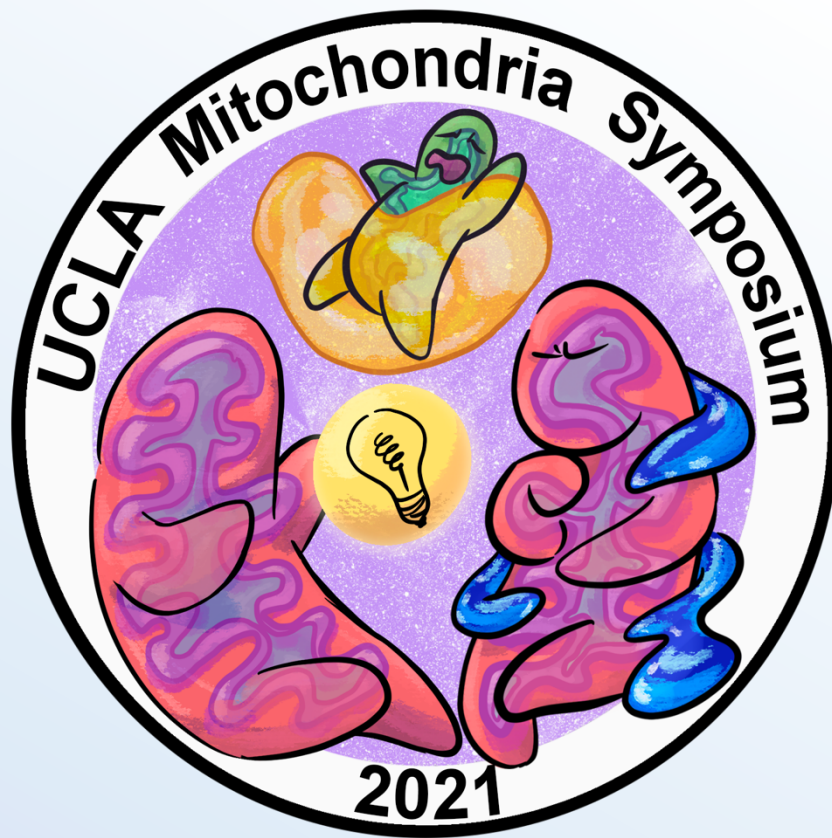




5<sup>th</sup> Annual **UCLA**  
**MITOCHONDRIA**  
**SYMPOSIUM**



## **2021 PROGRAM**

December 9<sup>th</sup>-11<sup>th</sup>, 2021

Covel Commons, UCLA

## Invited Speakers, Panelists, and Workshop Leaders



Ajit Divakaruni, PhD



Alexander van der Blik, PhD



Barbara Corkey, PhD



Cristiane Beninca, PhD



Estela Area Gomez, PhD



Guy Las, PhD



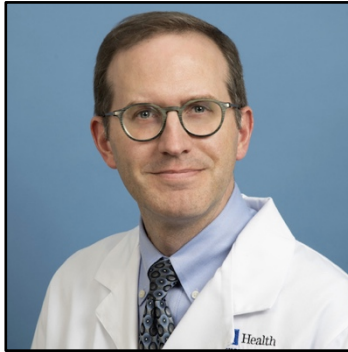
Gyorgy Hajnoczky, MD, PhD



Hiromi Sesaki, PhD



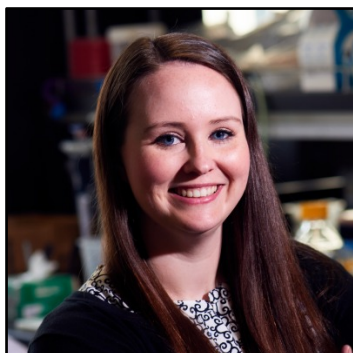
Jodi Nunnari, PhD



Jonathan Wanagat, MD, PhD



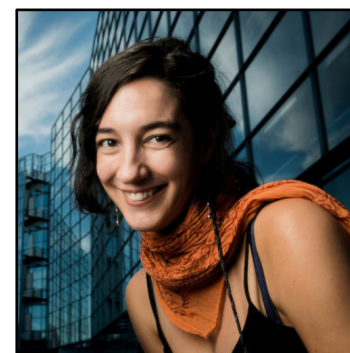
Katsu Funai, PhD



Linsey Stiles, PhD



Martin Picard, PhD



Rebeca Acín-Perez, PhD



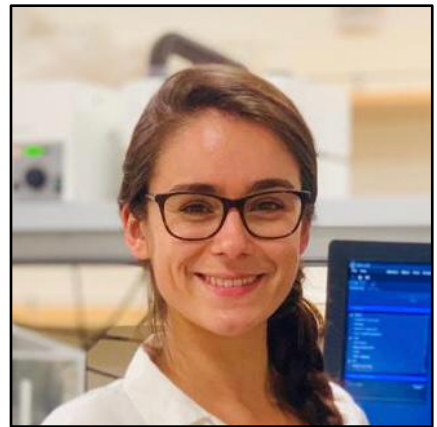
## The 2021 Organizing Team



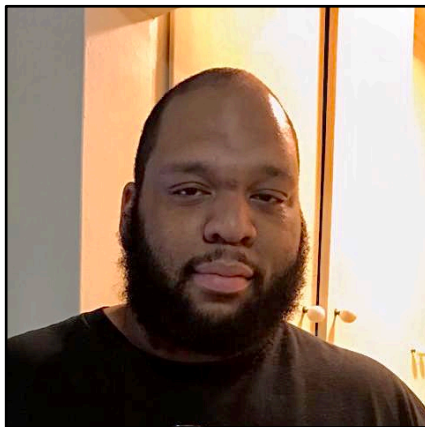
**Orian Shirihai, MD, PhD**  
Host (Chief Dishwasher)  
Professor | UCLA



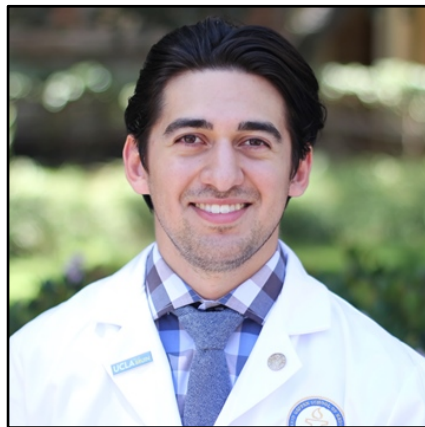
**Siyouneh Baghdasarian, MS**  
Metabolism Theme Event  
Planner  
Shirihai Lab | UCLA



**Michaela Veliova, PhD**  
Postdoctoral Fellow  
Shirihai Lab | UCLA



**Anthony Jones**  
Graduate Student  
Divakaruni Lab | UCLA



**Vincent Gutierrez**  
Graduate and  
Medical Student  
Liesa Lab | UCLA



**Cynthia Shu, PhD**  
Postdoctoral Fellow  
Shirihai Lab | UCLA

Contact us at [UCLAMitoMeeting@gmail.com](mailto:UCLAMitoMeeting@gmail.com)

# Kill the Expert Panel

In this panel, leading experts will painfully attempt and reattempt to deliver satisfactory answers to fundamental questions involving mitochondrial research methods.

## Contact Sites between Mitochondria and Organelles

### Panelists:

Estela Area Gomez, PhD | Professor | Columbia  
Gyorgy Hajnocy, MD, PhD | Professor | Thomas Jefferson University  
Jodi Nunnari, PhD | Professor | UC Davis

### Questions:

1. What is a reliable method to measure mitochondria contact sites with another organelle?
2. What would be positive and negative controls for contact site quantification?
3. How does one determine if a contact site plays a causal role in a biological process?

## Mitochondrial DNA and Heteroplasmy

### Panelists:

Jonathan Wanagat, MD, PhD | Associate Professor | UCLA  
Martin Picard, PhD | Professor | Columbia  
Rebeca Acin-Perez, PhD | Senior Scientist | UCLA

### Questions:

1. What is an accessible and reliable method to measure mtDNA copy number?
2. What is the most reliable method to measure heteroplasmy and heteroplasmic shift?
3. What is an accessible and reliable method to measure mtDNA damage?

## Mitophagy

### Panelists:

Alexander van der Bliek, PhD | Professor | UCLA  
Guy Las, PhD | Lecturer | Weizmann Institute of Science  
Hiromi Sesaki, PhD | Professor | Johns Hopkins University

### Questions:

1. What is a reliable method to image and quantify mitophagy using fluorescence microscopy?
2. How can one distinguish between a general increase in *autophagy* versus a specific increase in *mitophagy*?
3. Is there a non-imaging approach to assess mitophagy?

## Mitochondrial Biology and Medicine Round Table Discussions

In this lively discussion, attendees will form groups of 10-15 people. Each group will be assigned with a unique topic and discussion tasks.

Table #	Topic
1	Aging, mtDNA
2	Calcium regulation of mitochondrial function
3	Diabetes, obesity, WAT, and BAT
4	Mitochondria in inflammation and cancer
5	Mitochondria in striated muscle
6	Mitochondria lipids and phospholipids in structure and signaling
7	Mitochondrial dynamics and motility
8	Mitochondrial redox biology
9	Mitophagy
10	Neurodegeneration
11	Regulation of mitochondrial energy expenditure and fuel preference
12	Translational mitochondrial medicine: Biomarkers of mitochondrial function in humans

Once seated at the discussion table, each group will start with a 10 minute introduction of everyone at the table. Each member of the group will state their names, affiliation, and one sentence about their interests. This will then be followed by speeches delivered by two pre-assigned group members.

**The first discussion leader** will talk for 5 minutes about their perspectives on the current *knowledge gaps* in the topic assigned to that table. **The second discussion leader** will talk for 5 minutes about the current *technological gaps*. This will then be followed by a discussion by the rest of the group. After the group discussion, **the table representative** will summarize the discussion at the podium to the entire symposium.

## Thursday, December 9th, 2021

### D A Y O N E

2:00 PM **Check-in, Reception, and Sponsor Showcase**

2:30 PM **Tour of Scenic and Beautiful UCLA campus**  
Optional, meet at Check-in Table

4:00 PM **Opening Remarks**  
Orian Shirihai, MD, PhD | Professor | UCLA

### **Session 1: Interorganelle Communication**

Chaired by Carla Koehler, PhD | Professor | UCLA

4:10-4:40 PM **Dangerous ER-mitochondria liaisons in neurodegeneration**  
Estela Area Gomez, PhD | Professor | Columbia

4:40-5:10 PM **ER-mitochondria contacts, ROS, and calcium signaling**  
Gyorgy Hajnoczky, MD, PhD | Professor | Thomas Jefferson University

5:10-5:45 PM **"Kill the Expert" Panel**  
**Contact Sites between Mitochondria and Organelles**  
Moderated by Orian Shirihai, MD, PhD  
  
Panelists  
Estela Area Gomez, PhD | Professor | Columbia  
Gyorgy Hajnoczky, MD, PhD | Professor | Thomas Jefferson University  
Jodi Nunnari, PhD | Professor | UC Davis

6:00-7:00 PM **Dinner**

7:00-9:00 PM **Mitochondrial Biology and Medicine Round Table Discussions**  
Moderated by Orian Shirihai, MD, PhD



**Friday, December 10th, 2021**

<b>D A Y  T W O</b>	7:00-7:30 AM	<b>Group Workout</b> Optional, UCLA Intramural Fields South Entrance Led by Tony Kurkowski   Personal Trainer   Equinox
	7:30-8:45 AM	<b>Breakfast</b>
		<b>Session 2: Mitophagy</b> Chaired by Orian Shirihai, MD, PhD
	8:50-9:20 AM	<b>All I Need to Know I Learned from Mitochondria</b> Hiromi Sesaki, PhD   Professor   Johns Hopkins University
	9:20-9:35 AM	<b>Parkin Regulates Adiposity by Coordinating Mitophagy with Mitochondrial Biogenesis in White Adipocytes</b> Zhenqi Zhou, PhD   Assistant Professor   UCLA
	9:35-9:50 AM	<b>Acute Damage-induced Actin Polymerization Around Mitochondria: Signaling Pathway and Consequences</b> Henry Higgs, PhD   Professor   Dartmouth
	9:50-10:10 AM	<b>Coffee Break</b>
		<b>Session 3: Mitochondria and Aging</b> Chaired by Ming Guo, MD, PhD   Professor   UCLA
	10:10-10:40 AM	<b>Mitochondria are not all Created Equal: Lessons from the Blood and Brain</b> Martin Picard, PhD   Professor   Columbia
	10:40-10:55 AM	<b>Towards Defining Age-Related Bioenergetic Decline</b> Anthony Molina, PhD   Associate Professor   UCSD



... **Friday, December 10th, 2021**

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**Session 4: Mitochondrial Membrane Biophysics**

Chaired by Rebeca Acin-Perez, PhD | Senior Scientist | UCLA

10:55-11:25 AM **Mitochondrial Redox: A Master Communication System**  
Barbara Corkey, PhD | Emeritus Professor | Boston University

11:25-11:55 AM **Mitochondrial Membrane Lipids and Respiratory Efficiency**  
Katsu Funai, PhD | Associate Professor | University of Utah

12:00-1:15 PM **Lunch**

**"Kill the Expert" Panels (Main Lecture Hall)**

Moderated by Orian Shirihai, MD, PhD

1:20-1:55 PM **Mitochondrial DNA and Heteroplasmy**  
Panelists:  
Jonathan Wanagat, MD, PhD | Associate Professor | UCLA  
Martin Picard, PhD | Professor | Columbia  
Rebeca Acin-Perez, PhD | Senior Scientist | UCLA

1:55-2:30 PM **Mitophagy**  
Panelists:  
Alexander van der Bliek, PhD | Professor | UCLA  
Guy Las, PhD | Lecturer | Weizmann Institute of Science  
Hiromi Sesaki, PhD | Professor | Johns Hopkins University

2:30-3:00 PM **Coffee Break**

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... **Friday, December 10th, 2021**

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3:00-4:40pm **Workshops occurring in parallel**

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**Workshops (Main Lecture Hall)**

3:00-3:30 PM **Respirometry in Previously Frozen Samples**  
Linsey Stiles, PhD | Director of the UCLA Metabolism Core | UCLA

3:35-4:05 PM **Studying Mitochondrial Metabolism with Metabolomics and Stable Isotope Tracing**  
Ajit Divakaruni, PhD | Assistant Professor | UCLA

4:10-4:40 PM **Machine Learning in Microscopy: How to Improve Your Mitochondrial Image Analysis**  
Cristiane Beninca, PhD | Director of the UCLA Metabolic Imaging Core | UCLA

**Translational Mitochondrial Medicine Workshop: Bringing Mitochondria-targeting Compounds Towards FDA approval (West Coast Room, sign up at check-in, 40 people max capacity)**

3:00-3:40pm Amy Wang, PhD, MBA  
President | Capacity Bio, Enspire, and MyChon  
Investment/Merchant Banking, Life Sciences and Biotech | MDB  
Capital Group  
  
David Brown, PhD  
Senior Director, Scientific and Technical Innovation | Stealth  
BioTherapeutics  
  
*After workshop, continue discussions or join Workshops in Main  
Lecture Hall*

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5:00-6:30 PM **Cocktail Session #1 with Posters (even numbered posters in North Ridge and South Bay rooms)**

6:30-7:30 PM **Dinner with Tyler the Magician**

7:30-9:00 PM **Cocktail Session #2 with Posters (odd numbered posters in North Ridge and South Bay rooms)**

## Saturday, December 11th, 2021

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7:00-7:30 AM

### **Group Workout**

Optional, UCLA Intramural Fields South Entrance  
Led by Tony Kurkowski | Personal Trainer | Equinox

7:30-8:45 AM

### **Breakfast**

### **Session 5: Mitochondria and Inflammation**

Chaired by Anthony Covarrubias, PhD | Assistant Professor | UCLA

8:50-9:05 AM

### **Mitochondria-Microbe Conflict**

Lena Pernas, PhD | Research Group Leader | Max Planck Institute  
for Biology of Ageing

9:05-9:20 AM

### **Mitochondria Fuel Lipid Droplets Necessary for SARS-CoV-2 Replication and can be Targeted for Antiviral Therapy**

Anton Petcherski, PhD | Project Scientist | UCLA

9:20-9:35 AM

### **Mitochondrial CoA Redox State Governs Macrophage Inflammatory Metabolic Flux**

Greg Timblin, PhD | Postdoctoral Fellow | UCSF

9:35-10:00 AM

### **Coffee Break**

### **Session 6: Mitochondria Structure and Function**

Chaired by Iain Scott, PhD | Associate Professor | University of Pittsburgh

10:00-10:15 AM

### **Molecular Identity and Regulatory Mechanisms of the Mitochondrial Uncoupling Protein of Non-adipose Tissues**

Ambre Bertholet, PhD | Assistant Professor | UCLA

10:15-10:30 AM

### **Mitochondrial Calcium Uniporter Activity is Upregulated During Complex I Dysfunction**

Enrique Balderas-Angeles, PhD | Associate Researcher | University  
of Utah

10:30-10:45 AM

### **Long-lived Cristae Proteins as Pillars of Mitochondrial Ultrastructure in the Brain**

Ewa Karolina Bomba-Warczak, PhD | Postdoctoral Fellow |  
Northwestern University

## ... Saturday, December 11th, 2021

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10:45-11:00 AM      **Coffee Break**

**Session 7: Mitochondria in Cancer**

Chaired by Orian Shirihai, MD, PhD

11:00-11:15 AM      **3-dimensional structural and functional mapping of  
mitochondrial heterogeneity in lung cancer**

David Shackelford, PhD | Associate Professor | UCLA

11:15-11:30 AM      **AR blockade induces metabolic reprogramming and increases  
sensitivity to inhibition of mitochondrial oxidative metabolism**

Andrew Goldstein, PhD | Associate Professor | UCLA

11:30-11:45 AM      **Awards and Closing Remarks**

12:00 PM-2:00 PM      **Lunch**



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**MITOCHONDRIA  
SYMPOSIUM**

## Thank you to our sponsors



Capacity Bio is developing the most comprehensive and advanced mitophagy therapeutics and development platform for the purpose of restoring mitochondria quality control in disease. Our mission is to identify and develop mitophagy stimulators that result in radical, impactful therapeutic benefit for patients. [capacitybio.com](http://capacitybio.com)

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Stealth BioTherapeutics is an innovative biopharmaceutical company developing therapies to treat mitochondrial dysfunction associated with genetic mitochondrial diseases and common diseases of aging. Our team works with patients and advocacy organizations to better understand their journey with mitochondrial disease and raise awareness of the unmet need our programs seek to address. [stealthbt.com](http://stealthbt.com)

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LUCA Science is a pre-clinical stage biotechnology company focused on functional mitochondria as therapeutic agents, an emerging platform to treat damaged tissues and organs. [luca-science.com](http://luca-science.com)

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MyChon is a UCLA-originated science and technology company pioneering mitochondria wellness to impact human health. [mychonhealth.com](http://mychonhealth.com)

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**UCLA Metabolism Theme**

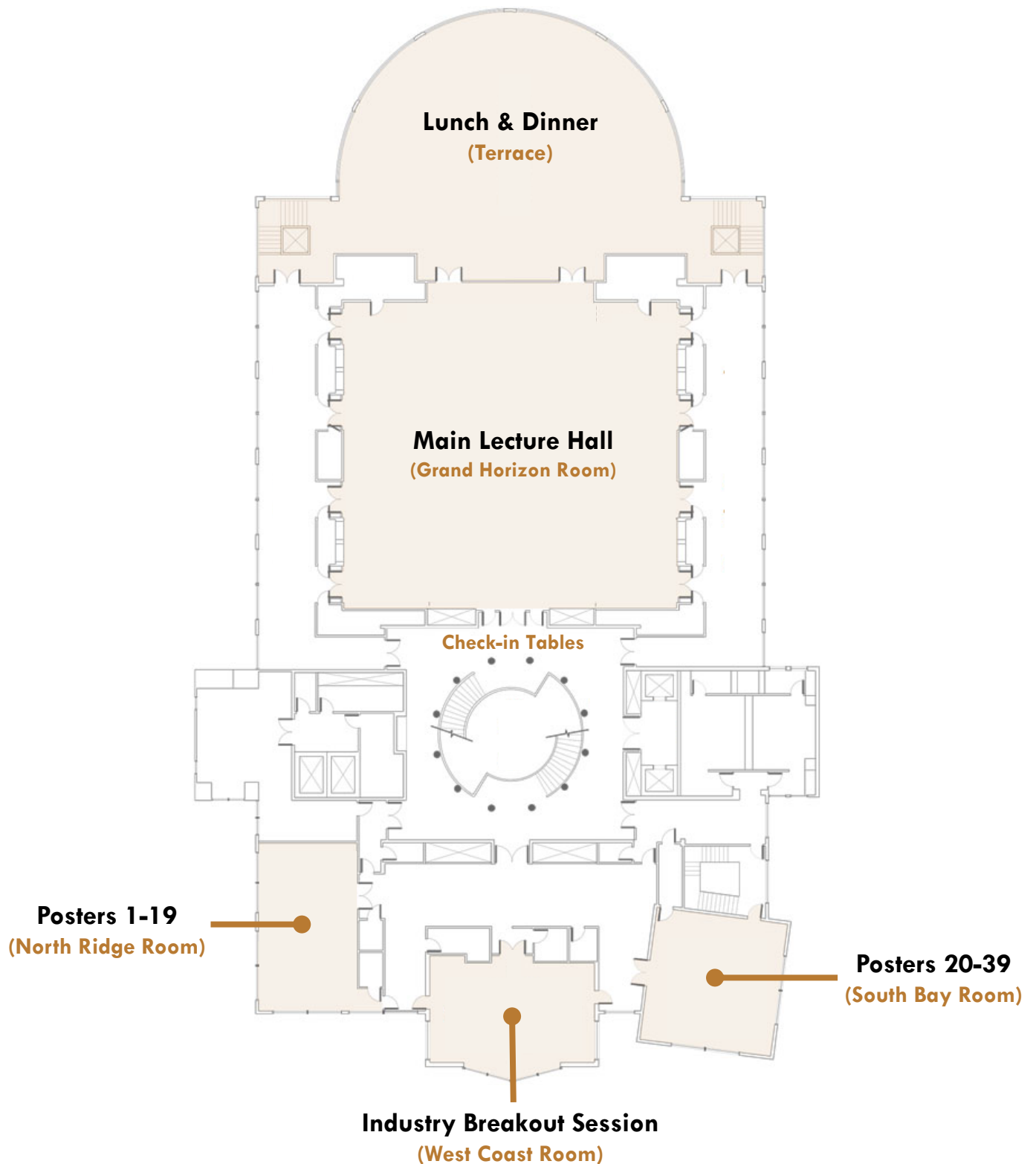
UCLA's Metabolism Research Theme aims to translate basic science discoveries to patient care in several areas, including the control of body weight, the link between metabolism and cancer, and gender differences in the susceptibility to metabolic diseases. [medschool.ucla.edu/metabolism](http://medschool.ucla.edu/metabolism)

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## Covel Commons Conference Center Map





## UCLA Campus Map



### Relevant Locations for Symposium

#### 1. Covell Commons (conference center)

330 De Neve Dr, Los Angeles, CA 90095

#### 2. Sunset Village (SV) Parking Structure (event parking)







200 De Neve Dr, Los Angeles, CA 90095

#### 2. Luskin Hotel (on-campus hotel)

425 Westwood Plaza, Los Angeles, CA 90095

#### 3. Intramural Fields South Entrance (Optional group exercise location)

UCLA

-  PARKING STRUCTURES
-  PARKING LOTS
-  CAMPUS BUILDINGS
-  CAMPUS ENTRANCES
-  CONSTRUCTION AREAS
-  PARKING/INFORMATION KIOSK