *Lhx1: From Studies of SCN Differentiation to Insights into SCN Physiology***
**Joseph Bedont, Johns Hopkins Medical Institute
- 12:00 **S89 • *Programming of mice circadian photic responses by postnatal light environment***
Maria Canal, Faculty of Life Sciences, University of Manchester
- 12:15 **S90 • *Role for DNA methylation in insect photoperiodic timing***
Eran Tauber, University of Leicester

- 11:00 AM–12:30 PM Slide Session P • *Fish Clocks* • Gallatin**
Chair: Yoav Gothilf, Tel Aviv University
- 11:00 **S91 • *Molecular genetic analysis of zebrafish circadian rhythms***
Han Wang, Center for Circadian Clocks, Soochow University
- 11:15 **S92 • *The zebrafish pineal gland transcriptome reveals new elements in the circadian clockwork and a complex regulation of the circadian clockwork by light***
Yoav Gothilf, Tel Aviv University
- 11:30 **S93 • *Melatonin is required for the circadian regulation of sleep but not for circadian rhythms***
Avni V. Gandhi, California Institute of Technology
- 11:45 **S94 • *A novel neuropeptide implicated in zebrafish sleep***
*Ida Barlow, University College London
- 12:00 **S95 • *The hypnotic effects of melatonin in wild type and mutant zebrafish***
Jason Rihel, University College London
- 12:15 **S96 • *A transgenic zebrafish line monitoring the circadian core clock feedback loop a tool for developmental, chemical and neural biological studies***
Benjamin Weger, Nestlé Institute of Health Sciences
- 12:30–2:30 PM Free Time**
- 12:30 PM Lunch Time Tables • *Huntley Dining Room***
Working times: Circadian insights and field study challenges
Chronobiology of drug addiction
- 2:30–3:30 PM Business Meeting • *Missouri Ballroom***
- 3:30–4:30 PM Workshop III: *Clock Reporters: Are We Being Misled by Reporters? What Reporters do We Need?* • *Missouri Ballroom***
Chairs: Shin Yamazaki, University of Texas Southwestern, Robert Dallmann, University of Zurich
Discussants: Jennifer Evans, Marquette University, Charna Dibner, University Hospital of Geneva, and Shigenobu Shibata, Waseda University
- 4:30–5:30 PM Pittendrigh / Aschoff Lecture • *Missouri Ballroom***
Introduction: **Erik Herzog**, Washington University in St. Louis
Presentation: ***Interlocked Clocks***
William Schwartz, University of Massachusetts Medical School
- 5:45–6:30 PM Free Time & Cocktails (cash bar) • *Huntley Dining Room***
- 6:30–7:30 PM Travel Awards / Entertainment / Cocktails (cash bar) • *Huntley Dining Room***
- 7:30 PM Montana BBQ • *Mountain Mall***

Poster Titles

* Indicates Trainee Merit Award recipient

** Indicates Trainee Excellence Award recipient

- P1 Time-of-day specific changes in metabolic detoxification and insecticide resistance in the malaria mosquito *Anopheles gambiae*** • Giles Duffield, University of Notre Dame
- P2 Daily rhythms in antennal protein and olfactory sensitivity in the malaria mosquito *Anopheles gambiae*** • Giles Duffield, University of Notre Dame
- P3 Light-regulated blood-feeding and flight activity behavior and a light phase response curve for the *Anopheles gambiae* malaria mosquito** • *Aaron Sheppard, University of Notre Dame
- P4 Analysis of Locomotor Activity Rhythms in a Population of Free-Behaving *C. elegans*** • Ari Winbush, University of Nevada
- P5 Physical and psychological stress as potent synchronizers of mouse peripheral circadian clocks** • *Yu Tahara, Waseda University
- P6 Redox oscillations in fruit flies** • Utham Kashyap Valekunja, Wellcome Trust-MRC Institute of Metabolic Science
- P7 Shock O'Clock The circadian clock in endotoxic shock—systemic versus local clock regulation** • Veronika Lang, Charité Universitätsmedizin
- P8 Chronic Stress Induces Physiological and Brain Region Specific Molecular Disruptions of Circadian Amplitude in Mice** • Nicole Edgar, University of Pittsburgh
- P9 CCA1, a central circadian oscillator mediates ER stress response in Arabidopsis** • Hee Jin Park, Gyeongsang National University
- P10 Assessing the Impact of Chronic Sleep Restriction and Acute Sleep Deprivation on Performance-Associated Regional Brain Activation Using Near-Infrared Spectroscopy** • Michael Lee, Brigham and Women's Hospital/Harvard Medical School
- P11 Sleep deprivation alters hepatic metabolism and the peripheral clock** • Jessica Ferrell, Northeast Ohio Medical University
- P12 Hyper-sensitivity of the circadian system to light in Delayed Sleep Phase Disorder** • Sean Cain, Monash University
- P13 Inter-individual differences in night-time behavioral and cerebral responses to high and low sleep pressure conditions** • Christina Schmidt, Psychiatric Hospital of the University of Basel
- P14 Circadian activity splitting in two sighted individuals with non-24 hour sleep-wake disorder** • Sabra Abbott, Northwestern University
- P15 Novel PER2 alleles for familial advanced sleep phase** • Christin Chong, UCSF
- P16 An Important Role of 5 Evening Neurons in Drosophila Circadian Rhythms and Sleep** • Fang, HHMI/Brandeis Univ
- P17 A circadian lens on human population activity patterns: Inferences from the power grid** • Caitlin Crosier, Kent State University

- P18 Chronobiology meets Big Data: Humans 'in the wild' • Dimitri Perrin, RIKEN**
- P19 Circadian disfunction in chronic kidney disease • Inês Chaves, Erasmus MC**
- P20 The effect of light containing spatial structure on the suprachiasmatic nucleus • Josh Mouland, University of Manchester**
- P21 Trypanosoma brucei accelerates the mouse circadian clock • Filipa Rijo-Ferreira, UT Southwestern / Instituto Medicina Molecular**
- P22 The Role of Sustained GABA-A Receptor Activation within the SCN in Light-induced Phase Shifts is Phase Dependent • Daniel Hummer, Morehouse College**
- P23 Effects of chronic nighttime light exposure on the daily rhythms in locomotor activity and clock gene expression in the SCN • Lily Yan, Michigan State University**
- P24 Suprachiasmatic clues to circadian dysfunction in the BACHD mouse model of Huntington's disease • Dika Kuljis, UCLA**
- P25 Temporal pattern of GABAA receptor δ subunit expression in the suprachiasmatic nucleus of male Syrian hamsters • James Walton, Georgia State University**
- P26 CRYPTOCHROME and its role in controlling circadian rhythms using electrophysiological techniques in Drosophila melanogaster • Marie Nugent, University of Leicester**
- P27 Phase-mapping the mouse brain with a CRY1::mCherry fluorescent reporter • Arthur Millius, RIKEN CDB**
- P28 Phosphorylation of the Cryptochrome 1 C-terminal tail regulates circadian period length • Peng Gao, Department of Neuroscience, University of Texas Southwestern Medical Center**
- P29 Structural and Functional Characterization of the Interactions between Cryptochromes and Xenobiotic Receptors • Anna Kriebs, The Scripps Research Institute**
- P30 Characterising of the role of Cryptochromes in Retinal Responses to Light • *Jovi Chau-Yee Wong, University of Oxford**
- P31 Structural Characterization of Fungal Photoreceptor-Envoy • Jameela Lokhandwala, Southern Methodist University**
- P32 Differential Mechanisms of Phase Advancing versus Delaying Light Pulses in Drosophila • Jay Hirsh, University of Virginia**
- P33 Identification of a second region regulating nuclear localization of the circadian clock protein mouse Cryptochrome 1 • Karla Marz, Gustavus Adolphus College**
- P34 Altered cryptochrome degradation influences GABAergic signaling and excitation of suprachiasmatic nucleus neurons • Sven Wegner, Faculty of Life Sciences, University of Manchester**
- P35 Magnetoreception in Drosophila melanogaster • Giorgio Fedele, University of Leicester**
- P36 Roles of C-terminal truncated Bmal1 on circadian rhythm • Noheon Park, University of Texas Southwestern Medical Center**
- P37 P37 A slow conformational change in the C-terminus of BMAL1 modulates binding to transcriptional coactivators • Chelsea L Gustafson, University of California Santa Cruz**
- P38 Structure/function interrogation of mCRY1 defines a distributed binding interface with the CLOCK/BMAL1 heterodimer • *Clark Rosensweig, UT Southwestern Medical Center**
- P39 Withdrawn**

- P40 The effect of interneuronal communication between clock neurons in *Drosophila*** • Qi Zhang, University of Michigan
- P41 Translational control of the circadian clock through the cap-binding protein eIF4E** • Ruifeng Cao, McGill University
- P42 The NRON/KPNB1 Complex Regulates Nuclear Translocation and Function of the Circadian Clock** • Yool Lee, University of Pennsylvania
- P43 Development of circadian pacemaker cells in the *Drosophila* brain** • *Tianxin Liu, Texas A&M University
- P44 The beginning of in vivo clock gene expression rhythmicity in the fetal rat SCN** • Alena Sumova, Institute of Physiology, Academy of Sciences of the Czech Republic
- P45 An ultradian rhythm of somite formation is modulated by xBmal1 and xNocturnin in *Xenopus laevis*** • Kristen Curran, University of Wisconsin Whitewater
- P46 The circadian molecular clock regulates adult hippocampal neurogenesis by controlling the timing of cell-cycle entry and exit** • Hai-Ying Mary Cheng, University of Toronto Mississauga
- P47 Hyperoxia affects neonatal lung circadian dynamics and worsens injury** • Shaon Sengupta, Children's Hospital of Philadelphia
- P48 Maternal effects on circadian gene expression in fetal kidneys** • Krisztina Meszaros, Heidelberg University
- P49 Dopamine and Melatonin Regulate Ocular Circadian Rhythms** • Kenkichi Baba, Morehouse School of Medicine
- P50 Utilizing Electroretinograms (ERG) to Analyze Circadian Rhythms in *Gromphadorhina portentosa* Photoreceptor Sensitivity** • Wil Bogue, Northeastern Illinois University
- P51 Retinal Muller Cells are Circadian Clock Cells and Clock Genes Impact Retinal Neovascularization** • Douglas McMahon, Vanderbilt University
- P52 Physiological and behavioural consequences of destabilised entrainment in melanopsin knockout mice** • Violetta Piorz, University of Oxford
- P53 Retinal projections to the suprachiasmatic nucleus: from morphology to function** • Diego Fernandez, Johns Hopkins University
- P54 ipRGC neurotransmitters, glutamate and PACAP, are distinct in their contributions to non-image forming behaviors** • *William Keenan, Johns Hopkins University
- P55 Involvement of 5-HT₃ and 5-HT₄ receptors in the regulation of circadian clock gene expression in mouse small intestine** • Natsumi Aoki, Waseda University
- P56 Serotonergic enhancement of photic phase shifts: BMY7378 does not require the serotonergic fibers connecting the median raphe nucleus to the suprachiasmatic nucleus** • Victoria Smith, University of Calgary
- P57 Investigating ASIC1a as a potential link between circadian disruption and mood disorders in mice** • Jonathan Shelton, Janssen R&D
- P58 A Mutation in PERIOD3 Causes Familial Advanced Sleep Phase** • Luoying Zhang, University of California, San Francisco
- P59 Perinatal photoperiod affects the serotonergic system** • *Noah Green, Vanderbilt University

- P60** In patients with Alzheimer's disease, correlations in motor activity fluctuations respond to bright light therapy are associated with mood and cognition • Kun Hu, Brigham & Women's Hospital/Harvard Medical School
- P61** Early wake therapy phase-delays advanced melatonin offset and improves mood in depressed pregnant women • Barbara Parry, University of California, San Diego
- P62** Inhibition of specific classes of histone deacetylases reduce anxiety- and depression-like behaviors in Clock Δ 19 mutant mice • Ryan Logan, University of Pittsburgh
- P63** Association of Depression with Variations of Melatonin and Cortisol Rhythms in Delayed Phase Sleep Disorder (DSPD) Patients • Seong Jae Kim, Northwestern University Feinberg School of Medicine
- P64** Circadian abnormalities in the Myshkin mouse model of mania • *Joseph Timothy, University of Manchester
- P65** Brain circadian clocks in a mouse model of depression • Dominc Landgraf, UCSD
- P66** Daily Temporal Rhythms in Cellular Activity in the Lateral Habenula • Hugh Piggins, University of Manchester
- P67** Cyanobacterial Clock Output Feeds Back through Metabolism to Regulate Clock Input • Gopal K. Pattanayak, University of Chicago
- P68** Intracellular Distributions of the KaiABC Proteins During the Cyanobacterial Circadian Cycle: A Spatiotemporal Simulation • Stefanie Hertel, Charité—Universitätsmedizin Berlin
- P69** Circadian regulation of oxidative stress-induced Stress Granules • Victoria A. Acosta Rodríguez, CIQUIBIC-CONICET, Dpto de Química Biológica, Facultad de Ciencias Químicas, Universidad Nacional de Córdoba
- P70** Circadian regulation of actin dynamics • Ned Hoyle, MRC Laboratory of Molecular Biology
- P71** Diverse Circadian Periods from Individual Cells: Stochastic or Clonal? • Yan Li, The University of Texas Southwestern Medical Center
- P72** An Ultradian Rhythm in Mouse Embryonic Fibroblast (MEF) Cell Lines • Shuzhang Yang, UT Southwestern Medical Center
- P73** Transcriptional responses during synchronization of clocks in mouse and human cells • Jason DeBruyne, Morehouse School of Medicine
- P74** Genome-wide analysis of circadian clock properties in human fibroblasts • *Ludmila Gaspar, Institute of Pharmacology and Toxicology
- P75** The circadian clock in the Antarctic krill *Euphausia superba* • *Benjamin Hunt, University of Leicester
- P76** Understanding timekeeping in an intertidal crustacean *Eurydice pulchra* • Lin Zhang, Leicester University
- P77** First description of circadian rhythms in visual sensitivity, predatory behavior, and locomotion in a praying mantis • Aaron Schirmer, Northeastern Illinois University
- P78** Clock Silencing in Adulthood Impairs Rhythmic Insulin Release and Reprograms Protein Secretion Transcription Networks • Mark Perelis, Northwestern University Feinberg School of Medicine

- P79 Sustained inhibition of Na⁺/K⁺/Cl⁻ co-transporter 1 (NKCC1) enhances the magnitude of light-induced phase delays of the circadian clock** • *John (Mac) McNeill, Georgia State University
- P80 Constitutive activation of glycogen synthase kinase 3 induces metabolic dyssynchrony and impairment in mice** • Karen Gamble, University of Alabama at Birmingham
- P81 Influence of circadian rhythms on postprandial triglyceride metabolism: Role of the Suprachiasmatic Nucleus** • Sofia Moran-Ramos, UNAM
- P82 Novel Cry Stabilizing Compounds Reinforce the Peripheral Clock Mechanism and Lower Blood Glucose in Diabetic Mice** • Jeffrey Johnson, Reset Therapeutics
- P83 Metabolic disturbances in a model of chronic jetlag** • Luciano Marpegan, Universidad Nacional de Quilmes/CONICET
- P84 Insulin-FOXO3 signaling modulates circadian rhythms via regulation of Clock transcription** • Ines Chaves, Erasmus MC
- P85 Bmal1 in brown adipocytes is not required for rhythmic oscillations of core body temperature** • Georgios Paschos, University of Pennsylvania
- P86 Human skeletal muscle clock: implications in myokine secretion and insulin-resistance** • Charna Dibner, Faculty of Medicine, University of Geneva
- P87 Circadian clocks and Polyamines—a metabolic feedback loop** • *Ziv Zwihaft, Weizmann Institute of Science
- P88 Effects of light, food, and methamphetamine on the circadian activity rhythm in mice** • Julie Pendergast, Vanderbilt University Medical Center
- P89 Food-entrainable circadian oscillations of PER2:LUC in the mouse olfactory bulb: critical role for olfactory input** • *Ilya Pavlovski, Simon Fraser University
- P90 Phase advanced locomotor activity during timed restricted feeding persists in tissue-type plasminogen activator knock out (tPA^{-/-}) mice** • Ashutosh , Kent State University
- P91 Circadian properties of food-anticipatory activity re-examined: entrainment limits and scalar timing in operant and general activity** • *Christian Petersen, Simon Fraser University
- P92 Meal shift experiments reveal unusual properties of circadian food anticipatory rhythms in rats and mice** • Andrea Smit, Simon Fraser University
- P93 Exploring interactions between copper homeostasis and transport and the SCN circadian clock** • Yukihiko Yamada, University of Tennessee
- P94 MicroRNAs cooperate with rhythmic transcription to shape circadian gene expression** • **Ngoc-Hien Du, Center for Integrative Genomics, University of Lausanne
- P95 Neurospora crassa Circadian Rhythms in Continuous Chemostat Cultures** • Allison Cockrell, Naval Research Laboratory
- P96 Use of mouse substrains identifies a QTL for circadian amplitude** • Vivek Kumar, UT Southwestern
- P97 A Novel ENU-Induced Mutation in the Melanocortin-4 Receptor (MC4R) Gene in Mice Leads to Altered Body-Weight Regulation and Expression of Circadian Rhythmicity** • Marleen de Groot, HHMI/UTSouthwestern
- P98 The circadian clock controls pre-mRNA splicing through the spliceosome** • Lin Zhang, Sun Yat-Sen University

- P99 Circadian gene expression patterns on the periphery depend on mouse genotype** • Rok Kosir, Faculty of Medicine, University of Ljubljana
- P100 Estrogen response elements in clock genes: a bioinformatic analysis** • Jessica Lensie, Kent State University
- P101 Circadian clock-dependent and -independent rhythmic proteomes implement distinct diurnal functions in mouse liver** • Daniel Mauvoisin, Nestle Institute of Health Science
- P102** Withdrawn
- P103 New insight into post-transcriptional regulation of circadian rhythms using a system wide identification of RNA-binding proteins** • Pauline Gosselin, University of Geneva
- P104 Role of the circadian clock regulated ATF5 transcription factor** • Capucine BOLVIN, NIHS
- P105 Orchestration of the rhythmic translation by the circadian clock** • Florian Atger, NIHS
- P106 Chronic phase shifting paradigms disrupt locomotor rhythm entrainment in C57BL/6J but not BALB/cJ mice** • Todd Weber, Rider University
- P107 Drosophila mechanosensory organs and Ionotropic Receptors (IRs) contribute to clock synchronization by temperature cycles and proprioceptive feedback** • **Chenghao Chen, UCL
- P108 Genetic engineering of an S714 mutation in PER1 leads to an advanced feeding rhythm phase in mice** • Guangsen Shi, Nanjing University
- P109 Sustained Inhibition of GABAA Receptors in the SCN is Necessary to Inhibit Light-induced Phase Delays** • Tony Larkin, Morehouse College
- P110 Bifurcated rhythms lead to rapid circadian re-entrainment after simulated travel to anti-meridian time zones in mice** • *Liz Harrison, UC San Diego Center for Chronobiology
- P111 Light duration requirements for induction and maintenance of bifurcated circadian rhythms in C57Bl/6j mice under light:dark:light:dark cycles** • Jonathan Sun, UC San Diego
- P112 Excitotoxins cause significant damage to the SCN and SPZ of diurnal grass rats, but this damage does not interfere with light-induced masking behavior** • Andrew Gall, Michigan State University
- P113 Overnight bright light accelerates re-entrainment to a 6h LD shift in per2:luc mice: photic, nonphotic and rhythm amplitude correlates** • Curtis Hazelwood, Simon Fraser University
- P114 Caffeine does not entrain the circadian clock but improves daytime alertness in blind patients with non-24-hour rhythms** • Steven Lockley, Brigham & Women's Hospital
- P115 Morning and Evening oscillators cooperate to reset circadian behavior in response to light input** • *Pallavi Lamba, UMass Medical School
- P116 Are photic shifts giving you a migraine? Try sumatriptan!** • Priyoneel Basu, University of Calgary
- P117 Bifurcated entrainment enables flexible resetting of PER2::LUC rhythms by dissection in SCN and peripheral tissues** • Takako Noguchi, UCSD
- P118 Delineating the dopaminergic ultradian oscillator** • *Ian Blum, Douglas Mental Health University Institute
- P119** Withdrawn

- P120 How can sleep fix a broken brain?** • Stephane Dissel, Washington University in St. Louis School of Medicine
- P121 Eveningness is associated with poor sleep quality in shift workers during both night and day shifts** • Jeanne Sophie Martin, Laval University
- P122 TIMELESS Mutation in FASPD Results in Aberrant Subcellular Localization and Shortened Period** • Pei-Ken Hsu, University of California, San Francisco
- P123 Molecular mechanism of S665L mutation of PER2 in FASP** • William C. Hallows, University of California San Francisco
- P124 From humans to monkeys and back: physical activity patterns in humans and primates** • Vadim Zipunnikov, Johns Hopkins Bloomberg School of Public Health
- P125 The human circadian clock modulates apnea severity** • Matthew Butler, Oregon Health & Science University
- P126 Functional decoupling of melatonin suppression and circadian phase resetting in humans** • Shadab Rahman, Harvard Medical School
- P127 Pyroelectric Sensors for Measurement of both Circadian Rhythms and Sleep in Mice** • Laurence Brown, Sleep & Circadian Neuroscience Institute (SCNi)
- P128 Chronic cocaine causes long-term alterations in circadian period and photic entrainment in the mouse** • Adam Stowie, Kent State University
- P129 Circadian rhythms and voluntary ethanol intake in ethanol-preferring rat lines: effects of long-term ethanol access** • Alan Rosenwasser, University of Maine
- P130 Skimming the surface: elucidating molecular mechanisms associated with rapid tolerance to alcohol using the suprachiasmatic nucleus (SCN)** • Jonathan Lindsay, University of Tennessee
- P131 The effects of ethanol vapor on alcohol dehydrogenase, ethanol sensitivity, and activity patterns in period mutants of *Drosophila melanogaster*** • Joseph Seggio, Bridgewater State University
- P132 Changes in biological rhythms generated by the intake of sweetened water** • Jose Luis Chavez Juarez, Instituto de Fisiologia Celular UNAM
- P133 Environmental lighting modulates voluntary ethanol intake in mice** • Alan Rosenwasser, University of Maine
- P134 The Differential Roles of GABA and VIP in Synchronization and Entrainment of the Suprachiasmatic Nucleus: A Mathematical Modeling Study** • Nathaniel Kingsbury, University of Massachusetts, Amherst
- P135 SCN network inference** • Stephanie Taylor, Colby College
- P136 Modeling Circadian Transcription of Ion Channels and Cardiac Arrhythmogenesis** • Casey Diekman, New Jersey Institute of Technology
- P137 Timing of coupling determines synchrony and entrainment in the mammalian circadian clock** • Bharath Ananthasubramaniam, Charite and Humboldt University, Berlin
- P138 Insights into circadian oscillator robustness through a coupled stochastic model** • John Abel, University of California, Santa Barbara
- P139 Two loop amplitudes decide the period direction** • Jie Yan, Soochow University

- P140 Emergent phase shifting properties at the SCN neuronal network level; from single cells to population attributes** • Ashna Ramkisoensing, Leiden University Medical Center
- P141 IMAAC: a new adaptive approach to quantify nonlinear coupling between biological rhythms** • Chien-Hung Yeh, The Research Center for Adaptive Data Analysis/Center for Dynamical Biomarker and Translational Medicine, National Central University
- P142 Effects of Neonatal Transient High Oxygen Exposure On Circadian Regulation of Energy Metabolism of Adult Male Rats** • Marie-Amélie Lukaszewski, Ste-Justine University Hospital and Research Center, Université de Montréal
- P143 Aging differentially affects clock gene expression rhythms in the hamster adrenal gland** • Marilyn Duncan, Univ. of Kentucky Medical School
- P144 Preterm infants have improved growth in light/dark cycle compared with continuous bright light** • Manuel Angeles-Castellanos, Facultad de Medicina, Universidad Nacional Autónoma de México
- P145 Characterization of postnatal Bmal1 knockout mice** • Guangrui Yang, University of Pennsylvania
- P146 GATA type transcription factors WCC and SUB1 cooperate in nucleosome dynamics and transcription activation** • Cigdem Sancar, Heidelberg University
- P147 Ablation of the Inhibitor of DNA binding 4 (Id4) gene results in effects on circadian clock function** • Maricela Robles-Murguía, University of Notre Dame
- P148 Ablation of the Id2 gene results in altered circadian feeding behavior, and sex-specific enhancement of insulin sensitivity and elevated glucose uptake in skeletal muscle and brown adipose tissue** • Peng Zhou, University of Notre Dame
- P149 CREB co-activator CRTC regulates the circadian clock in Drosophila melanogaster** • *Minkyung Kim, KAIST
- P150 Structural and Chemical Characterization of the Plant Circadian Clock** • Brian Zoltowski, Southern Methodist University
- P151 The co-repressor RCO-1 modulates circadian gene expression in Neurospora crassa** • *Consuelo Olivares-Yañez, Pontificia Universidad Católica de Chile
- P152 Identification of components of the WC-FLO, a novel oscillator in Neurospora crassa** • Nirmala Karunarathna, Texas A & M University
- P153 The effect of ultra short duration light pulses on the human circadian pacemaker** • Shadab Rahman, Harvard Medical School
- P154 Identification and characterization of phosphatases that regulate the pace of the Drosophila circadian oscillator** • *Parul Agrawal, Texas A & M University
- P155 Modeling the circadian oscillator protein network in Drosophila melanogaster** • *Vu Lam, University of California, Davis
- P156 Do rods/cones contribute to the alerting effect of light in humans?** • Tom Woelders, Rijksuniversiteit Groningen
- P157 Chronotype in South Africa is affected by longitude rather than genotype** • Laura Roden, University of Cape Town
- P158 Melatonin as a phase marker in 187 subjects: which method works best?** • Emma J Wams, University of Groningen

- P159 Neural basis of hyperphotosensitivity in a mouse model of Dravet syndrome** • Christoffer A. D. Amdahl, University of Washington
- P160 What a headache! Zolmitriptan attenuates photic phase shifts** • Michael Antle, University of Calgary
- P161 Acute responses to light and darkness in diurnal grass rats and nocturnal Long Evans rats** • Jennifer Langel, Michigan State University
- P162 Marked attenuation of circadian food-anticipatory activity in dopamine receptor 1 knockout mice** • *Mateusz Michalik, Simon Fraser University
- P163 Suppression of melatonin secretion by ocular exposure to bright light in totally visually-blind individuals** • Joseph Hull, Harvard Medical School / Brigham and Women's Hospital
- P164 Non-image forming temporal integration of ultra-short flashes of light** • *Raymond Najjar, Stanford University / VA Palo Alto Health Care System
- P165 Meal and exercise timing with a high fat diet influences energy expenditure and obesity in mice** • Shigenobu Shibata, Wasada University
- P166 Differential effects of saturated and poly-unsaturated fatty acids in the time-dependent modulation of the circadian clock mechanism and inflammatory signaling pathways** • Sam Moon Kim, Texas A & M University
- P167 Controlling access time to high fat diet during inactive period protects against obesity and abnormal phase-shift of peripheral clock in mice** • *Atsushi Haraguchi, Waseda University
- P168 Wheel-running activity modulates circadian organization and the daily rhythm of eating behavior** • Julie Pendergast, Vanderbilt University Medical Center
- P169 AhR +/- mice are protected from the harmful metabolic consequences of circadian disruption induced by shift work and high fat diet** • *Cassie Jaeger, Southern Illinois University School of Medicine
- P170 Lack of Food Anticipatory Activity In Female Mice Subjected to Daily Restricted Feeding Schedules** • Jessica Murphy, Kent State University
- P171 Unveiling novel transcriptional networks behind the circadian clock of *Neurospora crassa*** • *Felipe Muñoz-Guzmán, Pontificia Universidad Católica de Chile
- P172 Daytime circadian food anticipatory activity is associated with suppression of SCN multiple unit activity and c-Fos expression in mice** • *Teresa Dattolo, Simon Fraser University
- P173 MOCCS analysis for determination of CLOCK-binding motifs** • Hikari Yoshitane, The University of Tokyo
- P174 Genome-wide profiling of diurnal expression patterns of genes in *Brassica rapa*** • Jin A Kim, Rural Development Administration
- P175 Intriguing differences in gene expression between the Morning and Evening Cells of *Drosophila*** • Katharine Abruzzi, Howard Hughes Medical Institute, Brandeis University, National Center for Behavioral Genomics
- P176 Investigating the role of NonA in *Drosophila* circadian gene expression** • Hua Jin, Howard Hughes Medical Institute, National Center for Behavioral Genomics, Brandeis University

- P177 The *Drosophila* Brahma chromatin remodeling complex and its role in regulating circadian transcription: uncovering regulatory events at the per promoter** • *Rosanna Kwok, University of California, Davis
- P178 Integrated analysis of circadian expression under high-order chromatin organization** • Yichi Xu, CAS-MPG Partner Institute for Computational Biology
- P179 Orchestrated Signal Transduction Unites Mammalian Circadian Metabolism Across Tissues** • *Heather Ballance, University of Pennsylvania
- P180 Chromosome conformation of mammalian circadian genes** • Jérôme Mermet, Ecole Polytechnique Fédérale Lausanne, EPFL
- P181 Comprehensive identification of rhythmic protein synthesis using ribosome profiling in mouse liver** • Peggy Janich, University of Lausanne
- P182 Rhythmic glycogen synthase kinase 3-beta (GSK3 β) inactivation regulates long-term potentiation and the molecular circadian clock period in the hippocampus** • *Rachel Besing, University of Alabama at Birmingham
- P183 Grades, sex, and seasons: diagnostics from 1,000+ student sleep logs** • *Benjamin Smarr, UC Berkeley
- P184 Condition entrainable circadian oscillators (CEOs) responsible for time memory in place conditioning are reset by amphetamine** • Martin Ralph, University of Toronto
- P185 Acute sleep deprivation persistently inhibits the induction of associative memory in *Aplysia*** • Lisa Lyons, Florida State University
- P186 Normal sleep architecture is critical for memory consolidation in hippocampus-mediated tasks but not in amygdala-dependent tasks** • *Ângela Katsuyama, University of Washington
- P187 Impact of irregularity of sleep-wake schedules on circadian phase and amplitude in college undergraduates** • *William Clerx, Brigham and Women's Hospital
- P188 Period1 regulates membrane properties in neurons in the suprachiasmatic nucleus** • Takashi Kudo, University of California, Los Angeles
- P189 A-type K⁺ currents (IA) regulate circadian locomotor behavior and PER2 expression in the SCN** • Daniel Granados-Fuentes, Washington University in Saint Louis
- P190 Repetitive firing rates are higher in Vasoactive Intestinal Peptide- (VIP-) expressing neurons during the day and night, driving coordinated electrical activity in the suprachiasmatic nucleus** • *Tracey Hermanstynne, Washington University, St. Louis
- P191 The firing mode of clock neurons in *Drosophila* revisited** • Nara Muraro, Fundacion Instituto Leloir
- P192 Photic entrainment and SCN neuronal excitability are modulated by glycogen synthase kinase 3 (GSK3)** • *Jodi Paul, University of Alabama at Birmingham
- P193 How does neuronal activity regulate gene expression in the circadian clock?** • *Zhonghua Zhu, New York University
- P194 Genetic manipulations of the NARROW ABDOMEN leak channel promote unique circadian behavioral phenotypes** • Bridget Lear, University of Iowa
- P195 Variation in sleep duration and circadian phase by duty start time among short-haul commercial airline pilots** • Erin E. Flynn-Evans, NASA Ames Research Center

- P196 Integration of visual information in the mouse SCN** • Lauren Walmsley, The University of Manchester
- P197 Non-photic phase shifting by a muscarinic agonist** • Reid McKibbon, University of Calgary
- P198 Modifying the SCN response to light using temporal modulation** • Rachel Dobb, University of Manchester
- P199 The role of astrocytes from the Suprachiasmatic Nuclei in circadian pacemaker function** • Gabriela Dominguez-Monzon, Instituto de Fisiologia Celular, Universidad Nacional Autonoma de Mexico
- P200 Acetylcholine participates in non-photic phase shifting of the suprachiasmatic nucleus** • Glenn Yamakawa, University of Calgary
- P201 Disrupted feedback to the SCN prevents adequate circadian homeostatic control** • Frederik Buijs, Institute for Biomedical Research
- P202 Dorsomedial region of the SCN determines the phase of the dead zone** • Yasufumi Shigeyoshi, Kinki University School of Medicine
- P203 Optogenetic stimulation of SCN organotypic slices phase-shifts molecular circadian rhythms** • *Mathew Edwards, MRC Laboratory of Molecular Biology
- P204 Is activation of VIP Neurons in mammalian SCN sufficient to drive circadian rhythms in behavior?** • **Cristina Mazuski, Washington University in St. Louis
- P205 The impact of Drosophila's endogenous clock on fitness** • Melanie Bunz, University of Würzburg
- P206 Neonicotinoid pesticide disrupts circadian locomotor behavior in Drosophila** • *Michael Tackenberg, Vanderbilt University
- P207 Evolution of the molecular clockworks in animals: Non-congruence of gene trees for individual clock genes with clock species tree analyses** • Vincent Cassone, University of Kentucky
- P208 Peripheral clocks influence nocturnal migratory restlessness** • Paul Bartell, Pennsylvania State University
- P209 Evolution and functional divergence of zebrafish (Danio rerio) cryptochrome genes** • Han Wang, Soochow University
- P210 Circadian latitudinal clines: what can we expect?** • Roelof Hut, University of Groningen
- P211 A new statistical metric for Drosophila sleep** • Sheyum Syed, University of Miami
- P212 Diurnal and dopaminergic modulation of sleep-like oscillations in the striatum and cerebellum of the anesthetized rat** • Ariana Frederick, Concordia University
- P213 Robust methods for scoring NREM/REM sleep cycles in complex human sleep episodes** • Piotr Mankowski, Brigham and Women's Hospital
- P214 Ultradian Processes in Sleep-Related Spontaneous Movements**
- P215 The mouse liver displays circadian rhythms in the phospholipid metabolism and in the activity of its synthesizing enzymes** • Victoria Acosta Rodríguez, Universidad Nacional de Cordoba
- P216 ENTRAIN, a smartphone app predicting circadian phase, sleep drive and optimal schedules to minimize jetlag** • Olivia Walch, University of Michigan
- P217 Post-operative Circadian and Sleep Disruption in Healthy Patients** • *Nicola Ludin, The University of Auckland

- P218 Impact of Bmal1 on ischemic and sleep processes in mice** • Allison Brager, Morehouse School of Medicine
- P219 Rev-ERB α : a novel chrono-pharmacological target to regulate inflammatory diseases** • *Marie Pariollaud, University of Manchester
- P220 Circadian regulation of innate immunity by MiR-155 controlling BMAL1 in macrophages** • Annie Curtis, Trinity College Dublin
- P221 Period2 Protein Modulation of Immune Function after Chronic Jet Lag** • Philip Kurien, UCSF
- P222 A role for suprachiasmatic astrocytes in the immune-circadian communication** • Luciano Marpegan, Universidad Nacional de Quilmes
- P223 Endogenous circadian regulation of immune response in humans** • Shadab Rahman, Harvard Medical School
- P224 Diurnal changes in autophagy and the inflammatory response** • Sarah McLoughlin, University of Pennsylvania
- P225 Signaling inflammation to the suprachiasmatic nucleus, is the spinal Sensory system involved?**
• Fernando Cázarez-Márquez, Instituto de Investigaciones Biomédicas, Universidad Nacional Autónoma de México
- P226 Lack of evidence for a role of the NF-kappaB pathway in the suprachiasmatic circadian clock**
• Andrew Coogan, National University of Ireland Maynooth
- P227 Characterizing the Role of a Phosphorelay in Circadian Regulation of the OS MAP Kinase Pathway in Neurospora crassa** • Nikita Ojha, Texas A&M University
- P228** Withdrawn
- P229** Withdrawn
- P230 Circadian Rhythms of Drosophila Peroxiredoxins: Still to be Determined?** • Kimberly Kerr, Howard Hughes Medical Institute, National Center for Behavioral Genomics, Brandeis University
- P231 A new circadian transcriptional reporter in an ex vivo brain culture system allows the study of compensatory responses to perturbation in the neuronal circadian network in Drosophila**
• Shaul Mezan, The Hebrew University
- P232 Characterising the effect of anesthesia on the circadian clock in Drosophila** • James Cheeseman, The University of Auckland
- P233 Coordinated action of nuclear receptors required for the Drosophila circadian clocks** • Emi Nagoshi, University of Geneva
- P234 Transcription-centric circadian generation of rhythmic transcripts in Neurospora crassa** • Gencer Sancar, Heidelberg University
- P235 Transcriptional coordination of physiological responses in Nannochloropsis oceanica under diel cycles** • Eva Farre, Michigan State University
- P236 The circadian clock regulates rhythmic activation of the NRF2/glutathione-mediated antioxidant defence pathway to modulate pulmonary fibrosis** • Qing-Jun Meng, University of Manchester
- P237 Silencing the molecular timekeeper in human cancer** • *Alicia K. Michael, University of California—Santa Cruz

- P238** **Hausp transmits DNA damage signals to the circadian clock via Cry1 stabilization** • *Stephanie Papp, The Scripps Research Institute
- P239** **Using circadian rhythms to optimize glioblastoma therapy** • *Emily Slat, Washington University in St. Louis
- P240** **Clock-controlled molecular systems pharmacology of the anticancer drug irinotecan at cell population level** • Sandrine Dulong, INSERM
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- P242** **Real-time minute recording Per2::luc expression from hepatocarcinoma growing in nude mice** • Xiao-Mei Li, INSERM
- P243** **Analysis of Per2 expression in breast cancer cells: A possible link between clock regulation and cancer cell stemness** • Vishal Sharma, Bowling Green State University
- P244** **The circadian and infradian clock of the urochordate Botryllus schlosseri** • Rachel Ben-Shlomo, University of Haifa—Oranim
- P245** **Tumor suppressors PML and p53 directly regulate Per2 and the circadian clock** • Takao Miki, Kyoto University Graduate School of Medicine
- P246** **Role of the Circadian Clock in Sunburn Apoptosis and Erythema** • Shobhan Gaddameedhi, University of North Carolina
- P247** Withdrawn
- P248** **Feeding and adrenal entrainment stimuli are both necessary for normal circadian oscillation of peripheral clock in mice housed under different photoperiods** • *Yuko Ikeda, Waseda University
- P249** **In fruit flies, the mutual phase of PER and TIM varies with photoperiod. Could this serve as mechanism to measure day length?** • Pamela Menegazzi, University of Würzburg
- P250** **Photoperiodic responsiveness of depression-like behavior and the brain serotonergic system in mice** • Tsuyoshi Otsuka, Regulation in Metabolism and behavior, Faculty of Agriculture, Kyushu University
- P251** **Pinealectomy enhances sensitivity to light in melatonin-proficient CBA/N mice** • Keisuke Ikegami, Kinki University School of Medicine
- P252** **Free-running period of activity and body temperature circadian rhythms in the brown bear (Ursus arctos) during hibernation and their light entrainment** • Heiko Jansen, Washington State University
- P253** **Period and timeless mRNA splicing profiles under natural conditions in Drosophila melanogaster** • Gabriella Mazzotta, University of Padova
- P254** **Reproduction and fertility in the arrhythmic Siberian hamster (Phodopus sungorus)** • *Erin Cable, University of Chicago
- P255** **How molecular elements of the circadian clock are co-opted to drive mammalian photoperiodism in a melatonin-target site** • Alexander West, FLS, The University of Manchester
- P256** **The role of the pineal gland in the photoperiodic control of bird song frequency and repertoire in the house sparrow** • Clifford Harpole, University of Kentucky

- P257 Interaction between the Circadian and metabolic systems controls thermoregulation** • Mara Guzman-Ruiz, Biomedical Research Institute
- P258 Does the Drosophila seasonal timer require a circadian clock?** • Mirko Pegoraro, University of Leicester
- P259 Effects of timing of saturated fat and liquid sugar intake on obesity in rats and circadian rhythms in hypothalamic cells** • Joelle Oosterman, University of Amsterdam
- P260 Food scheduled induces rapid re-entrainment after a 6 hours phase advance in SCN and DMH** • Laura Ubaldo-Reyes, Facultad de Medicina, Universidad Nacional Autónoma de México
- P261 Gene-environment interactions of circadian gene variants and dietary intake or sleep duration for metabolic syndrome risk: a meta-analysis from CHARGE Consortium** • Hassan Dashti, Tufts University
- P262 Food-intake at night on workdays is associated with cardiometabolic syndrome risk factors in night-shift nurses** • *Hylton Molzof, University of Alabama at Birmingham
- P263 Calorie restriction affects circadian clock gene expression** • Sonal Patel, Cleveland State University
- P264 Hepatic steatosis due to meal intake during the rest period in rats** • Adrián Báez-Ruiz, Instituto de Investigaciones Biomédicas UNAM
- P265 The role of melatonin receptor 1 in adipose tissue insulin sensitivity** • Sharon Owino, Morehouse School of Medicine
- P266 Cold and hunger induce diurnality in a nocturnal mammal: function and mechanism** • Vincent van der Vinne, University of Groningen
- P267 Chronic circadian disruption causes weight gain in mice** • Linda van Kerkhof, National Institute for Public Health and the Environment
- P268 Effects of daily timing of food intake on the hypothalamic orexin system** • Anne-Loes Opperhuizen, Netherlands Institute for Neuroscience
- P269 Circadian clocks and feeding time regulate the oscillations and levels of hepatic triglycerides** • *Yaarit Adamovich, Weizmann Institute of Science
- P270 The effect of timed food pulses on human central and peripheral clock timing** • Sophie Wehrens, University of Surrey
- P271 Disturbances in the murine hepatic circadian clock in alcohol-induced hepatic steatosis** • *Peng Zhou, University of Notre Dame
- P272 Shaggy/GSK-3 Binds and Phosphorylates Timeless to Regulate Nuclear Accumulation of PER and TIM** • Deniz Top, The Rockefeller University
- P273 Neuropeptide DH31 and PDF receptors independently control daytime and night-onset temperature preference rhythm in Drosophila** • Tadahiro Goda, Cincinnati Children's Hospital Medical Center
- P274 Light entrainment of the Drosophila circadian clock by the visual system** • Francois Rouyer, CNRS
- P275 Salt-inducible kinase 3 regulates circadian period and phase by destabilization of PER2 protein** • Naoto Hayasaka, Yamaguchi University Graduate School of Medicine

- P276 Rapid resetting of the circadian clock in vasopressin V1a and V1b receptors-deficient mice** • Yoshiaki Yamaguchi, Kyoto University
- P277 A novel mechanism controlling re-setting speed of the circadian clock to environmental stimuli** • Violetta Pilorz, University of Manchester
- P278 The CRTCl-SIK1 pathway regulates entrainment of the circadian clock** • Aarti Jagannath, University of Oxford
- P279 Rest-activity cycle disturbances and sleep deprivation following severe traumatic brain injury: A case report** • Catherine Duclos, Hôpital du Sacré-Coeur de Montréal
- P280 Lighting effects within hospital patient rooms; a 24-h lighting rhythm can improve sleep and satisfaction** • Luc Schlangen, Philips Research
- P281 Measuring Circadian Entrainment in Five Species of Lemurs** • Mariana Figueiro, Rensselaer Polytechnic Institute
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Notes

A series of horizontal dotted lines for taking notes.

Big Sky Montana

Altitude Adjustment

Big Sky is located near Yellowstone National Park and sits at an elevation of 7500 ft, which is just a little higher than the mile high city of Denver, CO. So, for those of us not accustomed to life at higher elevations, this little segment provides some tips on how to acclimate to altitude.

1) DRINK WATER! Before the trip, and while you are at Big Sky, staying well hydrated is the best way to adjust to altitude. The best recommendation is to double your water intake.

2) Drink Alcohol in Moderation. Alcoholic drinks pack a greater punch at altitude compared to sea level, especially for the first couple of days. That means less is more. So enjoy yourself, but keep this in mind.

3) Eat Foods High in Potassium. Broccoli, bananas, avocado, cantaloupe, celery, greens, bran, chocolate, granola, dates, dried fruit, potatoes and tomatoes all make the list.

4) Watch Your Physical Activity. The effects of exercise are more intense. Run 6 miles instead of your normal 10...

5) Protect from the Sun. There's 25 percent less protection from the sun at this altitude. Use sunscreen, sunglasses, and lip balm.

6) Dress in Layers. Temperatures are warm in the day, but can be chilly at night. Be prepared.

7) Enjoy Yourself. Don't let anything you hear about the altitude scare you. Air is just thinner and dryer. Just follow these simple tips and you will very likely not even notice the difference.

In the unlikely event that you do experience altitude sickness, drugs such as Diamox (Acetazolamide) can reduce symptoms and duration. Ideally, Diamox should be taken a few days prior to your trip, but it can also be used on the spot if you start feeling ill. Keep ibuprofen or acetaminophen on hand to prevent headaches. Big Sky does have a clinic on-site.

Dining Guide to Big Sky Resort

At Big Sky Resort, you have dining options. We have arranged for a convenient, daily buffet to be served in Huntley Lodge. If you want a special treat, try Buck's T-4. And there are many other choices depending on where and what you want to eat.

Mountain Village: Walking distance from the hotels and conference center.

Town Center: A 25-minute shuttle down the mountain.

Meadow Village: A 30-minute shuttle down the mountain.

Canyon: A 35-minute shuttle down the mountain.

Things to do at Big Sky

bigskyresort.com/things-to-do/activities



Logo Contest Winners

First Place (front cover):

Peter St. John
Graduate Student
University of California, Santa Barbara

Second Place (left):

Louise Kearney
Graduate Student
University of Manchester

Third Place (center):

Marie Pariollaud
Graduate Student
University of Manchester

Honorable Mention (right):

Nicola Ludin
Graduate Student
University of Auckland