



Pharmacological and Pharmaceutical Sciences Virtual Research Retreat

Friday, August 21, 2020

9:00AM - 3:00PM

Hosted by:

The Pharmacological Sciences Training Program

Department of Neuroscience and Pharmacology

Department of Pharmaceutical Sciences and
Experimental Therapeutics

Welcome to the **Pharmacological and Pharmaceutical Sciences Virtual Research Retreat.**

Your involvement makes this retreat a success. Thank you for your continued efforts, flexibility, and dedication during these uncertain and challenging times.

We look forward to seeing you next year!

SAVE THE DATE! 2021 RESEARCH RETREAT

FRIDAY, AUGUST 20, 2021 | LOCATION TO BE DETERMINED

Executive Committee

Stefan Strack (Director), PhD
Dave Roman (Co-Director), PhD
Michael G. Anderson, PhD
Rebecca Dodd, PhD
Ernesto Fuentes, PhD
Dawn Quelle, PhD

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General Information

ZOOM Links: Each short talk session subgroup, keynote speaker, and the Career Development luncheon has its own ZOOM link. Please refer to the agenda for the corresponding link. All sessions are secure, passwords are built into the ZOOM links. If questions, please contact Linda Buckner at linda-buckner@uiowa.edu; 335-7946 or Lisa Ringen at lisa-ringen@uiowa.edu; 353-3131.

Meeting Etiquette: When you enter the ZOOM meeting, please mute your microphone and turn your video off (bottom left screen); only your full name (first and last) should appear.

Schedule: We plan to begin promptly at each session's start time and will move through the agenda fluidly. Please be mindful of the schedule.

Short Talk Presenter Instructions:

- **Time allotted:** Presenters will be allotted 10-minutes; 8-minutes for presenting, plus 2-minutes for Q&A.
- **Screen Sharing:** Presenters will utilize the *Screen Share* option (bottom center screen) in ZOOM when it is their time to present.

Q&A: Following each 8-minute presentation, we will allow 2-minutes for Q&A. Please utilize ZOOM's *Chat* or *Raise Hand* functions, remembering you may need to unmute yourself; a moderator will facilitate questions from audience after presentations.

Moderator Instructions: All preselected moderators have been assigned to a short talk session subgroup. Please see agenda for your assignment.

- Introduce each presenter by name and lab and keep presenters on schedule to ensure there's time for Q&A.
- End screen sharing if presenter goes over allotted time.
- Invite and monitor questions from the audience.

Judge Instructions: All preselected judges have been assigned presenters to evaluate. Please see agenda for your assignment. A link to a Qualtrics Survey will be sent to all judges prior to the retreat by email.

- Voting is anonymous and closes on Saturday, August 22 at 5pm.
- Scores should be based on overall scientific quality.
- Rate each assigned presenter from 1 (Outstanding) through 10 (Acceptable).

Outstanding		Excellent		Very Good		Good		Acceptable	
1	2	3	4	5	6	7	8	9	10

Consider the following criteria: • Presenter exhibited good understanding of topic • Presenter was well prepared • Presenter spoke clearly/effectively • Presentation was organized and easy to follow • Time for presentation used effectively • Slides enhanced presentation • Presentation was done in a way that engaged audience • Presenter responded effectively to audience questions

Retreat Evaluation Survey: A web link to our survey will be sent by email following the retreat. We encourage all attendees to complete the survey to provide feedback and offer any suggestions for improvement.

Awards: Eight (4 graduate students and 4 postdoc/research staff) best oral presentation awards of \$100 each will be announced by email on Monday, August 24 after all electronic votes from judges are tallied.

Keynote Speaker

10-11 AM

<https://uiowa.zoom.us/j/94897000369?pwd=Zzl2V01INTFMUEYvTW9tU0U1aE5FUT09>

Lydia Finley, PhD

Assistant Member

Cell Biology Program

Memorial Sloan Kettering Cancer Center

Metabolic Coordination of Cell Fate Decisions

Lydia Finley is an Assistant Member in the Cell Biology Program at Memorial Sloan Kettering Cancer Center and an Assistant Professor at Weill Cornell Medical College. Dr. Finley received her BS *summa cum laude* from Yale University and completed her PhD in the laboratory of Dr. Marcia Haigis at Harvard Medical School. As a postdoctoral fellow in the laboratory of Dr. Craig Thompson at Memorial Sloan Kettering Cancer Center, Dr. Finley identified metabolites that contribute to the regulation of embryonic stem cell self-renewal. Since opening her own laboratory, she has investigated the mechanisms that link metabolic pathways to cell fate decisions. Using both stem cells and cancer cells, her laboratory has discovered genetic and environmental factors that drive metabolic regulation of chromatin modifications and gene expression programs that control cell fate. Dr. Finley is a Searle Scholar and the recipient of the Dale F. Frey Award for Breakthrough Scientists from the Damon Runyon Cancer Research Foundation and the Pershing Square Sohn Prize for Young Investigators in Cancer Research.



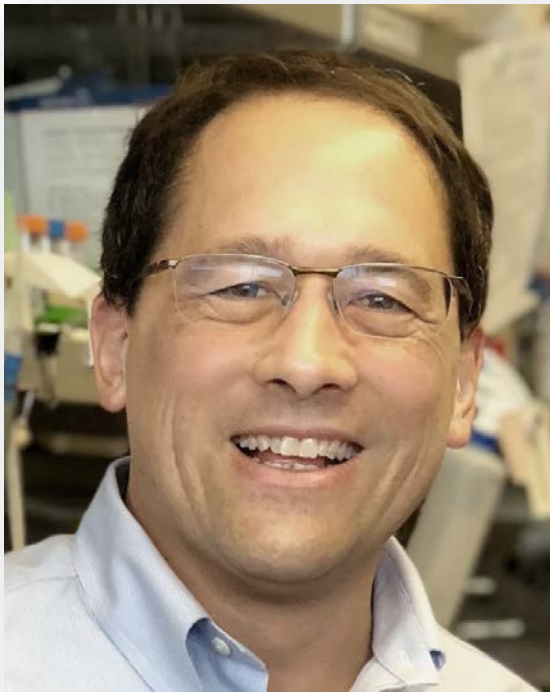
Keynote Speaker

1-2 PM

<https://uiowa.zoom.us/j/94437145567?pwd=ZjJMZHpRUHQwTDRrRStVMUNYc0ZZUT09>

Anthony Oro, MD, PhD

*Eugene and Gloria Bauer Professor of Dermatology
Co-Director, Maternal and Child Health Research Institute
Associate Director, Center for Definitive and Curative Medicine
Stanford University*



The Nuclear Option: New Mechanisms of Tumor Evolution and Drug Resistance

Anthony Oro, M.D., Ph.D., is a practicing physician and Co-Director of the Child Health Research Institute, Associate Director of the Center for Definitive and Curative Medicine and the Eugene and Gloria Bauer Professor of Dermatology at Stanford University School of Medicine. Dr. Oro trained at the Salk Institute with Dr. Ron Evans on the structure and function of novel orphan nuclear receptors during embryonic development, and completed postdoctoral work with Dr. Matthew Scott. Dr. Oro established the first link between the hedgehog pathway and continues investigating hair follicle development, and the evolution of human cancer resistance in response to therapy. His interest in hair and skin regeneration have led him to pursue the mechanisms of chromatin dynamics during tissue differentiation, and to create scalable manufacturing protocols to produce autologous, genetically-corrected tissue stem cells for skin diseases like Epidermolysis bullosa.

Pharmacological and Pharmaceutical Sciences Research Retreat Agenda August 21, 2020

9:00 AM-10:00 AM: **Welcome and Short Talk Presentations – Session 1**

1.1 Cancer - <https://uiowa.zoom.us/j/97948064368?pwd=RkdCa3krQXhZS0JCM09tS0hS0ThRdz09>

Welcome and Moderator: Ted Abel, PhD (Judges: Atasoy, Brogden, Fisher, Rahmouni)

1. *Identifying Novel RABL6A Targets in Pancreatic Neuroendocrine Tumors Using Sleeping Beauty Screen*, **Chandra Maharjan**, PhD Candidate (DQuelle lab) – **9:10-9:20**
2. *Enhancing the Antitumor Activity of the Adenovirus Cancer Vaccine with Intratumoral Delivery of CpG-loaded Nanoparticles for the Treatment of Melanoma*, **Rasheid Smith**, PhD Candidate (Salem lab) – **9:20-9:30**
3. *The Functional Role of PRC2 Loss in Malignant Peripheral Nerve Sheath Tumor (MPNST) Metastasis*, **Qierra Brockman**, PhD Candidate and Current T32 trainee (Dodd lab) – **9:30-9:40**
4. *Targeting Gi/o-coupled GPCRs in HER2+ breast cancer*, **Cancan Lyu, PhD** (Chen lab) – **9:40-9:50**
5. *Novel Combination Therapies for MPNSTs Targeting RABL6A and RB1 Pathways*, **Jordan Kohlmeyer**, PhD Candidate and Former T32 trainee (DQuelle lab) – **9:50-10:00**

1.2 Cellular Signaling and Disease - <https://uiowa.zoom.us/j/91808907149?pwd=cm4ySDhsaml2TnFKdmVoa0RQTXhlZz09>

Welcome and Moderator: Stefan Strack, PhD (Judges: Cui, Doorn, Fuentes, Gaine)

1. *NADPH and glutathione redox link the TCA cycle to ER homeostasis*, **Erica Gansemer**, PhD Candidate and Current T32 trainee (Rutkowski lab) – **9:10-9:20**
2. *Changes in Nucleolar Activity Induce Spatial Shifts in Protein Aggregation*, **Emily Lavering**, PhD Candidate and Current T32 trainee (Weeks lab) – **9:20-9:30**
3. *X-linked intellectual disability caused by mutations in the E3 ligase substrate adaptor KLHL15*, **Jianing Song**, PhD Candidate (Strack lab) – **9:30-9:40**
4. *Interrogating Environmental Contaminant Activity on the Human GPCR-ome*, **Joshua Wilkinson**, PhD Candidate (Roman lab) – **9:40-9:50**
5. *Norepinephrine metabolites enhance collagen cross-linking and induce a pro-fibrotic phenotype in cardiac fibroblasts via RAGE*, **Blake Monroe**, PhD Candidate and Former T32 trainee (E. Anderson lab) – **9:50-10:00**

1.3 Pain - <https://uiowa.zoom.us/j/91783054415?pwd=Sy9NWEdhQ1ZsTVZTdGh0d0Y0dDFxdz09>

Welcome and Moderator: Dave Roman, PhD (Judges: An, Boudreau, Marcinkiewicz, Potthoff)

1. *Avoiding Opioids: Adenylyl Cyclase 1 as a Novel Target for Pain Therapeutic Discovery*, **Joseph O'Brien**, PhD Candidate (Roman lab) – **9:10-9:20**
2. *The Role of Cerebellar CGRP in Migraine-like Behavior*, **Mengya Wang**, PhD Candidate (Russo lab) – **9:20-9:30**
3. *The Role of ASICs in Immediate Exercise-Induced Muscle Pain and Exercise Performance*, **Tahsin Khataei, PhD** (Benson lab) – **9:30-9:40**
4. *Testosterone Protects Against Widespread Muscle Pain*, **Joseph Lesnak**, PhD Candidate and Current T32 trainee (Sluka lab) – **9:40-9:50**
5. *Role of C5a/C5aR1 Signaling in Central Sensitization and Neuropathic Pain*, **Alex Keyes**, PhD Candidate and Current T32 trainee (Usachev lab) – **9:50-10:00**

10:00 AM-11:00 AM: **Keynote Speaker Presentation**

<https://uiowa.zoom.us/j/94897000369?pwd=ZzI2V01INTFMUEYvTW9tU0U1aE5FUT09>

Facilitator: Rebecca Dodd, PhD

(Group Photo – All participants, please enable video when prompted.)



[Lydia Finley, PhD](#)

Assistant Member

Cell Biology Program

Memorial Sloan Kettering Cancer Center

Title: Metabolic Coordination of Cell Fate Decisions

11:00 AM-12:00 PM: Short Talk Presentations – Session 2

2.1 Central Control of Energy Homeostasis - <https://uiowa.zoom.us/j/92610947566?pwd=K1VZUk92aVMYWFSTkh1SVI5Nkcrdz09>

Moderator: Dan Weeks, PhD (Judges: Abel, Duffel, Koland, Usachev)

1. *Ascending catecholamine pathway in appetite regulation*, **Nilly Sayar, PhD** (Atasoy lab) – **11:00-11:10**
2. *The Role of RGS2PVN in Energy Homeostasis*, **Alvin Deng**, PhD Candidate (Cui lab) – **11:10-11:20**
3. *Polysynaptic Neurotracing of Autonomic Nuclei Projecting to Cardiovascular and Metabolic Organs*, **Paul Williams, PhD** (Rahmouni lab) – **11:20-11:30**
4. *FGF21 Signals to Glutamatergic Neurons in the Ventromedial Hypothalamus to Suppress Carbohydrate Intake*, **Sharon Jensen-Cody**, PhD Candidate (Potthoff lab) – **11:30-11:40**
5. *Regulation of food intake, insulin sensitivity and sympathetic nerve traffic by hypothalamic steroidogenic factor 1 neurons*, **Jingwei Jiang, MD, PhD** (Rahmouni lab) – **11:40-11:50**
6. *A novel liver-to-brain endocrine axis regulates alcohol consumption*, **Kyle Flippo, PhD** (Potthoff lab) – **11:50-12:00**

2.2 Therapy Development and Delivery - <https://uiowa.zoom.us/j/97378307300?pwd=WmZlVDVsbHoyR1Z5cGhMORDbTJPUT09>

Moderator: Katelin Dannen, PhD (Judges: E. Anderson, Roman, Stevens, Strack)

1. *Incorporating pharmacological target-mediated drug disposition (TMDD) in a whole-body physiologically based pharmacokinetic (PBPK) model of linagliptin in rat and scale up to human*, **Nan Wu**, PhD Candidate (An lab) – **11:00-11:10**
2. *Translation of Oxfendazole from Veterinary Medicine to Human Antiparasitic Treatment*, **Thanh Bach**, PhD Candidate (An lab) – **11:10-11:20**
3. *Addressing the PEG Dilemma in Non-Viral Gene Therapy: A Case Study on Multifunctional Peptide/DNA Nanoparticles*, **Nathan Delvaux**, PhD Candidate (Rice lab) – **11:20-11:30**
4. *Thermosensitive gels used to improve microneedle-assisted drug delivery of naltrexone*, **Kevin Tobin**, PhD Candidate (Brogden lab) – **11:30-11:40**
5. *Chemical and physiological factors influencing dermal drug absorption*, **Nicole Brogden, PhD** (PSET Faculty) – **11:40-11:50**

12:00 PM-1:00 PM: Career Development Luncheon with T32 Trainee Alumni

<https://uiowa.zoom.us/j/97449285081?pwd=clptWU5tWFQ2UFV0OGRRd2ZZU1BLdz09>

Moderators: Stefan Strack, PhD and Dave Roman, PhD

Please Note: Trainees currently appointed to the Pharmacological Sciences TG are required to attend.

Participating Alumni

Kevin Tidgewell – Assistant Professor, Duquesne University

<https://www.dug.edu/academics/faculty/kevin-tidgewell>

Elizabeth Boehm – Patent Agent; Wolf, Greenfield, & Sacks

<https://www.wolfgreenfield.com/professionals/b/boehm-elizabeth>

Jacqueline Reilly – Associate Medical Director, Johnson & Johnson

<https://www.linkedin.com/in/jacqueline-reilly-aa799594/>

Laurie Davenport (Eckert) – Assistant Professor, The Christ College of Nursing and Health Sciences

<https://www.thechristcollege.edu/faculty>

Lucas BonDurant – Research Scientist, Alnylam Pharmaceuticals

<https://www.linkedin.com/in/lucas-bondurant>

Amanda Fenner, Scientist II, Bayer Crop Science, West Sacramento

<https://www.linkedin.com/in/amanda-fenner/>

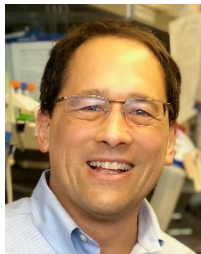
Justin Drake – Assistant Professor, University of Minnesota

<https://med.umn.edu/bio/department-of-pharmacology/justin-drake>

1:00 PM-2:00 PM: Keynote Speaker Presentation

<https://uiowa.zoom.us/j/94437145567?pwd=ZjJmZHpRUHQwTDRrRStVMUNYc0ZlUT09>

Facilitator: Rebecca Dodd, PhD



Anthony Oro, MD, PhD

Eugene and Gloria Bauer Professor of Dermatology
Co-Director, Maternal and Child Health Research Institute
Associate Director, Center for Definitive and Curative Medicine
Stanford University

Title: The Nuclear Option: New Mechanisms of Tumor Evolution and Drug Resistance

2:00 PM-3:00 PM: Short Talk Presentations – Session 3

3.1 Addiction and Sleep - <https://uiowa.zoom.us/j/97754311508?pwd=SDFhamR4N2NKY0dUZXRwS0xhUGdydz09>

Moderator: Tom Rutkowski, PhD (Judges: M. Anderson, Dannen, F. Quelle, Sluka)

1. *Investigating the role of basolateral amygdala cell populations in approach and avoidance behaviors*, **Sarah Ferri, PhD** (Abel lab) – **2:00-2:10**
2. *RGS6 is a critical modulator of alcohol seeking/reward behaviors and VTA neuronal activity in the mesolimbic circuit*, **Mackenzie Spicer, PhD** Candidate and Current T32 trainee (Fisher lab) – **2:10-2:20**
3. *Transcriptional regulation of RGS6 gene*, **Jianqi Yang, PhD** (Fisher lab) – **2:20-2:30**
4. *Metabolic regulation of sleep/wake states: The role of lateral hypothalamic circuit engaged by leptin*, **Uday Singh, PhD** (Cui lab) – **2:30-2:40**
5. *Quantification of sleep deficits in a mouse model of Alzheimer's disease*, **Tom James, PhD** (Marcinkiewicz lab) – **2:40-2:50**
6. *Manipulation of cAMP in Sleep Deprived Mice*, **Emily Walsh, PhD** Candidate (Abel lab) – **2:50-3:00**

Brief Closing Remarks – Ted Abel, PhD

3.2 Neurodevelopmental & Mood Disorders, Neurotoxicity -

<https://uiowa.zoom.us/j/92696829711?pwd=dGxFR0gzN1hoaURUQy96Y0lwUE9FZz09>

Moderator: Andy Russo, PhD (Judges: Potthoff, Rahmouni, Rice, Weeks)

1. *Discovering DNA-Methylation-based Biomarkers for Bipolar Disorder Patients with Suicidal Behavior*, **Aysheh Alrfooh, PhD** Candidate (Gaine lab) – **2:00-2:10**
2. *Recurrent de novo mutations in PP2A/B'delta in the neurodevelopmental disorder Jordan's Syndrome*, **Chian Ju Jong, PhD** (Strack lab) – **2:10-2:20**
3. *Neurotoxicity of PCBs and their Metabolites*, **Neha Paranjape, PhD** Candidate (Doorn lab) – **2:20-2:30**
4. *The aldehyde metabolite of dopamine inhibits glutathione S-transferase*, **Rachel Crawford, PhD** Candidate and Former T32 trainee (Doorn lab) – **2:30-2:40**
5. *Matrix-dependent viability in neurons and glia*, **Lewis Stevens, PhD** (PSET Faculty) – **2:40-2:50**

Brief Closing Remarks – Dave Roman, PhD

Eight best oral presentation awards of \$100 each will be announced by email on Monday, August 24 after all electronic votes from judges are tallied.

Thanks

to all for your participation in the 2020 Pharmacological and Pharmaceutical Sciences Virtual Research Retreat!

List of Short Talk Presenters

(Alphabetical by Presenter Last Name)

Presenters will be allotted 10-minutes; 8-minutes for presenting, plus 2-minutes for Q&A

Presenter	Short Talk Title	Start Time of Talk	Presentation Session Subgroup
Aysheh Alrfooh	Discovering DNA-Methylation-based Biomarkers for Bipolar Disorder Patients with Suicidal Behavior	2:00	Neurodevelopmental & Mood Disorders, Neurotoxicity – Session 3.2
Thanh Bach	Translation of Oxfendazole from Veterinary Medicine to Human Antiparasitic Treatment	11:10	Therapy Development and Delivery – Session 2.2
Qierra Brockman	The Functional Role of PRC2 Loss in Malignant Peripheral Nerve Sheath Tumor (MPNST) Metastasis	9:30	Cancer - Session 1.1
Nicole Brogden, PhD	Chemical and physiological factors influencing dermal drug absorption	11:40	Therapy Development and Delivery – Session 2.2
Rachel Crawford	The aldehyde metabolite of dopamine inhibits glutathione S-transferase	2:30	Neurodevelopmental & Mood Disorders, Neurotoxicity – Session 3.2
Nathan Delvaux	Addressing the PEG Dilemma in Non-Viral Gene Therapy: A Case Study on Multifunctional Peptide/DNA Nanoparticles	11:20	Therapy Development and Delivery – Session 2.2
Alvin Deng	The Role of RGS2PVN in Energy Homeostasis	11:10	Central Control of Energy Homeostasis – Session 2.1
Sarah Ferri, PhD	Investigating the role of basolateral amygdala cell populations in approach and avoidance behaviors	2:00	Addiction and Sleep – Session 3.1
Kyle Flippo, PhD	A novel liver-to-brain endocrine axis regulates alcohol consumption	11:50	Central Control of Energy Homeostasis – Session 2.1
Erica Gansemer	NADPH and glutathione redox link the TCA cycle to ER homeostasis	9:10	Cellular Signaling and Disease – Session 1.2
Tom James, PhD	Quantification of sleep deficits in a mouse model of Alzheimer's disease	2:40	Addiction and Sleep – Session 3.1
Sharon Jensen-Cody	FGF21 Signals to Glutamatergic Neurons in the Ventromedial Hypothalamus to Suppress Carbohydrate Intake	11:30	Central Control of Energy Homeostasis – Session 2.1
Jingwei Jiang, MD, PhD	Regulation of food intake, insulin sensitivity and sympathetic nerve traffic by hypothalamic steroidogenic factor 1 neurons	11:40	Central Control of Energy Homeostasis – Session 2.1
Chian Ju Jong, PhD	Recurrent de novo mutations in PP2A/B'delta in the neurodevelopmental disorder Jordan's Syndrome	2:10	Neurodevelopmental & Mood Disorders, Neurotoxicity – Session 3.2
Alex Keyes	Role of C5a/C5aR1 Signaling in Central Sensitization and Neuropathic Pain	9:50	Pain – Session 1.3
Tahsin Khataei, PhD	The Role of ASICs in Immediate Exercise-Induced Muscle Pain and Exercise Performance	9:30	Pain – Session 1.3
Jordan Kohlmeyer	Novel Combination Therapies for MPNSTs Targeting RABL6A and RB1 Pathways	9:50	Cancer - Session 1.1
Emily Lavering	Changes in Nucleolar Activity Induce Spatial Shifts in Protein Aggregation	9:20	Cellular Signaling and Disease – Session 1.2

Presenter	Short Talk Title	Start Time of Talk	Presentation Session Subgroup
Joseph Lesnak	Testosterone Protects Against Widespread Muscle Pain	9:40	Pain – Session 1.3
Cancan Lyu, PhD	Targeting Gi/o-coupled GPCRs in HER2+ breast cancer	9:40	Cancer - Session 1.1
Chandra Maharjan	Identifying Novel RABL6A Targets in Pancreatic Neuroendocrine Tumors Using Sleeping Beauty Screen	9:10	Cancer - Session 1.1
Blake Monroe	Norepinephrine metabolites enhance collagen cross-linking and induce a pro-fibrotic phenotype in cardiac fibroblasts via RAGE	9:50	Cellular Signaling and Disease – Session 1.2
Joseph O'Brien	Avoiding Opioids: Adenylyl Cyclase 1 as a Novel Target for Pain Therapeutic Discovery	9:10	Pain – Session 1.3
Neha Paranjape	Neurotoxicity of PCBs and their Metabolites	2:20	Neurodevelopmental & Mood Disorders, Neurotoxicity – Session 3.2
Nilly Sayar, PhD	Ascending catecholamine pathway in appetite regulation	11:00	Central Control of Energy Homeostasis – Session 2.1
Uday Singh, PhD	Metabolic regulation of sleep/wake states: The role of lateral hypothalamic circuit engaged by leptin	2:30	Addiction and Sleep – Session 3.1
Rasheid Smith	Enhancing the Antitumor Activity of the Adenovirus Cancer Vaccine with Intratumoral Delivery of CpG-loaded Nanoparticles for the Treatment of Melanoma	9:20	Cancer - Session 1.1
Jianing Song	X-linked intellectual disability caused by mutations in the E3 ligase substrate adaptor KLHL15	9:30	Cellular Signaling and Disease – Session 1.2
Mackenzie Spicer	RGS6 is a critical modulator of alcohol seeking/reward behaviors and VTA neuronal activity in the mesolimbic circuit	2:10	Addiction and Sleep – Session 3.1
Lewis Stevens, PhD	Matrix-dependent viability in neurons and glia	2:40	Neurodevelopmental & Mood Disorders, Neurotoxicity – Session 3.2
Kevin Tobin	Thermosensitive gels used to improve microneedle-assisted drug delivery of naltrexone	11:30	Therapy Development and Delivery – Session 2.2
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Paul Williams, PhD	Polysynaptic Neurotracing of Autonomic Nuclei Projecting to Cardiovascular and Metabolic Organs	11:20	Central Control of Energy Homeostasis – Session 2.1
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Jianqi Yang, PhD	Transcriptional regulation of RGS6 gene	2:20	Addiction and Sleep – Session 3.1