

# PATHWAY TO MEMORY

LEARNING | CONSOLIDATION | REPRESENTATION

CNLM 2022  
SPRING CONFERENCE

May 5-6, 2022

Register Today:

<https://cnlm.uci.edu/spring-meeting/>



**Keynote Speaker**

**Gina Poe**

University of California, Los Angeles

## **Symposium Speakers**

**Aaron Bornstein**, University of California, Irvine

**Lulu Chen**, University of California, Irvine

**Liz Chrastil**, University of California, Irvine

**Christine Grienberger**, Brandeis University

**Autumn Ivy**, University of California, Irvine

**Attila Losonczy**, Columbia University

**Bryce Mander**, University of California, Irvine

**Sara Mednick**, University of California, Irvine

**Azahara Oliva Gonzalez**, Cornell University

**Brad Pfeiffer**, University of Texas Southwestern

**Daniela Schiller**, Icahn School of Medicine at Mount Sinai

**Jason Shepherd**, University of Utah

**UCI** Center for the Neurobiology  
of Learning and Memory

# PATHWAY TO MEMORY

## LEARNING | CONSOLIDATION | REPRESENTATION

Thursday, May 5 – Friday, May 6, 2022

Herklotz Conference Center, Center for the Neurobiology of Learning and Memory  
University of California, Irvine

*As we change with time, so too do our memories. Decades of research has shown that memory formation and representation is not a singular process, but rather a host of processes working together to encode, maintain, and augment memories to be used to inform behavior. Here, we aim to understand these pathways to memory through three symposia. The first, "Learning Signals," will investigate how the brain transforms experience into signals which persist and augment neural circuits. The second, "Consolidation," will focus on how brain regions and neural circuits change to stabilize labile memories to persist over time. The third, "Representation," will examine how the dynamics of brain regions and neural populations support the encoded memories. Through discussion sections, data blitz and poster sessions, we will synthesize and integrate research findings to build a portrait of memory through its timecourse.*

### Organizing Committee

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Laura Ewell, Javier Diaz Alonso, Jenna Adams, Keiland Cooper,  
Diana Lofflin, Manuella Oliveira Yassa, and Michael Yassa

## Data Blitz Sessions

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The program includes a data blitz session, giving graduate students and postdoctoral fellows an opportunity to briefly present their research findings. The number of data blitz presentations will be limited and prioritized according to registration date and also distributed to represent different labs and institutions.

### Presentations

Data blitz participants will NOT be able to use their own laptops. Presenters must upload their presentations prior to the meeting. This will ensure that there is no animation and that slides will look as intended.

### Awards

Data blitz presentations will be judged by an anonymous panel (advanced graduate students and postdocs) and the top two data blitz presenters will be awarded. We will once again give awards for the **top two data blitzes** to recognize the outstanding presentations of our graduate students and postdocs, to encourage participants to observe the data blitz rules, and to have a little fun! Blitzes will be judged based on (1) the ability to communicate a single idea effectively with a focused presentation and a clear concise visual image, (2) giving just enough context so that the listener understands the significance of the question and findings, and (3) strictly adhering to the rules, i.e. time limit and number of slides.

## Open Paper Sessions

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In addition to presentations from trainees, we will have one "open paper" session that will provide faculty who are not speaking in the symposium sessions to deliver a slightly shorter 8-minute brief talk with 2 minutes for questions. No more than 10 slides are permitted in open paper sessions. Every effort will be made to accommodate all faculty interested in presenting open papers.

## Travel Information

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### Air Travel

The closest airport to UC Irvine is John Wayne Airport (SNA) located just 10 minutes from campus. Alternatively, participants may fly into Long Beach Airport (LGB) and Los Angeles International Airport (LAX). Long Beach Airport is a 30-minute drive from campus, Los Angeles International Airport is 60 minutes from campus, without traffic. Traffic from both of these airports can be very heavy during commute times (7-10am and 4-8pm). Please plan accordingly.

### Travel by Train

A fun alternative to driving or flying in Southern California is taking the Pacific Surfliner. Connecting San Luis Obispo and San Diego through Los Angeles and Santa Barbara, the Pacific Surfliner route offers a unique vantage on the Southern California seascape. The closest Amtrak stop is in Irvine (IRV) located at the Irvine Transportation Center, 15215 Barranca Parkway, Irvine, CA 92618. From the station, the UCI campus is a short cab or Uber/Lyft ride away. For GPS navigation please use the address: 506 C Student Center, Irvine, CA 92617, which will get you closest to the Herklotz Conference Center. For more information visit: <https://www.amtrak.com/pacific-surfliner-train>

### Driving to Irvine

Irvine is centrally located between Los Angeles and San Diego, and can be reached easily by car. From Los Angeles, it is easiest to take the 405 Freeway to the 73 Freeway and exist on Bison Ave at the edge of campus. Follow the map on the page 5 to arrive at the CNLM. From San Diego you can take the 5 Freeway either to the 73 Toll Road and exist on Bison as above, or alternatively you can take the 5 to the 405 and exit on University Ave. From University make a left on Campus Drive and follow the map on page 5 to arrive at the CNLM. For GPS navigation please use the address: 506 C Student Center, Irvine, CA 92617, which will get you closest to the Herklotz Conference Center.

### Rideshare

If you are using a rideshare application such as Lyft or Uber, please provide the following address:

506C Student Center Drive  
Irvine CA 92697

## **Lodging Information**

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We have negotiated special UCI rates with several area hotels. Please call the hotel directly to reserve your room. There is no deadline for room reservations.

### **Ayres Hotel and Suites – Costa Mesa**

<https://www.ayreshotels.com/ayres-hotel-and-suites-costa-mesa>

325 Bristol, Costa Mesa, CA 92626

800-322-9992

### **Crowne Plaza - Costa Mesa**

<https://www.crowneplazacostamesa.guestreservations.com/>

3131 Bristol Street, Costa Mesa, CA 92626

714-557-3000

### **Atrium Hotel**

<https://atriumhotel.com>

18700 MacArthur Blvd., Irvine, CA 92612

949-833-2770

### **Hotel Irvine (A Lifestyle Hotel)**

<https://www.hotelirvine.com>

17900 Jamboree Road, Irvine, CA 92614

888-230-4452

### **Hyatt Regency Newport Beach**

<https://www.hyatt.com/newport-beach>

1107 Jamboree Road, Newport Beach, CA 92660

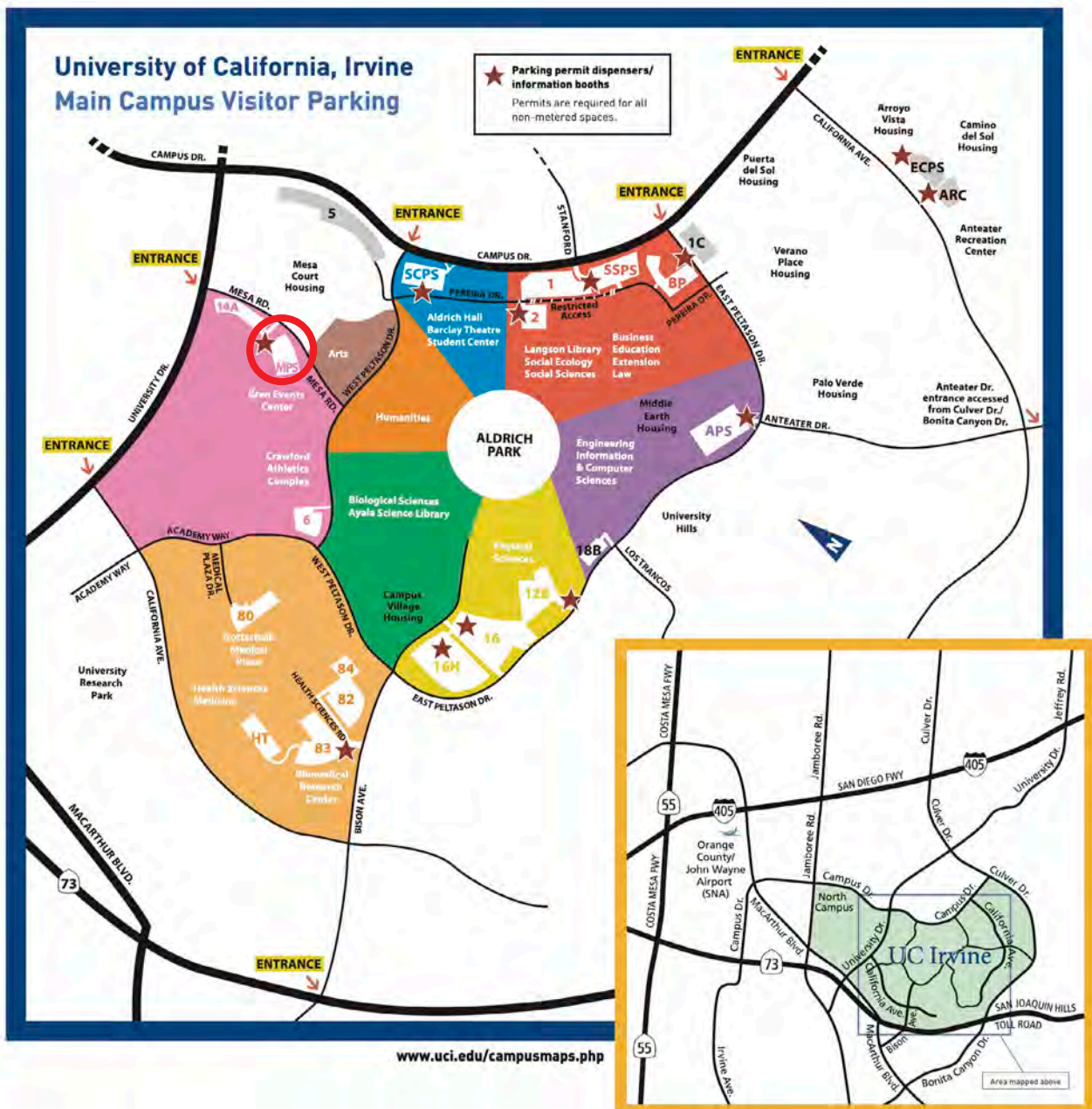
949-729-1234

More information can be found at the link below:

<https://www.accounting.uci.edu/travel/resources/hotels.html>

# Parking

Parking for participants traveling by car is available in the Mesa Parking Structure adjacent to the CNLM. Parking passes can be purchased at any of the kiosks on the UCI campus (marked on the map below). Please note that the CNLM office does not have permits that can be dispensed and will not be able to validate parking. "Reserved" parking passes allow you to park in any of the spots marked "AR" in any of the parking lots or structures. They can be purchased for \$13/ day. The UCI Parking Office can be reached at (949) 824-7275.



## **Meals**

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Conference provides meals on Thursday and Friday.

## **Wi-Fi Access**

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Wi-Fi access will be available at the Conference Facility.

Please use the network login: CNLM Guest and password: GotBrain?

## **Remote Viewing**

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To join the conference remotely, please visit: <https://uci.zoom.us/j/97608862544>

## **Taco Night and Career Discussion**

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Join Gina Poe and Mike Yassa in a lively discussion over tacos about careers in neuroscience, landing that perfect postdoc or dream job, professional development, networking, overcoming job market challenges, dual career partners, negotiating offers, and more! This event will be taking place Thursday, May 5th, 2022 at 5 PM in the CNLM Outdoor Courtyard.

## **Brainfest Party**

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At the conclusion of the business meeting on Friday, we will celebrate with dinner, music, and games! Faculty and students will face off against each other in ping pong, bean bag toss, brain trivia, and more! Put your game face on and come ready to blow off some steam. Colleagues who are driving to UCI can also stay a bit later to miss rush hour traffic.

## **Questions?**

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Please e-mail [memory@uci.edu](mailto:memory@uci.edu) or call the CNLM at 949.824.5193 if you have other questions about the meeting. We look forward to seeing you in Irvine!

# Agenda

## Day One: Thursday, May 5, 2022

- 8:30 am\* **Check in, Breakfast, and Poster Set-up**
- 9:00 am **Welcome and Introduction**
- 9:15pm **Session 1: Consolidation**  
Moderator: Laura Ewell
- 11:45 am **Lunch**
- 1:00 pm **Data Blitz**
- 2:00 pm **Poster Session and Refreshments**
- 3:30 pm **Open Paper Session**
- 5:00 pm **Taco Night and Career Discussion with Gina Poe and Mike Yassa**  
*Let's taco 'bout careers*

## Day Two: Friday, May 6, 2021

- 8:30 am\* **Breakfast**
- 9:00am **Session 2: Learning Signals**  
Moderator: Javier Diaz Alonso
- 11:30am **Lunch**
- 1:00pm **Session 3: Representation**  
Moderator: Keiland Cooper
- 3:30pm **Break**
- 4:00 pm **Keynote: Gina Poe, *The importance of regrouping in the downstate***
- 5:00 pm **BrainFest Party**

\* All times in Pacific Time



# Symposia

## Session 1: Consolidation

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Moderator: Laura Ewell

Attila Losonczy (Columbia University) - *Adaptive stimulus selection for world structure inference during memory consolidation in the hippocampus*

Bryce Mander (UC Irvine) - *Effects of aging and Alzheimer's disease on sleep mechanisms supporting memory consolidation*

Sara Mednick (UC Irvine) - *Exploring the body/mind connection during sleep and its contributions to cognitive enhancement*

Brad Pfeiffer (UT Southwestern) - *Hippocampal network planning and retrospection during navigation*

## Session 2: Learning Signals

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Moderator: Javier Diaz Alonso

Lulu Chen (UC Irvine) - *Neurexin 2: the synaptic organizer underlying neural signals*

Christine Grienberger (Brandeis University) - *The entorhinal cortex directs learning-related changes in CA1 representations*

Autumn Ivy (UC Irvine) - *Neural epigenetic mechanisms of early life exercise supporting hippocampal memory*

Jason Shepherd (UC Irvine) - *Non-cell autonomous synaptic plasticity mediated by virus-like intercellular signaling*

## Session 3: Representation

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Moderator: Keiland Cooper

Liz Chrastil (UC Irvine) - *The representation of spatial knowledge: from cognitive maps to cognitive graphs*

Aaron Bornstein (UC Irvine) - *Matching learning condition to learning style is necessary for multi-step planning*

Azahara Oliva Gonzalez (Cornell University) - *Hippocampal mechanisms of social memory*

Daniela Schiller (Mount Sinai) - *Navigating social space*

## Open Paper Session

Moderator: Jenna Adams

Stephen Mahler - *Psychedelic drugs: potent potential antidepressants with novel mechanisms?*

Gregory Brewer - *Spatial-temporal dynamics in interregional hippocampal axons responding to patterned stimulation*

Christine Smith - *The relationship between news event memory and episodic memory changes as a function of the age of memory—implications for assessing Alzheimer's disease risk*

# Open Paper Session Continued

Moderator: Jenna Adams

Norbert Fortin - *Hippocampal ensembles represent sequential relationships among an extended sequence of non-spatial events*

Tallie Z Baram - *An alternate path to memory?*

Takashi Kitamura - *Role of Eph-ephrin bidirectional signal on anatomical and functional modules in the medial entorhinal cortex*

Robert Hunt - *Brain-wide reconstruction of inhibitory circuits after traumatic brain injury*

Laura Ewell - *Hippocampal network dynamics during impaired working memory in rodent temporal lobe epilepsy*

Kei Igarashi - *Circuit mechanisms of associative memory in health and Alzheimer's disease*

## Data Blitz

Carlene Chinn - *Determining the role of gilz, an X-linked gene, in the development and persistence of maladaptive fear memories*

Jacky Au - *Transcranial direct current stimulation over left prefrontal cortex improves verbal memory consolidation in older adults*

Rachael Hokenson - *Low estrogen levels protect female mice from the impact of multiple acute concurrent stresses on memory*

Kate Lawson - *Rat locomotion and vocalizations on different drugs of abuse*

Jenna Adams - *Associations between Alzheimer's pathology and episodic memory are mediated by medial temporal lobe subregional volume in older adults*

Vinicius Duarte - *Molecular memory: mild dendrite injury enhances subsequent dendrite regeneration*

Nora Harhen - *Representation learning and adaptation in human foraging*

Yueqi Ren - *Multiclass prediction of Alzheimer's clinical diagnosis using statistical machine learning*

Mariya Vodyanyk - *Drawing from what we see to transform our representations*

Ruiyi Chen - *Hippocampal network axons respond to patterned theta burst stimulation with initially higher spike train similarity at EC to DG and later at CA1 to EC*

Ashley Keiser - *Exercise parameters that open a 'molecular memory window' for cognitive enhancement shine light on key mechanism in the adult, aging, and Alzheimer's*

Sydney Prange - *Dendrite injury induces neuroprotection in a Drosophila model of polyglutamine disease*

## Poster Session

Cherie (Lepe) Stringer - *Astrocytes and aquaporins: elucidating the role of astrocytic Aquaporin 4 in Down Syndrome and Down Syndrome with Alzheimer's disease*

Emmanuella Bassey - *Early-life exercise leads to activation of unique hippocampal gene expression programs*

Destiny Berisha - *Associations between obstructive sleep apnea, anti-inflammatory interleukins, and cortical amyloid burden in cognitively unimpaired older adults*

Amanda Borges Rivas - *Adolescent wild type sprague-dawley rats show enhanced nicotine plus cue induced reinstatement*

Alyssa Crystal Rodriguez - *Phosphorylation state of histone deacetylase 3 (HDAC3) modulates long-term memory formation and synaptic plasticity*

Margaret Donahue - *Awake replay of CA1 place cells is impaired in a rat model of Fragile X Syndrome*

Vinicius Duarte - *Using drosophila to understand dendrite development, injury detection and repair after injury*

Abigail Flores - *The effect of adolescent stress on adult learning and working memory performance*

Mulatwa Haile - *Conditional deletion of neurexin 2 leads to spontaneous recurrent seizures*

Michael Hicks - *The effects of spaced learning on the training of declarative and working memory*

Li Juan - *The persistence of time cell sequences during delay intervals does not depend on ongoing theta oscillations*

Soyun Kim - *Examining the diagnostic utility of the mnemonic discrimination task for classification of cognition and amyloid-beta burden*

Ananth Kolli - *Novelty-induced hyperlocomotion and increased neuronal activity in the dentate gyrus upon GluA1 carboxy-terminal domain truncation*

Kate Lawson - *A data driven approach to analyze rat ultrasonic vocalizations*

Jason Lee - *Dopamine facilitates associative memory coding in the lateral entorhinal cortex*

Bianca Leonard - *Functional connectivity of the paraventricular nucleus of the thalamus in children and adolescents*

Tatsuki Nakagawa - *Impaired associative memory encoding in the lateral entorhinal cortex of amyloid precursor protein knock-in mice*

Nellie Nelson - *Neuronal transcriptomic and epigenomic signatures of early-life adversity and exercise underlie modulations to cognitive function*

Brenda Patricia Noarbe - *Early life adversity modifies the male mouse cingulum in adulthood*

Vivian Nye - *The event recognition task: a personalized screening tool for highly superior autobiographical memory*

Sydney Prange - *Dendrite injury induces neuroprotection in a drosophila model of polyglutamine disease*

Anthony Raus - *The role of epigenetic modifications in enabled hippocampal memory after early-life exercise*

Yueqi Ren - *Multiclass prediction of Alzheimer's clinical diagnosis using statistical machine learning on imputed, multimodal NACC data*

Juan Luis Romero Sosa - *Contributions of ventrolateral orbitofrontal cortex to flexible stimulus-reward learning under delay conditions*

Jake Rounds - *A sex-specific role of GILZ in cocaine-associated memory*

Matthew Sandoval - *Characterizing the expression and localization of MDGAs at hippocampal synapses*

## Poster Session Continued

Gerardo Sandoval - *Extracellular protein interactions mediating synaptic AMPAR trafficking*

Sabrina Santos - *Processing goal-directed navigation*

Rajat Saxena - *Learning in brains and deep neural networks with similarity weighted interleaved learning*

Jordan Sigler - *THC Impact on early development and behavior*

Nya Weems - *The effects of early life adversity on opioid withdrawal*

Holly Westfall - *An application of cognitive models to the free recall of semantically-related stimuli in Alzheimer's patients*

Jungsun Yoo - *Increased state-space complexity encourages online planning in the two-stage task*

Hope Zamora - *Wnt signalling and synaptic plasticity*

