
Welcome to the
2023 Sagan
Summer Workshop!
NASA
NExScI
ipac
Caltech

Land Acknowledgment

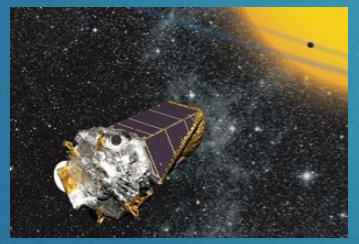
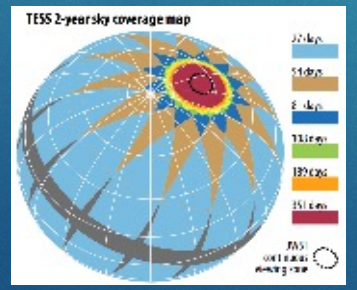
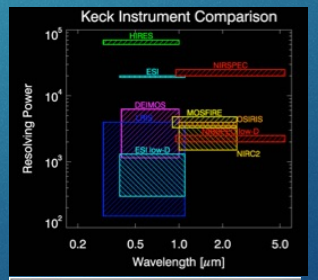
We want to recognize the Gabrielino/Tongva peoples as the original caretakers of this land. We are grateful to work as guests here in what is today Los Angeles county - the traditional, ancestral, and unceded territory of the Gabrielino/Tongva. We ask that we each tread lightly, humbly, and with open hearts. We pay our respects to the Gabrielino/Tongva peoples, our ancestors, elders, and all of our relations, past, present, and emerging.

We also want to acknowledge that inclusion means being intentional of how we are connecting with indigenous communities at Caltech and in the Pasadena community. As we are conducting research and working toward our goals at the Institute, think about how it impacts Indigenous communities and their traditions.

https://native-land.ca/.

NExScI Supports NASA's Exoplanet Program

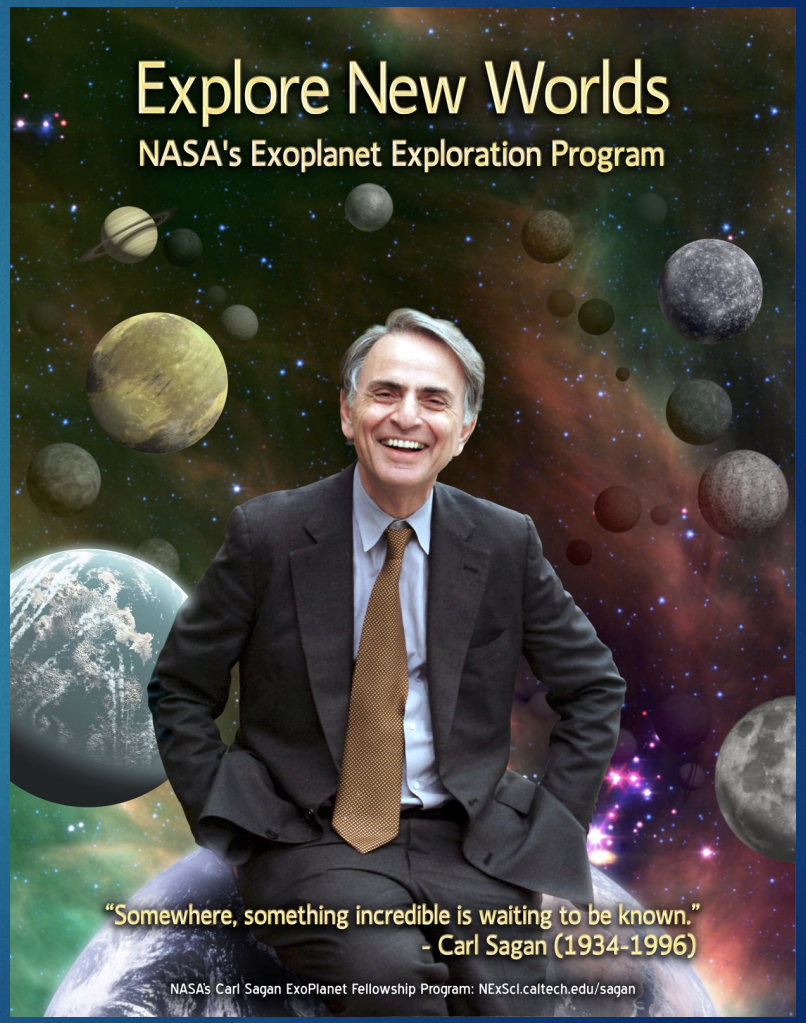
- NExScI is the science center for NASA's Exoplanet Exploration Program and is part of IPAC on the Caltech campus
- Provides broad support of exoplanet research community through archives, observing time, workshops, tools and services to enable data sharing and analysis
- We are scientists, programmers, engineers, and admin

Sagan Program & Community Support	Exoplanet Archive &ExoFOP	Long Term Archives	Keck Operations and Archive	EPRV (NEID/NN-Explore)
				
				

Keck Observatory Archive KOA

2023 Sagan Summer Workshop

- The Sagan Program is part of NASA's Exoplanet Exploration Program (ExEP), one of three science themed programs at NASA (including Cosmic Origins & Physics of the Cosmos)
  - The primary goal of missions within ExEP is to discover and characterize planetary systems and Earth-like planets around nearby stars
- The SSW continues the tradition of the past 22 Michelson/Sagan Summer Workshops
  - This year we have over 1,300 registrants from institutions in almost 60 countries and 36 US states and territories!



The Organizing Committees

THANK YOU!!

Science Organizing Committee:

- Ian Crossfield, Co-Chair (University of Kansas)
- Tiffany Kataria, Co-Chair (NASA JPL)
- Chas Beichman (Caltech/IPAC-NExScI)
- Jayne Birkby (University of Oxford)
- Jonathan Fortney (UC Santa Cruz)
- Dawn Gelino (Caltech/IPAC-NExScI)
- Tom Greene (NASA Ames)
- Renyu Hu (NASA JPL)
- Laura Kreidberg (MPIA)
- Kevin Stevenson (Johns Hopkins University/APL)

NExScI Local Organizing Committee:

- Tracy Chen
- Megan Crane
- Elise Furlan
- Dawn Gelino
- Ellen O'Leary
- Melanie Swain

SSW Code of Conduct

- All SSW participants are expected to follow the Code of Conduct during the meeting, including Zoom, Slack, and Gather conversations
- You will be removed from the meeting, Slack, and Gather if you violate this code

The organizers are committed to making this meeting productive and enjoyable for everyone, regardless of gender, sexual orientation, disability, physical appearance, body size, race, nationality or religion. We will not tolerate harassment of participants in any form.
Please follow these guidelines:

- Behave professionally. Harassment and sexist, racist, or exclusionary comments or jokes are not appropriate. Harassment includes sustained disruption of talks or other events, inappropriate physical contact, sexual attention or innuendo, deliberate intimidation, stalking, and photography or recording of an individual without consent. It also includes offensive comments related to gender, sexual orientation, disability, physical appearance, body size, race or religion.
- All communication should be appropriate for a professional audience including people of many different backgrounds. Sexual language and imagery is not appropriate.
- Be kind to others. Do not insult or put down other attendees. Critique ideas, not people.
- If participants wish to share photos or contents of talks/slides of any speaker or attendee on social media, we ask that they first get permission.

Participants asked to stop any inappropriate behavior are expected to comply immediately. Attendees violating these rules will be asked to leave the event at the sole discretion of the organizers.

SSW Code of Conduct

If you experience harassment in any form, or if you see someone else experiencing harassment, please report the incident in any of the following ways:

- Email nexsci@ipac.caltech.edu (only seen by Dawn Gelino and Ellen O'Leary)
- Send a direct message in Slack to any of the following Workshop Organizers:
  - Tracy Chen
  - Dawn Gelino
  - Ellen O'Leary

These instructions are also posted on Slack and in the Help Desk corner of the main Gather room

COVID-19 Protocols

- Masks are encouraged in indoor spaces
- Please drink and eat in outdoor spaces
  - No food/drink allowed in lecture hall and poster area

- We have masks available if needed
- We have COVID tests available if needed
- Anonymous COVID positive reporting Google form URL posted in Slack and in "Know Before You Go" email sent on Friday last week

- **Please do not attend in person if you feel sick or have possible COVID symptoms**

Presentations - Thank You Speakers!

- PDFs of all submitted presentations, including the pops, will be posted and updated during the week
- Recordings of all presentations will be posted on the Sagan Workshop YouTube channel by the end of next week (although they are typically available within 24 hours)
- Talks: (look for iPad timer in front of room)
  - 45 min talks: 35 min (5 min, 2 min) + 10 min for questions
  - 30 min talks: 25 min (5 min, 2 min) + 5 min for questions

- All in-person presentations will be given from the designated presentation laptop
- Make sure to upload and test your talk no later than the break before your talk

Wireless Access (in Baxter, Dabney, and KS 410/415)
Network: "Caltech Visitor" or "Caltech Conference"
User name: SaganWS2023
Password: sagan2023

Venues: Baxter Lecture Hall (BLH)

- All presentations, as well as the Excalibur workshop on Saturday, will take place in BLH
- *No food or drink allowed in BLH*
- During the day, it is unlocked, so leave items at your own risk; it will be locked after 6 pm
- Plugs and power strips are available on the floor in some rows
- Enter/exit through back of room unless you have *pre-arranged* elevator access
- Restrooms are down one level using stairs at the back of the hall

Venues: Dabney Hall and Gardens

- Dabney Hall:
  - Posters are displayed all week
  - Dedicated poster sessions on Monday and Tuesday
  - Posters must be taken down by 3 pm Friday if you want to keep them

- Dabney Gardens:
  - In-person lunch with speakers
  - Lunches and dinners on Monday and Thursday (for those who purchased them)

Interactive Workshop Features

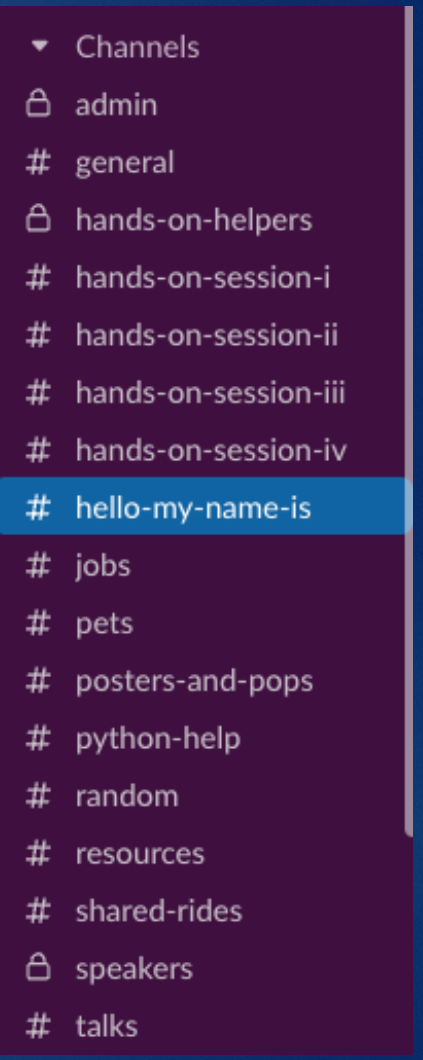
- In-person and remote Lunch with Speakers
  - Informal chat with a speaker and up to 15 attendees
  - In-person lunches will be in Dabney Gardens
  - Remote lunches will take place via Zoom with the links emailed out the day before
    - We still have a few spots open, so sign up via the link in your email

- Posters and Pops
  - All posters are listed and posted on the SSW website and in the poster room in Gather
  - Monday and Tuesday: in-person poster sessions in Dabney Hall and remote poster sessions in Gather
  - There is also a *#posters-and-pops* channel in Slack

Interactive Workshop Features

- Twitter: *#sagan2023*
  - Guest takeover of IPAC Twitter @caltechipac
    - Michael Wong (in-person attendee)
    - Kevin Hardegree-Ullman(remote attendee)

- Slack Workspace
  - Invitation is in the emails sent over the past month, and link in Zoom chat
  - We have set up several channels →
  - Go to **Channels > Manage > Browse Channels** to see what's available and join those that you'd like to!



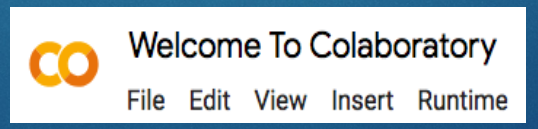
Remote Attendee Status & Questions

- Unless you are speaking or chairing a session, you will be a Zoom Webinar Attendee
  - This means that your video and microphone are disabled, and the speakers cannot see or hear you
- We encourage everyone to ask questions in the Zoom Q&A
  - We encourage speakers to help answer the zoom Q&A questions
- Follow-up questions can be asked in the *#talks* channel in Slack

- The Excalibur workshop on Saturday will use the same Zoom webinar link and Slack workspace

Hands-On Sessions (1)

- Everyone, from beginner to expert, is welcome to participate!
- The activities will use either Jupyter notebooks:
  - requires a Python installation
- or Google Colaboratory (Colab) notebooks:
  - runs on Google Drive on a virtual machine and requires a new free Google account for storage reasons
- **We recommend using the Google Colab notebooks if you are not familiar with Python**
  - Please note that the Python installation can take more than 1/2 hour, so if you plan to use Python, please install it via the instructions on our website before the start of the hands-on session
- **Look on the SSW website for more information and software instructions**



Hands-On Sessions (2)

- **Monday:** (I) Reducing JWST Data: From Raw Data to Light Curves
- **Tuesday**: (II) Fitting JWST Data: From Light Curves to Planet Spectra
- **Wednesday**: (III) Forward Modeling with PICASO

  (IV) Retrievals using petitRADTRANS
- **Thursday**: Group project work (choose one)
  - Near-IR Transmission Spectrum of WASP-39b
  - Mid-IR Phase Curve of WASP-43b
  - Grid Search: Fitting Models to Data
  - Emission Spectrum Retrieval of the Hot Jupiter WASP-77 Ab
- **Friday**: Group project presentations (informal, ~10 minutes each)

Hands-On Sessions (3)

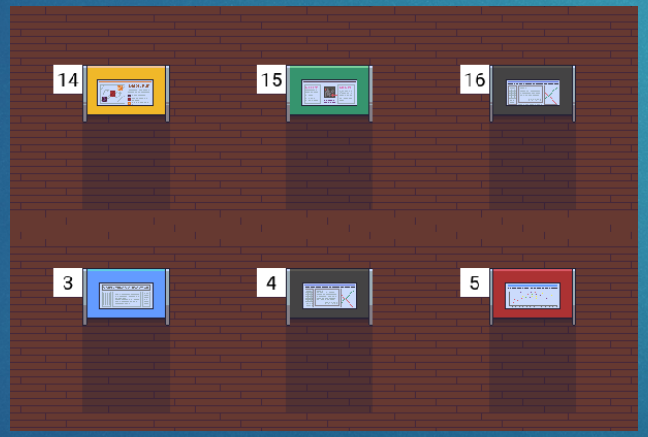
- The preparation in getting ready for the hands-on sessions would not have been possible without the dedicated help from:
  - Taylor Bell (NASA Ames), Kevin Stevenson (JHU/APL), Laura Kreidberg (MPIA)
  - Natasha Batalha (NASA Ames), Sagnick Mukherjee (UCSC)
  - Paul Molliere (MPIA)
  - Melanie Swain (NExScI), Tracy Chen (NExScI), Elise Furlan (NExScI)

  and the 63 in-person and remote hands-on session helpers!

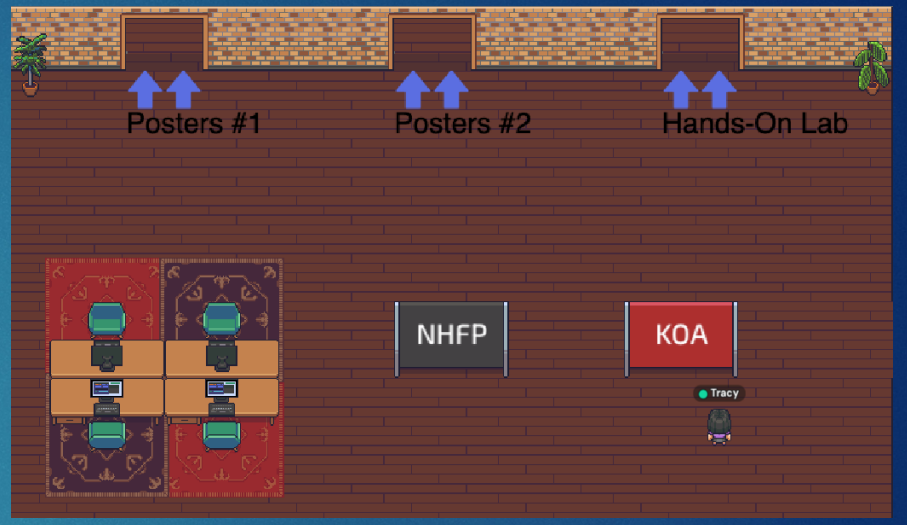
- We encourage everyone to participate in all four hands-on sessions
- Remote attendees can choose to do the hands-on session activities live, on their own time, and/or in Gather
- Please ask questions on the Slack channels #python-help, #hands-on-session-i (ii, iii, iv)

Gather Virtual Space

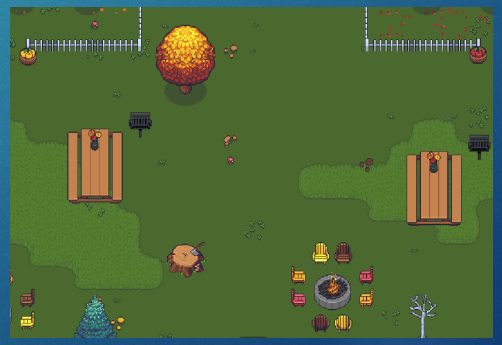
- Gather will be open 24/7 for the entire week of the workshop
- All submitted posters are in Gather in the Poster Rooms
  - They can be viewed any time, not just during the poster sessions (Monday, July 24 at 12:30 pm PDT and Tuesday, July 25 at 12:45 pm PDT)
  - If you have a question for a poster author who is not in Gather, please post your question in the "*posters-and-pops*" channel in Slack



- Hands-on Lab is available for attendees to work together on the hands-on sessions



- Chrome and Firefox are the recommended browsers. Safari and mobile devices are not supported.



- Head to the campground on Wednesday at 11:30am PDT for a group photo!

Letters and Pictures

- Submit a headshot for our Class Picture (for our remote attendees)
  - Via a form on our website
  - Pictures are due by August 18 and we'll post the picture on the workshop website in September

AFTER the workshop, you'll be able to:

- Request a Letter of Attendance
  - Via a form on our website
  - The deadline to request a letter is August 18 and letters will be sent by mid-September
- Complete the workshop survey
  - Via a form on our website, please complete your survey by August 18

Final Reminders

- We want everyone to have an enjoyable and productive meeting
- Please:
  - Behave professionally
  - If you want to share photos of any attendee or their work on social media, please get their permission first
- Reminders:
  - No food/drink in Baxter lecture hall (because it is so hot out, water will be allowed)
  - Silence your cell phones and laptops
  - Workshop picture on Wednesday at 11:30 am (in-person, and in Gather!)

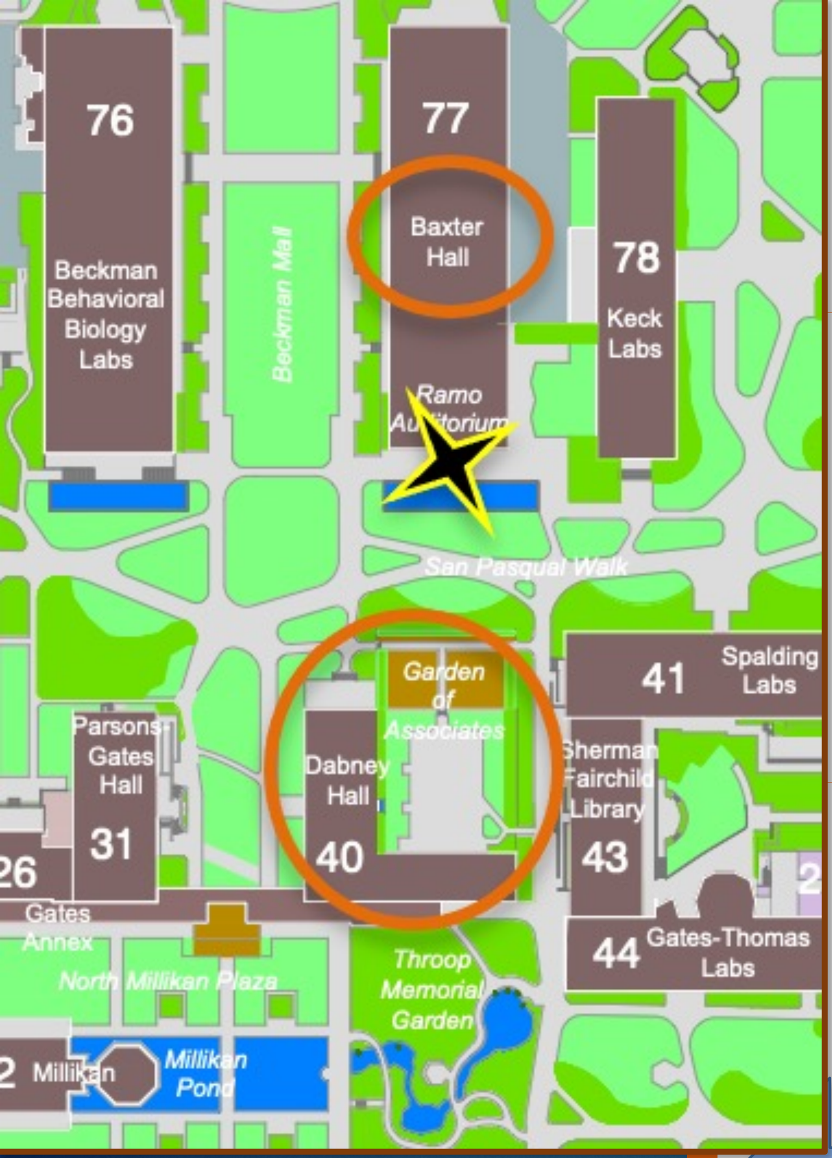
Where are you joining us from?

- Go to: menti.com
- Type in code at top of screen (also shown in slack and zoom chat)

- Results will be shared later in the week

Thank you and Let's Begin!

Backup



76
Beckman Behavioral Biology Labs
77
Baxter Hall
Ramo Auditorium
78
Keck Labs
Beckman Mall
San Pasqual Walk
Garden of Associates
Dabney Hall
40
41
Spalding Labs
Parsons-Gates Hall
31
Sherman Fairchild Library
43
26
Gates Annex
44
Gates-Thomas Labs
North Millikan Plaza
Throop Memorial Garden
Millikan Pond

DEL MAR BLVD.
MICHIGAN AVE.
CATALINA AVE.
WILSON AVE.
SAN PASQUAL ST.
CALIFORNIA BLVD.
ARDEN RD
UNDER CONSTRUCTION
18
Chen Neuroscience Research Building
Broad Center
96
3
74
Beckman Institute
91
Beckman Auditorium
Gene Pool
Beckman Lawn
73
Mead Lab
72
Noyes Labs
75
Braun Labs
20
Schlinger Labs
76
Beckman Behavioral Biology Labs
77
Baxter Hall
Ramo Auditorium
78
Keck Labs
79
Powell-Booth Center
80
Jorgensen Labs
81
Steele Lab
95
Watson Labs
93
Moore Lab
14
Bechtel Residence
Parking Structure 1
123
Parking Structure 2
124
29
Church Lab
28
Alles Lab
30
Crellin Labs
26
31
Parsons-Gates Hall
27
Kerckhoff Labs
Gates Annex
40
Dabney Hall
41
Spalding Labs
43
Sherman Fairchild Library
44
Gates-Thomas Labs
Throop Memorial Garden
North Millikan Plaza
32
Millikan
Millikan Pond
South Millikan Plaza
51
Hameetman Center
1
52
Chandler Cafe'
2
Page House
54
Lloyd House
55
Ruddock House
61
Athenaeum
23
Mudd Labs North
25
Arms Labs
24
Linde-Robinson Labs
21
Mudd Labs South
33W
West Bridge Labs
34
Bridge Annex
33E
East Bridge Labs
37
Linde Hall
38
Kellogg Lab
45
Guggenheim Labs
46
Karman Labs
50
Firestone Labs
49
Synchrotron
47
Downs-Lauritsen Labs
57
Fleming House
Ricketts House
59
58
Dabney House
60
Blacker House
Student Activities Center (57B)
6
Keith Spalding Bldg
Ticket Office
17
Cahill Center
5
Central Plant
8
Young Health Clinic
308
306
Fire Station
IMSS
15
International Scholars
Community Garden
67
98
99
Lot 10
Lot 11
Lot 14
Athenaeum Tennis Courts
Athenaeum Parking Lot
4

Workshop: *Baxter lecture hall (2nd floor, enter on south side of building 77 only; at star)*

Registration Gathering and Lunch with Speakers: *Dabney Gardens outside building 40*

Posters: *Dabney Hall building 40 (enter off courtyard)*

Black ovals indicate food for purchase

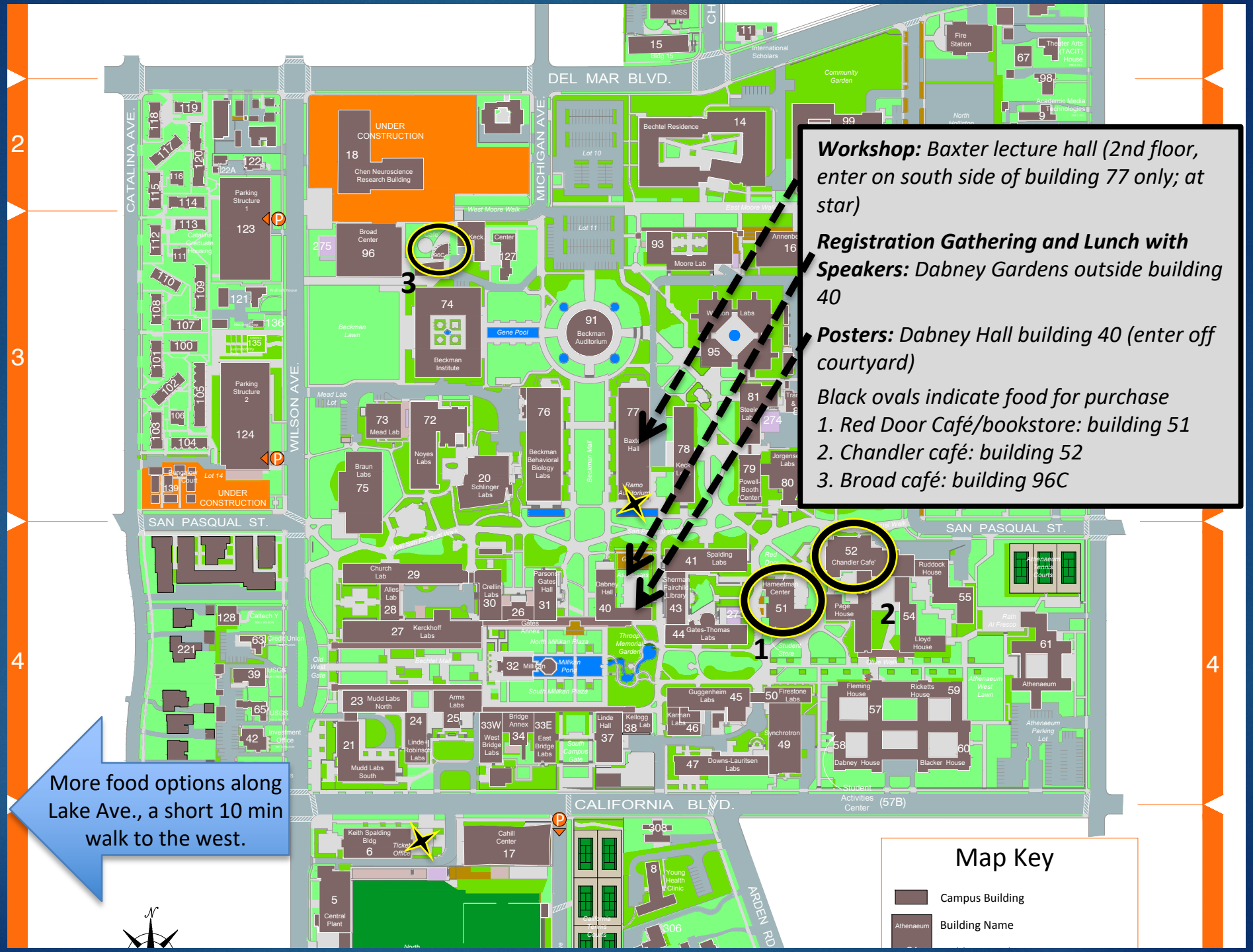
1. *Red Door Café/bookstore: building 51*
2. *Chandler café: building 52*
3. *Broad café: building 96C*

More food options along Lake Ave., a short 10 min walk to the west.

Map Key

Campus Building

Athenaeum Building Name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DEL MAR BLVD.
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ARDEN RD.
UNDER CONSTRUCTION
Chen Neuroscience Research Building
Beckman Auditorium
Beckman Institute
Gene Pool
Beckman Lawn
Broad Center
Bechtel Residence
Moore Lab
Baxter Hall
Ramo Auditorium
Noyes Labs
Braun Labs
Mead Lab
Schlinger Labs
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Synchrotron
Downs-Lauritsen Labs
Keith Spalding Bldg
Ticket Office
Cahill Center
Young Health Clinic
Central Plant
Parking Structure 1
Parking Structure 2
Lot 10
Lot 11
Lot 14
Community Garden
Athenaeum Tennis Courts
Athenaeum Parking Lot
Fire Station
International Scholars
Theater Arts (TACIT) House
Academic Media Technologies
Caltech Y
Credit Union
USGS
Investment Office
Catalina Graduate Housing
West Moore Walk
East Moore Walk
Mead Lab Lot
Old West Gate
South Campus Gate
North Holliston
1
2
3
4

Food

- Pre-orders are closed
  - Coffee and tea provided at morning coffee breaks and lunches
  - Box lunches for those who pre-ordered (see the back of your badge)
  - Monday and Thursday dinners for those that pre-ordered at 5:30 pm in Dabney Gardens (see the back of your badge)

- See campus map on the back of the agenda and posted online for other on-campus food options

- Reminders:
  - Please drink and eat in outdoor spaces – no food/drink allowed in lecture hall or in poster area
  - Mask wearing is encouraged even in outdoor areas when not eating or drinking

23 Years of Exoplanet Science

JPL/Interferometry Science Center

- 1999: Interferometry Summer School
- 2000: Astrophysics with Optical Interferometry
- 2001: Interferometry Techniques
- 2002: Interferometry Theory and Techniques

Michelson Summer Workshops

- 2003: Interferometry Overview
- 2004: Frontiers of High Contrast Imaging in Astrophysics Astronomical Interferometry in the Optical and Near-Infrared
- 2005: Discovering New Worlds Through Astrometry
- 2006: Frontiers of Interferometry: Stars, Disks, and Terrestrial Planets
- 2007: Planetary Transits: Detection to Characterization

Sagan Summer Workshops

- 2009: Exoplanetary Atmospheres
- 2010: Stars as Homes for Habitable Planetary Systems
- 2011: Exploring Exoplanets with Microlensing
- 2012: Working with Exoplanet Light Curves
- 2014: Imaging Planets & Disks
- 2015: Exoplanetary System Demographics: Theory and Observations
- 2016: Is There a Planet in My Data? Statistical Approaches to Finding and Characterizing Planet
- 2017: Microlensing in the Era of WFIRST
- 2018: Did I Really Just Find an Exoplanet?
- 2019: Astrobiology for Astronomers
- 2020: Extreme Precision Radial Velocity
- 2021: Circumstellar Disks and Young Planets
- 2022: Exoplanet Science in the Gaia Era
- **2023: Characterizing Exoplanet Atmospheres: The Next 20 Years**