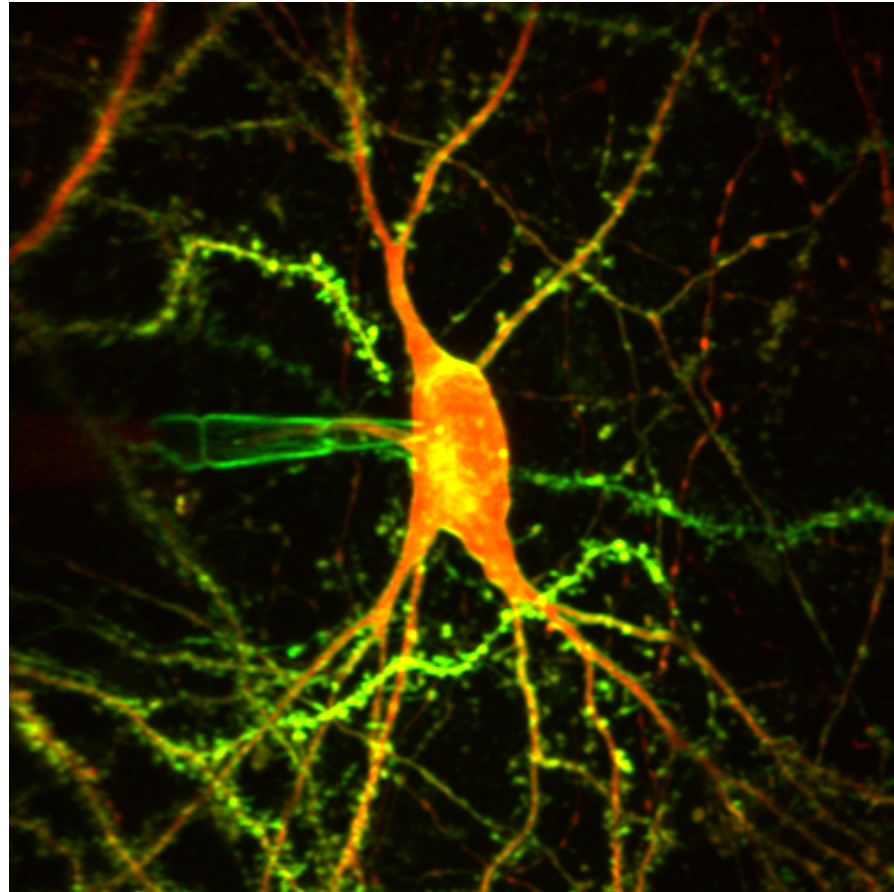


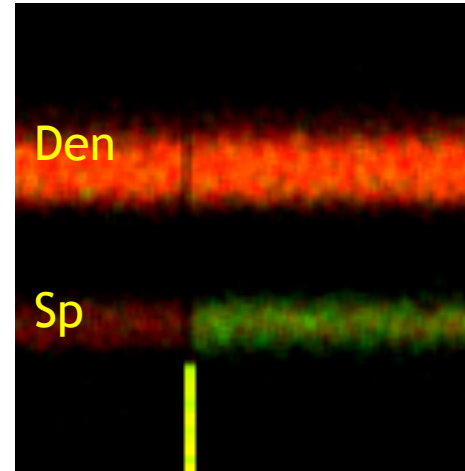
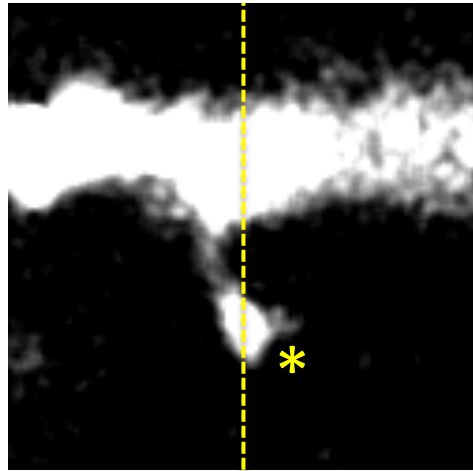
What computations are performed by a circuit?
How do these computations change with experience?

Brenda Bloodgood, Ph.D.
University of California, San Diego
Division of Biological Sciences

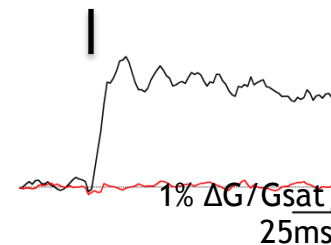
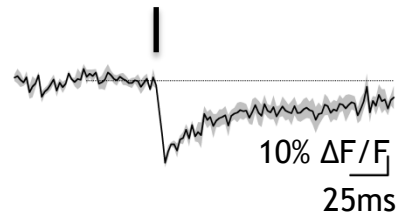
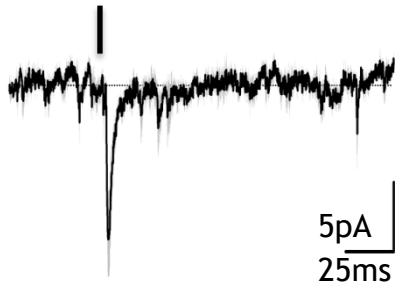
How does a neuron process synaptic information?



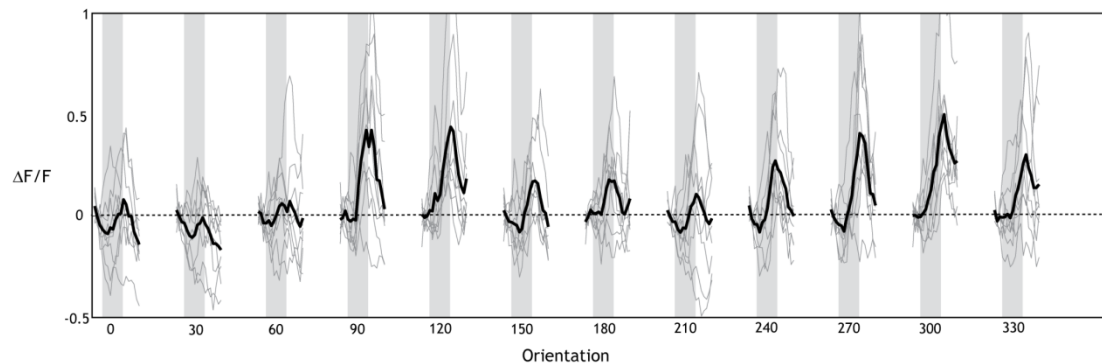
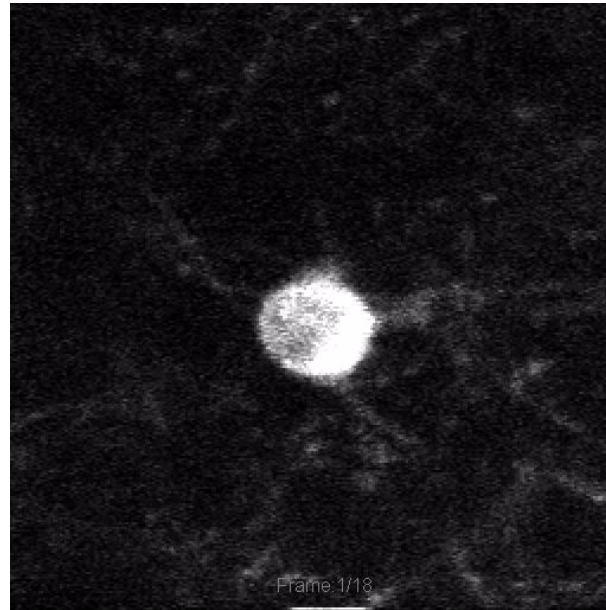
Two-photon glutamate uncaging allows us to probe the function of individual synapses in a brain slice



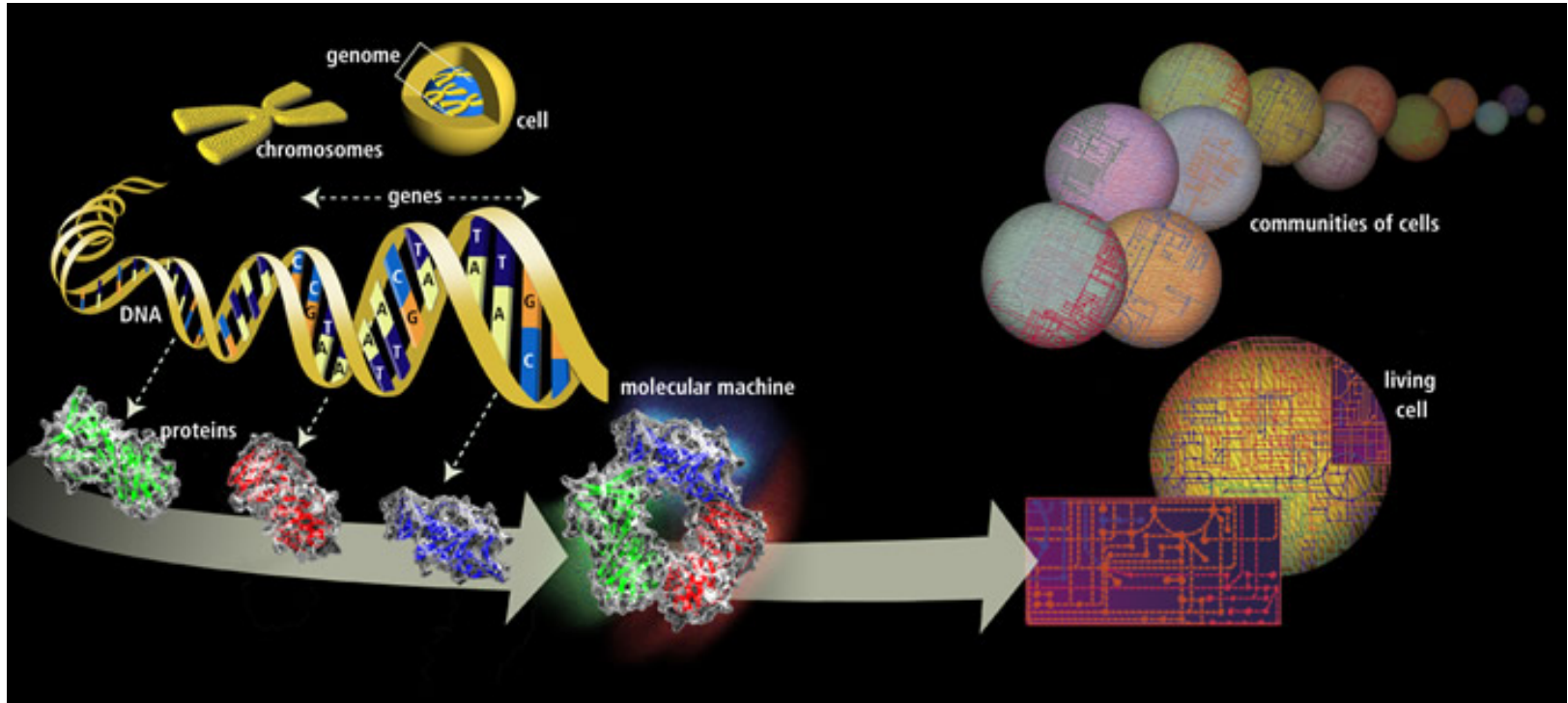
Alexa-594
Fluo5F

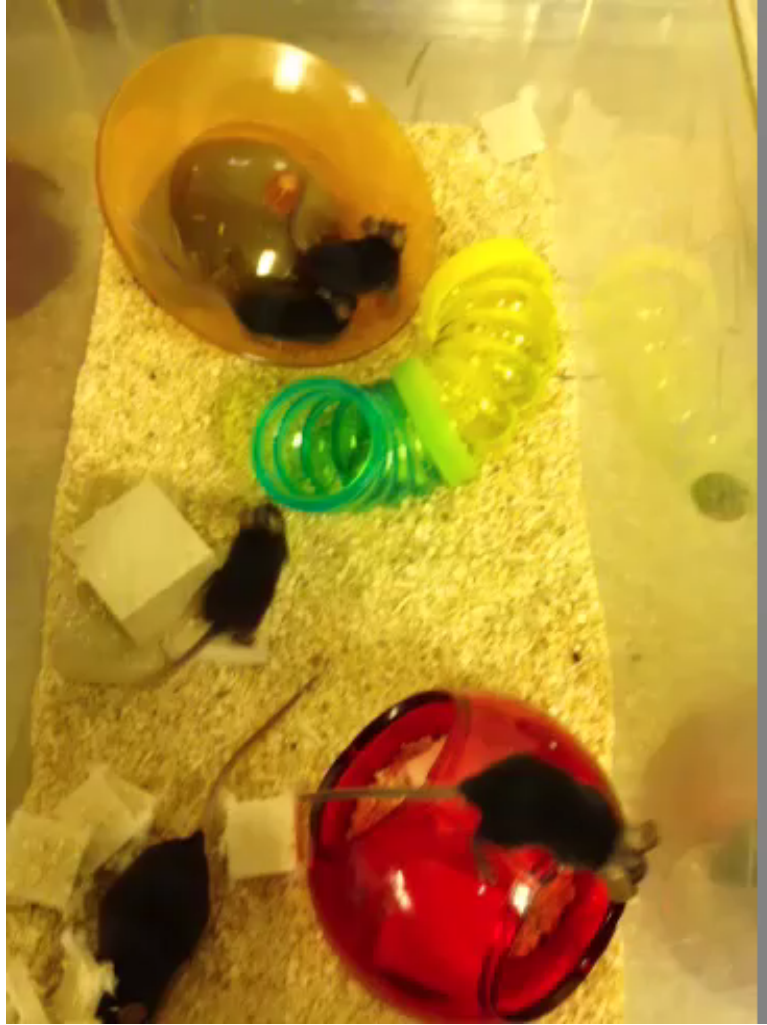
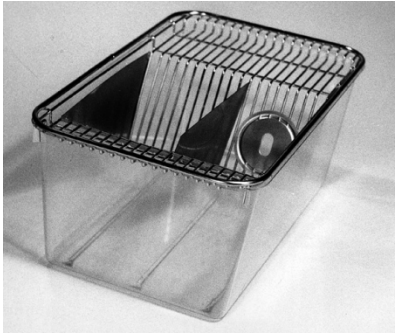


Two-photon calcium imaging allows us to probe the function of individual neurons in a brain

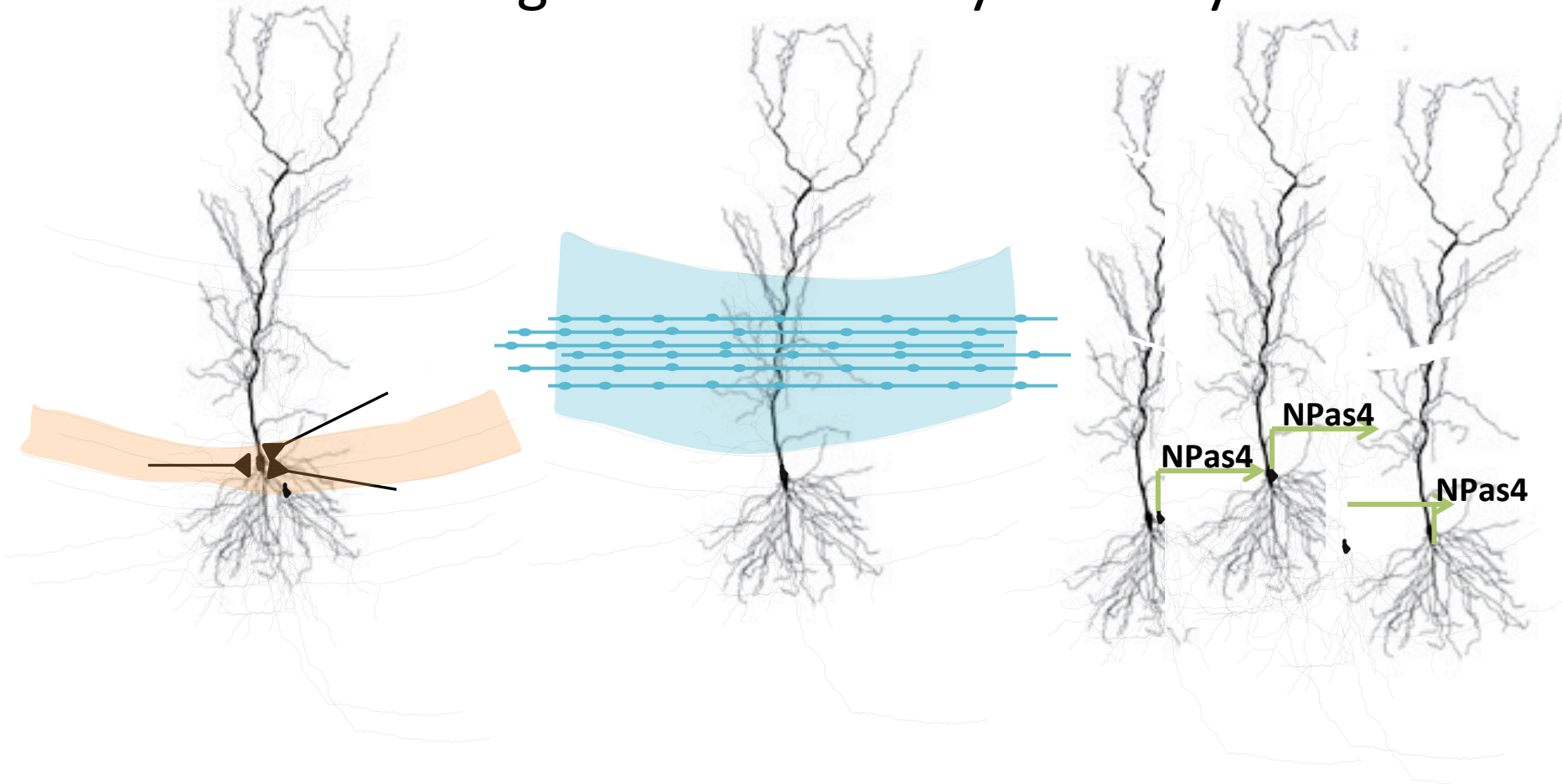


How does experience dependent gene regulation alter circuit function?





Experience dependent gene regulation reorganizes inhibitory circuitry



Gain Control

Cobb et al., 1995; Miles et al., 1996;
Pouille et al., 2009; Atallah et al., 2012;
Wilson et al., 2012, Lee et al., 2012;

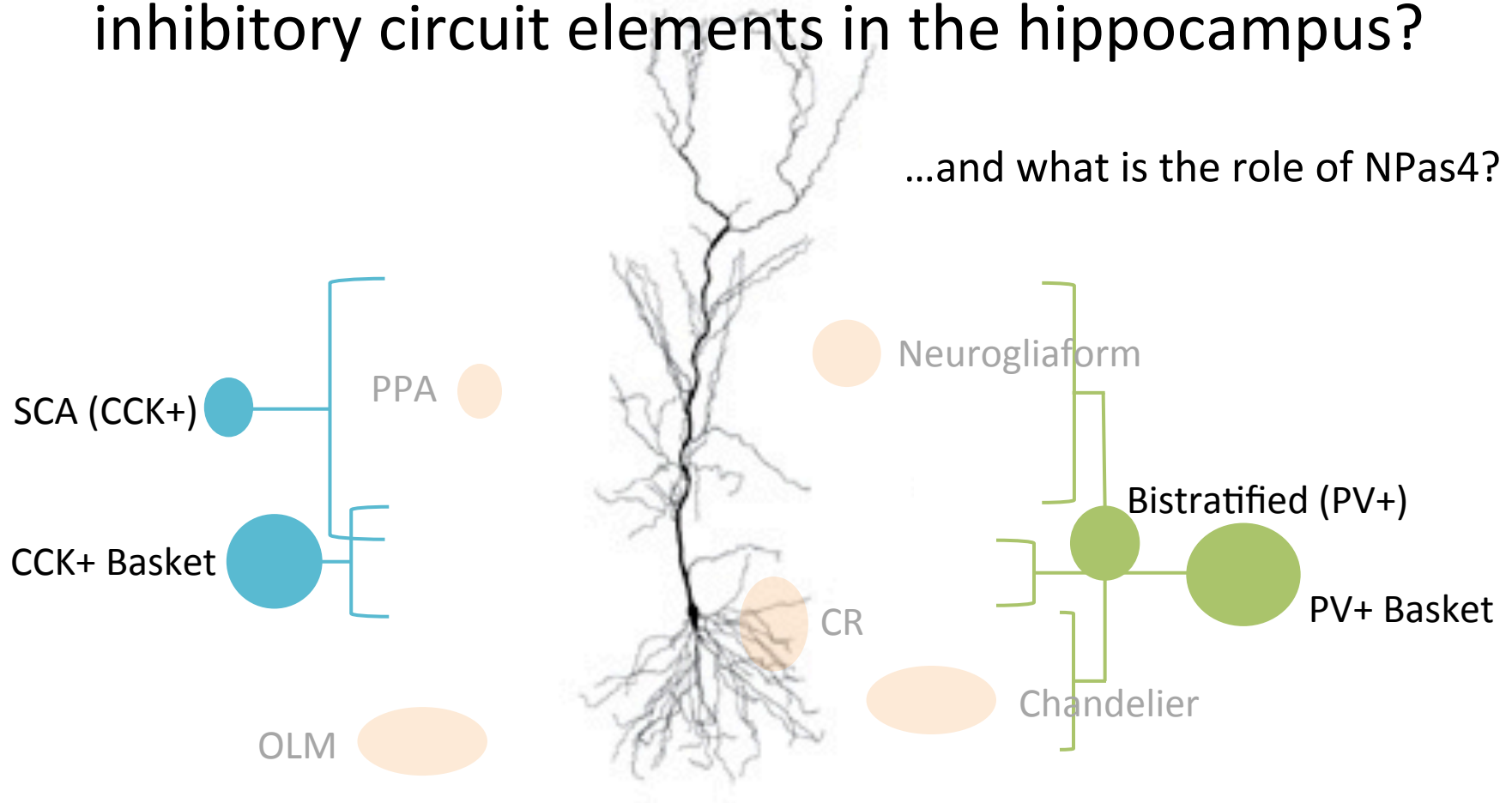
Plasticity

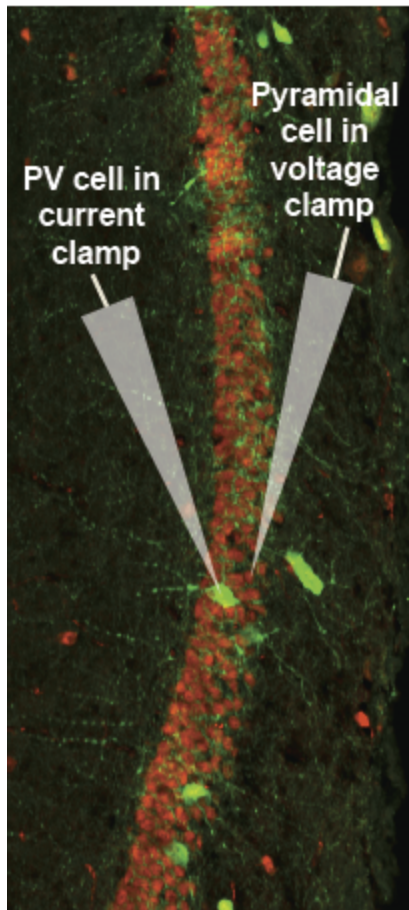
Miles et al., 1996;
Basu et al., 2013

Ensemble firing

Markram et al.,
1997; Xu et al., 2014

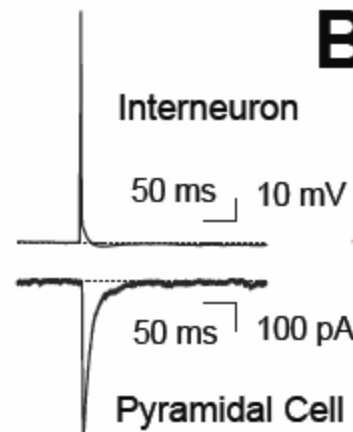
How does experience change the relative influence of inhibitory circuit elements in the hippocampus?





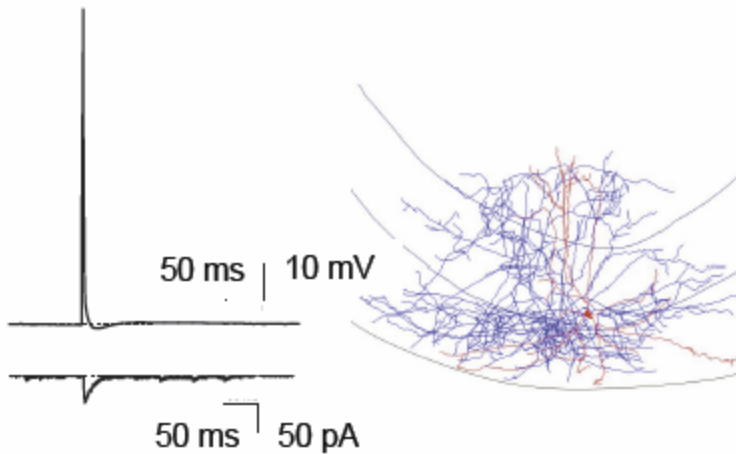
A

PV Basket Cell

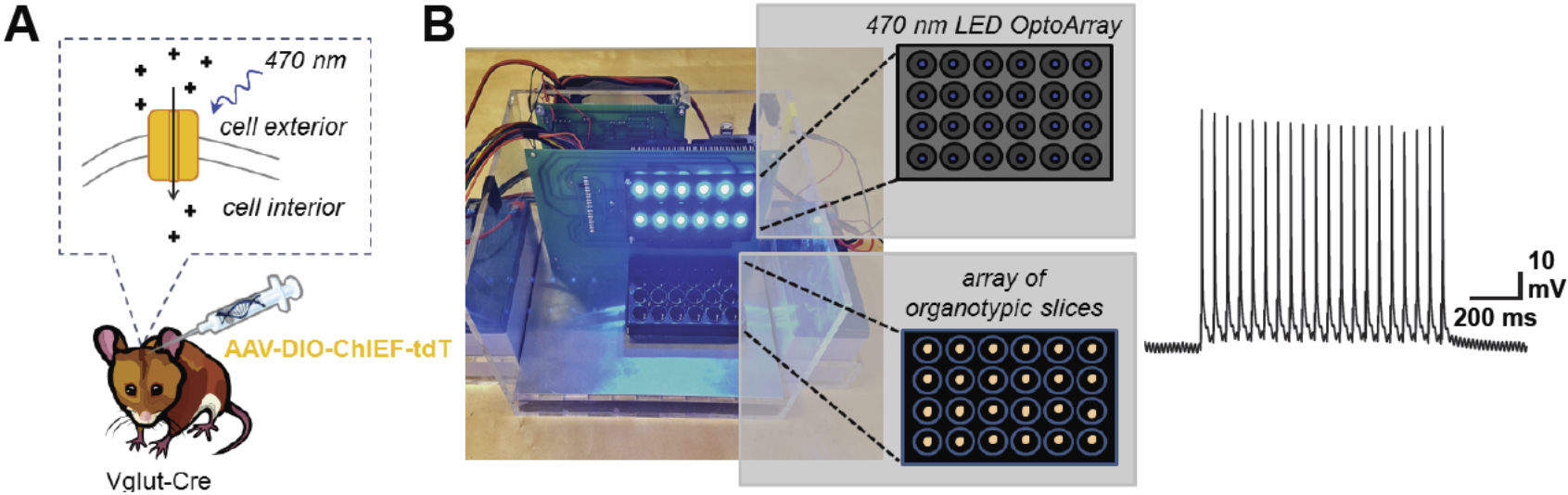


B

PV Bistratified Cell

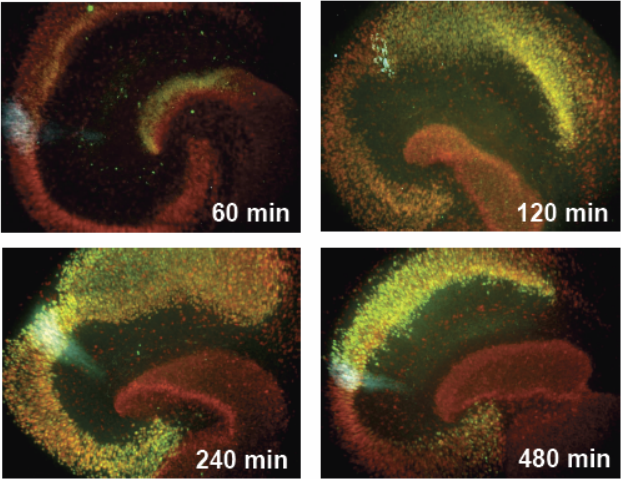
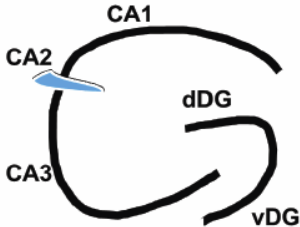


What pattern of neuronal activity engages the genome?

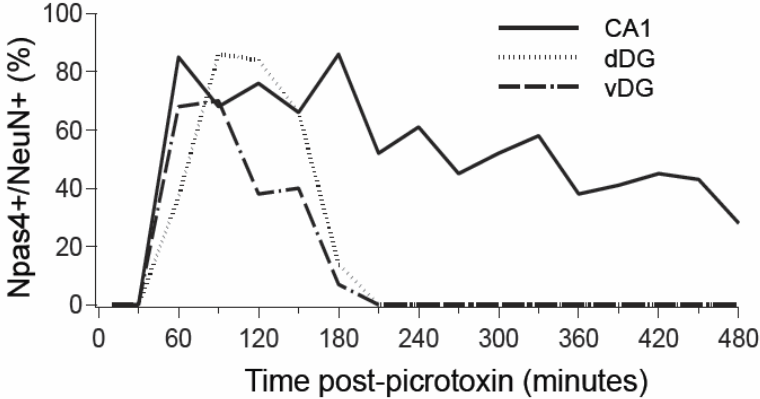


What pattern of neuronal activity engages the genome?

A



B





LabGuru in the Bloodgood lab

The screenshot displays the LabGuru web application interface. At the top, there is a navigation bar with the LabGuru logo, user information for Dr. Brenda Bloodgood, and a search bar. Below this is a secondary navigation bar with tabs for Home, Research, Knowledgebase, Inventory, and Storage & Equipment. The main content area is titled "Research Projects" and includes a "New Experiment" button and a "New Project" button. The interface is divided into two main sections: "My projects" and "Projects I'm part of".

My projects

Project Name	Last updated
ASAP1	Nov 08, 2014
Labguru Research Basics - Read Me Now!	Oct 05, 2014

Projects I'm part of

Project Name	Last updated
Genotyping	May 06, 2015
AAV virus production	Apr 27, 2015
Pharmacology	Apr 08, 2015
Using DREADDs to drive NPas4 inhibitory phenotype	Apr 08, 2015
GETFaR	Apr 08, 2015
OptoArray: Transcriptional Regulation of Inhibitory Synapses	Apr 06, 2015
Intrinsic Excitability Project	Apr 06, 2015
NMDAR staining in V1 PV cells	Feb 06, 2015
u-opioid receptor IHC	Jan 22, 2015
Ca signalling in PV interneurons in V1	Dec 19, 2014
Quantifying spines in V1 PV interneurons	Dec 16, 2014
NPas4 regulation of inhibition: Connected Pairs	Dec 14, 2014
NPas4 regulation of inhibition: DAMGO wash in	Dec 14, 2014
NPas4 regulation of inhibition: WIN 55, 212-2 wash in	Dec 14, 2014
Septin	Nov 17, 2014
IEG in situs	Oct 22, 2014

On the right side of the interface, there is a "Tags" section with the following tags: NASPM, receptors, and toxin.

Project management

The screenshot shows the labguru web interface. At the top, there is a navigation bar with the labguru logo, user information for Dr. Brenda Bloodgood, and a search bar. Below this is a secondary navigation bar with tabs for Home, Research, Knowledgebase, Inventory, and Storage & Equipment. The main content area is titled 'OptoArray: Transcriptional Regulation of Inhibitory Synapses' and includes a 'New Experiment' button. Underneath the title, there are tabs for Progress, Attachments (51), Key Papers, Notes, Documents, and Calendar. The Attachments tab is active, displaying a list of 51 nested attachments. Each attachment entry includes a thumbnail image, a filename, a 'Download or Annotate' link, a date, the user who uploaded it, and a link to a specific litter or experiment. The right sidebar contains sections for Tags, Linked Resources, Attachments (with an 'Upload a file' button), Tasks, Project Team (listing Pei-Ann and Pouya), and Recently Viewed.

labguru Dr. Brenda Bloodgood Brenda bloodgood Support

Home Research Knowledgebase Inventory Storage & Equipment

Research OptoArray: Transcriptional Regulation of Inhibitory Synapses **New Experiment**

Pei-Ann Lin

Progress Attachments (51) Key Papers Notes Documents Calendar

View all 51 nested attachments of this project

- OptoArray: Transcriptional Regulation of Inhibitory Synapses (0)
- Vglut-Cre Colony Development (0)
- 08/22/2014 Genotyping 07/28 Litter (1)
- 08/25/2014 Anneal Temp Ramp Test (1)
- 08/26/2014 PCR Reagents Test (1)
- 08/27/2014 Tubulin Ctrl & Higher Anneal Temp Ramp Test (1)
- 08/28/2014 Cre Primers Test (Vglut, PV, Emx) (2)
- Andrea Control (2)
- 08/29/2014 Genotyping 07/28 Litter with PV-Cre Primers (1)
- 09/01/2014 Genotyping 07/28/2014 Litter (lower primer conc) (1)
- 09/29/2014 Genotyping 09/15/2014 Litter (1)
- 10/08/2014 and 10/15/2014 Litters (1)
- 10/24/2015 Litter (#86-89) - troubleshooting for Pouya (4)
- 03/11/2015 Genotyping 01/26 Litter (1)
- 03/20/2015 Genotyping Controls for Colony (1)

bloodgoodLab 2015-03-20 14hr 28min.tif
Download or Annotate
Mar 20, 2015 by Pei-Ann
34.4 MB | No comments | 03/20/2015 Genotyping Controls for Colony

bloodgoodLab 2015-03-11 15hr 12min.tif
Download or Annotate
Mar 11, 2015 by Pei-Ann
34.4 MB | No comments | 03/11/2015 Genotyping 01/26 Litter

bloodgoodLab.tif
Download or Annotate
Jan 11, 2015 by Pei-Ann
8.59 MB | No comments | 10/24/2015 Litter (#86-89) - troubleshooting for Pouya

bloodgoodLab 2014-12-19 16hr 09min.tif
Download or Annotate
Jan 3, 2015 by Pei-Ann
34.4 MB | No comments | 10/24/2015 Litter (#86-89) - troubleshooting for Pouya

bloodgoodLab 2014-12-19 12hr 55min (pouya 2).tif
Download or Annotate
Jan 3, 2015 by Pei-Ann
8.59 MB | No comments | 10/24/2015 Litter (#86-89) - troubleshooting for Pouya

bloodgoodLab 2014-12-17 14hr 27min (pouya).tif
Download or Annotate
Jan 3, 2015 by Pei-Ann
8.59 MB | No comments | 10/24/2015 Litter (#86-89) - troubleshooting for Pouya

Tags add tag

Linked Resources add link
Remove all links

Attachments
Upload a file
ATTACHED IMAGES
ATTACHED FILES

Tasks add task

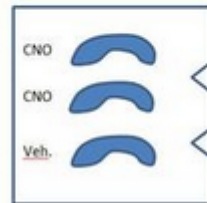
Project Team
Pei-Ann Pouya

Recently Viewed

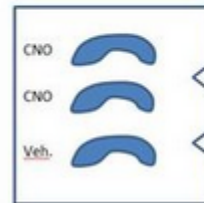
Project management

Aerial view of OCT blocks

Block 1 R

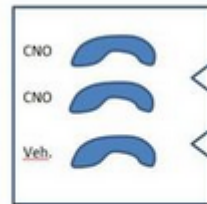


Block 1 L

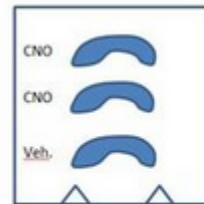


Injected at p14,
fixed 7 days
post infection

Block 2 R



Block 2 L



Injected at p15,
fixed 6 days
post infection

*Start cutting from side with notches except for Block 2 L (start cutting from asterisk)

Protocol management

The screenshot displays the Labguru web application interface. At the top, there is a navigation bar with the Labguru logo, user information (Dr. Brenda Bloodgood), and navigation links (Home, Research, Knowledgebase, Inventory, Storage & Equipment). The main content area is titled "Lab Protocols" and includes a search bar, a "Print" button, and a "Sort Items" dropdown. A list of protocols is shown, each with a magnifying glass icon for search. On the right side, there is a "Tags" section with the heading "Use tags to group items" and a list of tags such as Antibody, Cell Lines, DFF, ECL, Enzyme, Harmful, Hormone, Label, Liquid, Microscopic, PCR, Toxic, Plastic, Phosphatase, Laser-capture, CO2, Peptide, NMR, and Experiments.

labguru Dr. Brenda Bloodgood Brenda bloodgood Support

Home Research Knowledgebase Inventory Storage & Equipment

Knowledgebase Protocols

Lab Protocols

Add From Protocols Directory New Protocol

Print Sort Items Search this

1 2 Next




- PV-Fip genotyping
- In Utero Electroporations (HPC)
- P14 Hippocampal Injections
- Vglut-Cre Genotyping
- Image Analysis and Cell Counting
- Quantify neurolucida reconstructions
- Organotypics immunohistochemistry
- Organotypics Slice Preparation
- Pharmacology- differentiating receptor types
- P0-P2 Hippocampal Viral Injections
- Untitled
- Biocytin Protocol
- AAV Production
- XL10-Gold Ultra Competent Plasmid Maxi Prep
- Gel Electrophoresis

Tags

Use tags to group items

- Antibody
- Cell Lines
- DFF
- ECL
- Enzyme
- Harmful
- Hormone
- Label
- Liquid
- Microscopic
- PCR
- Toxic
- Plastic
- Phosphatase
- Laser-capture
- CO2
- Peptide
- NMR
- Experiments

Reagent/supply management







labguru  Dr. Brenda Bloodgood  Brenda bloodgood  Support

Home Research Knowledgebase **Inventory** Storage & Equipment

Shopping List [\(view order history\)](#)

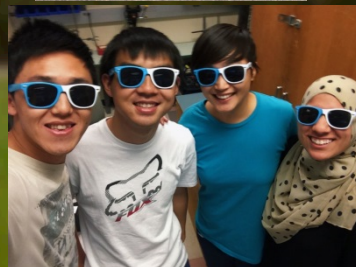
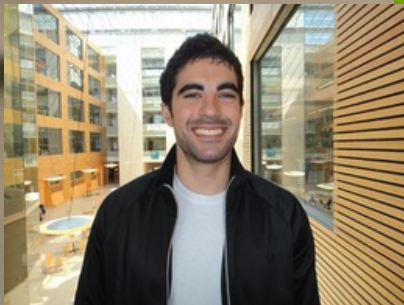
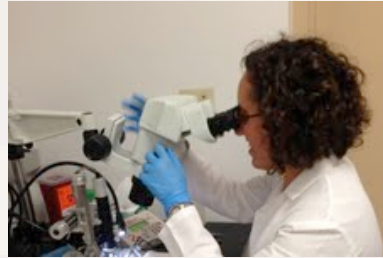
Select a material to add to the shopping list

[Filter Items](#) [Export to CSV](#) [Print](#)

id	User	Material	Price	Details	Dates	Status
1591	 Laura	Name Loctite	Price: \$1.85	Budget #	Requested Date	Mark As Arrived Mark as cancelled
		Catalog # A11363131	Quantity: 10	Order #	Approved Date	
		Manufacturer OfficeMax	Total: \$18.5	Remarks	Ordered Date	
1581	 Pei-Ann	Name O2/CO2	Price: \$37.01	Budget #	Requested Date	Mark As Arrived Mark as cancelled
		Catalog # O224	Quantity: 2	Order #	Approved Date	
		Manufacturer storehouse	Total: \$74.02	Remarks	Ordered Date	
1541	 Pei-Ann	Name Hibernate A Media	Price: \$93	Budget #	Requested Date	Mark As Arrived Mark as cancelled
		Catalog # A12475-01	Quantity: 1 of (1)	Order #	Approved Date	
		Manufacturer life technologies	Total: \$93	Remarks	Ordered Date	
1551	 Pei-Ann	Name GlutaMAX	Price: \$0	Budget #	Requested Date	Mark As Arrived Mark as cancelled
		Catalog # 35050-061	Quantity: 1 of (1)	Order #	Approved Date	
		Manufacturer life technologies	Total: \$0	Remarks	Ordered Date	
1561	 Pei-Ann	Name Neurobasal A Media	Price: \$60	Budget #	Requested Date	Mark As Arrived Mark as cancelled
		Catalog # 10888-022	Quantity: 2 of (1)	Order #	Approved Date	
		Manufacturer life technologies	Total: \$120	Remarks	Ordered Date	
1571	 Pei-Ann	Name B27 Supplement	Price: \$86	Budget #	Requested Date	Mark As Arrived Mark as cancelled
		Catalog # 17504-044	Quantity: 4 of (1)	Order #	Approved Date	
		Manufacturer life technologies	Total: \$344	Remarks	Ordered Date	

Bloodgood Lab

Andrea Hartzell
Laura Sancho
PeiAnn Lin
Stefan Brigidi
Kelly Martyniuk
Pouya Parsa
Grace Moore
Dhruv Zocchi



Valerie Polichar and Ho Jung
Integrated Digital
Infrastructure program

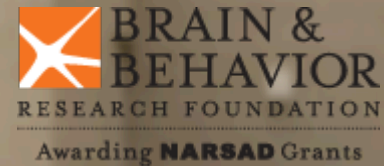
SEARLE SCHOLARS PROGRAM

FUNDING EXCEPTIONAL YOUNG SCIENTISTS

Center for Brain Activity Mapping



of the KAVLI Institute for Brain and Mind at UC San Diego



National Science Foundation
WHERE DISCOVERIES BEGIN

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