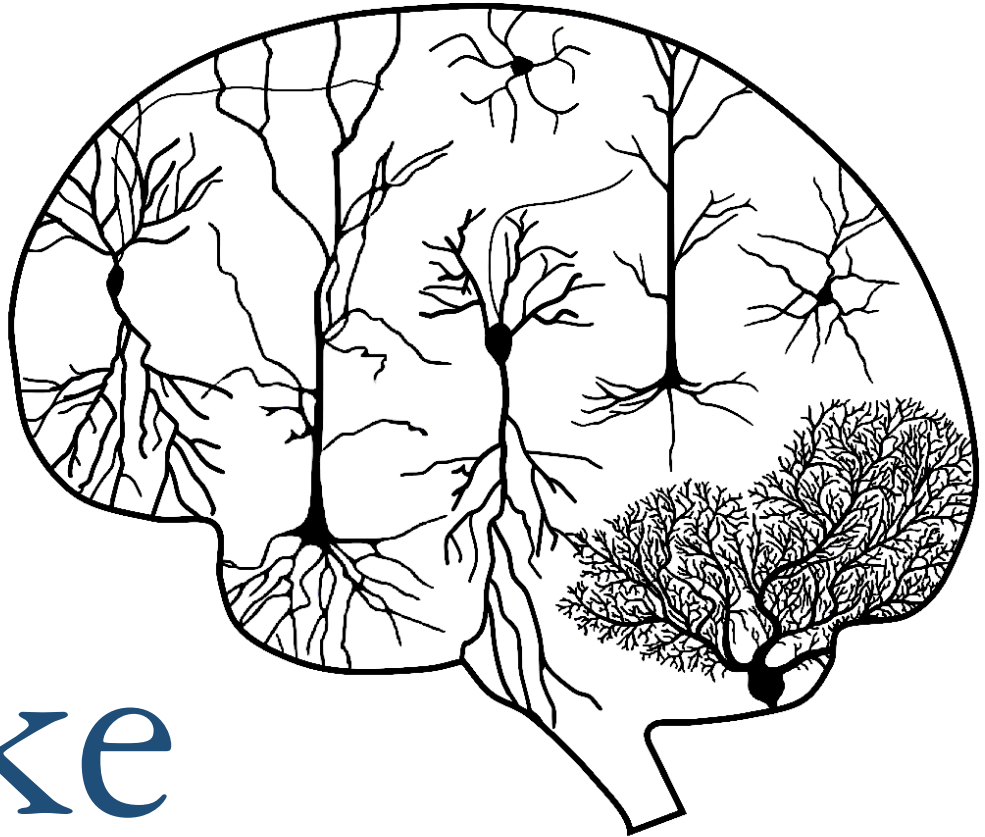


# Duke

NEUROBIOLOGY



## 2018 Annual Retreat

Thursday, September 27 | Durham, NC

21c Museum Hotel  
111 North Corcoran Street  
Durham, NC 27701

## Invited Speakers



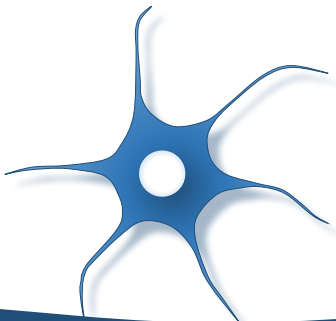
**Indira Raman**  
Professor of Neurobiology  
Northwestern University



**Robin L. Rasor**  
Executive Director  
Duke Office of Licensing & Ventures

## Student Organizers

Caley Burrus (Eroglu Lab)  
Bryson Deanhardt (Volkan Lab)  
Shataakshi Dube (Soderling Lab)  
Neil Gallagher (Dzirasa Lab)  
Shiva Nagappan (Franks Lab)  
Divya Subramanian (Sommer Lab)  
Aashutosh Vihani (Matsunami Lab)



Program and T-Shirt Design  
by Shataakshi Dube

# Schedule of Events

## Thursday, September 27

8:00am – 9:00am     Registration in Main Gallery  
Light Breakfast and Coffee

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9:00am – 9:10am     Welcome by **Jorg Grandl** (Faculty, Neurobiology)

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9:10am – 10:10am     Keynote Speaker – **Indira Raman** (Northwestern University)  
*Synaptic signaling in cerebellar circuits*

Introduction by **Audrey Mercer** (Postdoc, Mooney Lab) and **Amanda Lewis** (Postdoc, Grandl Lab)

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10:10am – 10:30am     Coffee Break

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10:30am – 12:10pm     Talks moderated by **Court Hull** (Faculty, Neurobiology)

10:30 – 10:45     **Kevin Bolding** (Postdoc, Franks Lab)  
*Recurrent cortical circuits implement concentration-invariant odor coding*

10:45 – 10:50     Discussion

10:55 – 11:10     **Shataakshi Dube** (Student, Soderling Lab)  
*Chemicogenetic analysis of the presynaptic cytoskeleton*

11:10 – 11:15     Discussion

11:20 – 11:35     **Max Gillett** (Student, Brunel Lab)  
*Unsupervised learning of sequential activity with temporally asymmetric Hebbian learning rules*

11:35 – 11:40     Discussion

11:45 – 12:00     **Eva Naumann** (Faculty, Neurobiology)  
*Neural architecture for visual motion processing in the zebrafish*

12:00 – 12:05     Discussion

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12:10pm – 1:30pm     Lunch

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1:30pm – 2:30pm	Non-Academic Speaker – <b>Robin Rasor</b> (Duke Office of Licensing & Ventures) <i>Academic Technology Transfer, Or... How someone who started out pre-med ended up in an entirely new profession</i>  Introduction by <b>Jorg Grandl</b> (Faculty, Neurobiology)
2:30pm – 2:40pm	Coffee Break
2:40pm – 4:40pm	Poster Session
4:40pm – 5:30pm	Talks moderated by <b>Nicole Calakos</b> (Faculty, Neurology)
4:40 – 4:55	<b>Maya Kaelberer</b> (Postdoc, Bohórquez Lab) <i>Transduction of a gut sense</i>
4:55 – 5:00	Discussion
5:05 – 5:20	<b>Matt Kearney</b> (Student, Mooney Lab) <i>An actor critic circuit in the songbird enables vocal learning</i>
5:20 – 5:25	Discussion
5:30pm – 6:00pm	Nobel/Ignobel Talks moderated by <b>Divya Subramanian</b> (Student, Sommer Lab)
5:30 – 5:35	<b>Marc Sommer</b> (Faculty, Biomedical Engineering)
5:35 – 5:40	<b>Fan Wang</b> (Faculty, Neurobiology)
5:40 – 5:45	<b>Rebecca Yang</b> (Faculty, Neurobiology)
5:45 – 5:50	<b>Steve Lisberger</b> (Faculty, Neurobiology)
5:50 – 5:55	<b>Anne West</b> (Faculty, Neurobiology)
6:00pm – 6:30pm	Awards and Student/Faculty Skits
Evening	Dinner on your own

## Poster Session

#	Name	Lab	Poster Title
1	Meredith Achey (Other)	Calakos	<i>Examining the role of mGluR5 signaling in striatal astrocytes</i>
2	Fernando Alsina (Postdoc)	Silver	<i>Non-canonical roles of the exon junction complex component Eif4a3 during neuronal maturation</i>
3	Stuart Behling (Student)	Lisberger	<i>Visual motion reliability impacts visual and nonvisual components of smooth pursuit eye movements</i>
4	Mor Ben-Tov (Postdoc)	Mooney	<i>Effects of dopamine in the songbird nucleus HVC on song production</i>
5	Robin Blazing (Student)	Glickfeld	<i>Contribution of inhibitory cell types in mouse primary visual cortex to perceived contrast</i>
6	Tyler Bradshaw (Student)	Soderling	<i>Evaluating changes in synaptic proteome of mouse neurodevelopmental disorders</i>
7	Sam Brudner (Student)	Mooney	<i>Testing a novel role for cortico-basal ganglia circuitry in juvenile zebra finch learning</i>
8	Caley Burrus (Student)	Eroglu	<i>Striatal projection neurons require Huntingtin for synaptic connectivity and longevity</i>
9	Sasha Burwell (Student)	Tadross	<i>Deconstructing Schultzian dynamics with DART</i>
10	Jon Cafaro (Other)	Field	<i>Natural global motion processing by populations of direction-selective retinal ganglion cells</i>
11	Zachary Caffall (Other)	Calakos	<i>TBD</i>
12	Urann Chan (Student)	West	<i>Elucidating the role for the lysine-specific histone demethylase Kdm6b in cerebellar granule neuron maturation</i>
13	Bin Chen (Postdoc)	Wang	<i>In vivo imaging of general anesthesia activated central analgesic neurons</i>
14	Jamie Courtland (Student)	Soderling	<i>Leveraging proteomics to analyze synaptic proteins of PV and SST interneurons</i>
15	Tim Darlington (Student)	Lisberger	<i>Sensorimotor gain control as a mechanism of movement prevention during modulation of preparatory activity</i>
16	Jennifer David (Postdoc)	Kuo	<i>Rose bengal photothrombosis induces reaching impairments and increases GFAP immunoreactivity in mice</i>
17	Bryson Deanhardt (Student)	Volkan	<i>Epigenetic reprogramming of courtship behaviors with social experience</i>
18	Hala El-Nahal (Student)	Sommer	<i>Immunohistochemistry is required to visualize virally mediated fluorescent protein expression in non-human primates</i>
19	Elizabeth Fleming (Student)	Hull	<i>Sensory representations in the cerebellar granule cell layer</i>

20	Neil Gallagher (Student)	Dzirasa	<i>Estimating neural signal lag via instantaneous phase</i>
21	David Gallegos (Student)	West	<i>Psychostimulant-induced chromatin plasticity in interneurons of the nucleus accumbens</i>
22	Victoria Goldenshtein (Student)	Tadross	<i>Towards massively parallel optimization of DART</i>
23	Yael Grossman (Postdoc)	Dzirasa	<i>TBD</i>
24	Rupali Gupta (Postdoc)	Liedtke	<i>Expanding the neuroscience toolbox toward translational-medical use: Rx magnetogenetics</i>
25	Nathan Hall (Postdoc)	Lisberger	<i>The cerebellar representation of learning in smooth pursuit eye movements across hundreds of trials</i>
26	Victoria Hall (Student)	Calakos	<i>TBD</i>
27	Jordan Hatfield (Other)	Mooney	<i>Role of medium spiny neurons in avian model of Huntington's Disease: techniques for selective ablation and visualizing regeneration</i>
28	Mariah Hazlett (Student)	West	<i>Modification of addiction-like behavior with CRISPR/Cas9-mediated epigenomic editing</i>
29	Jake Heffley (Student)	Hull	<i>Cerebellar climbing fibers signal reward expectation in both voluntary and classically conditioned behaviors</i>
30	Ashley Henderson (Student)	Grandl	<i>Understanding the effects of human disease-causing mutations on Piezo function</i>
31	David Herzfeld (Postdoc)	Lisberger	<i>Properties of the signals that drive directional learning in smooth pursuit eye movements</i>
32	Dolores Irala (Postdoc)	Eroglu	<i>Do autism-linked epigenetic factors regulate astrocyte development and function?</i>
33	Miaomiao Jin (Student)	Glickfeld	<i>Contribution of sensory encoding to measured bias</i>
34	Shuyang Jin (Student)	Hull	<i>Cerebellar climbing fibers are suppressed during locomotion</i>
35	NaYoung Jun (Student)	Field	<i>TBD</i>
36	Breanna Kalmeta (Student)	Grandl	<i>Functional studies of Piezo1 ion channel</i>
37	Boris Kantor (Other)	Vector Core	<i>Targeted epigenome editing: a novel therapeutic strategy for altering SNCA expression</i>
38	Christopher Kozlowski (Student)	Kay	<i>Role of megf10 in starburst amacrine cell spatial patterning and laminar targeting</i>
39	Amanda Lewis (Postdoc)	Grandl	<i>Structural determinants of inactivation in mechanically activated Piezo ion channels</i>
40	Jennifer Li (Student)	Glickfeld	<i>Mechanisms underlying adaptation in mouse visual cortex</i>
41	Thiri Lin (Postdoc)	McNamara	<i>c-Fos expression in the mouse brain following status epilepticus induced by intra-amygdala kainic acid model</i>

42	Fang Liu (Other)	West	<i>KDM6B-mediated H3K27Me3 dynamics orchestrate postnatal development of cerebellum</i>
43	Winston Liu (Student)	Bohórquez	<i>Transduction of a gut sense: part 3</i>
44	Elizabeth Matthews (Other)	McNamara	<i>Noisy neighbors make strong networks: spill-over mediated glutamatergic communication in the hippocampal network</i>
45	Ian Matthews (Tech)	Glickfeld	<i>Higher visual areas have distinct laminar distributions of interneuron subtypes</i>
46	J. Patrick Mayo (Postdoc)	Lisberger	<i>Cortical contributions to the initiation of smooth pursuit eye movements</i>
47	Valerie Michael (Student)	Mooney	<i>A hypothalamic-to-midbrain circuit for the control of vocalization</i>
48	Aaron Mitchell-Dick (Student)	Silver	<i>Prolonged mitosis of neural stem cells in vivo alters neural cell fate acquisition during cortical development</i>
49	Jeff Mohl (Student)	Groh	<i>Distinct codes as a substrate for causal inference in primate superior colliculus neurons</i>
50	Moawiah Naffaa (Postdoc)	Kuo	<i>Anatomical/functional mapping of neural circuits controlling interneuron production in the adult rodent brain</i>
51	Maira Nagai (Postdoc)	Matsunami	<i>Smelling sulfur in Wilson's Disease: how does copper affect olfaction</i>
52	Shiva Nagappan (Student)	Franks	<i>Characterizing odor responses of target-specific projection neurons in piriform cortex</i>
53	Max Nikitchenko (Postdoc)	Naumann	<i>TBD</i>
54	Caitlin Paisley (Student)	Kay	<i>Mechanisms underlying programmed cell death of retinal astrocytes during development</i>
55	Gregory Payne (Other)	Glickfeld	<i>Effects of visual spatial attention on perceptual state in mice</i>
56	Robin Perelli (Other)	Kay	<i>The effects of hyperoxia on astrocyte spatial patterning in the retina</i>
57	Louis-Jan Pilaz	Silver	<i>mRNA transport and local translation regulates radial glia branching during cortical development</i>
58	Cameron Prigge	Kay	<i>Repulsive FLRT2 signaling directs laminar targeting of the retinal direction-selective circuitry</i>
59	Jiaxuan Qi (Student)	Mooney	<i>Characterization of inputs to ventral tegmental area in the songbird</i>
60	Sivaprakasam Ramamoorthy (Postdoc)	Kuo	<i>Thrombospondin-4 and post-stroke hemorrhage</i>
61	Juan Ramirez (Student)	Eroglu	<i>Toll-like receptor signaling in synaptic development</i>
62	Suva Roy (Postdoc)	Field	<i>Receptive field coordination among functionally distinct retinal ganglion cell types</i>
63	Kiersten Ruda (Student)	Field	<i>The impact of light adaptation and cell type on correlated spiking and retinal population codes</i>

64	Francesco Paolo Ulloa Severino (Postdoc)	Eroglu, Yin	<i>Control of goal-directed actions by astrocyte–neuron signaling</i>
65	Charlie Sheehan (Other)	Silver	<i>Dose-dependent requirements of Magoh in the production of cortical interneurons</i>
66	Kunal Shroff (Undergrad)	Calakos	<i>TBD</i>
67	Jonnathan Singh Alvarado (Student)	Mooney	<i>Identifying a learning role for the songbird basal ganglia</i>
68	Divya Subramanian (Student)	Sommer	<i>Bayesian-like and anti-Bayesian judgments of object movement across saccades</i>
69	Saraswathi Subramaniyan (Postdoc)	Terrando	<i>Modulation of neuroinflammation and memory dysfunction using vagus nerve stimulation</i>
70	Janani Sundararajan (Student)	Mooney	<i>A cortical filter that learns to suppress the acoustic consequences of movement</i>
71	Jun Takato (Postdoc)	Wang	<i>Anatomical and molecular deconstruction of the whisking central pattern generator and sensory feedback premotor circuits</i>
72	Nathan Taylor (Other)	Hull	<i>Complex spike modulation during a cerebellar-dependent sensorimotor association learning task</i>
73	Paul Thompson (Student)	Wang	<i>Quantifying responses to touch of rapidly adapting afferents</i>
74	Eric Thomson (Postdoc)	Naumann	<i>Quantitative analysis of the zebrafish optomotor response</i>
75	Marios Tringides (Student)	Mooney	<i>TBD</i>
76	Katherine Tschida (Postdoc)	Mooney, Wang	<i>A midbrain-to-hindbrain circuit for vocalization</i>
77	Aashutosh Vihani (Student)	Matsunami	<i>Semiochemical detection in the mouse main olfactory system exhibits experience-dependent plasticity</i>
78	Jingjing Wang (Student)	Kay	<i>Characterizing cell surface receptor multimeric complexes for homotypic recognition in developing retina circuits</i>
79	Zack Weaver (Student)	Tadross	<i>TBD</i>
80	Shawn Willett (Student)	Groh	<i>Frequency dependent interaction of dual sound representations in monkey inferior colliculus</i>
81	Ashley Wilson (Student)	Glickfeld	<i>Separable codes for behavior in mouse primary visual cortex across attentional states</i>
82	Michael Young (Student)	Grandl	<i>Mechanosensory specializations and their underlying cellular and molecular mechanisms</i>

# List of Attendees

Meredith Achey	Jorg Grandl	Elizabeth Matthews	Miranda Shipman
Fernando Alsina	Tal Greber	Ian Matthews	Kunal Shroff
Jeff Beck	Yael Grossman	J. Patrick Mayo	Jonna Singh-Alvarado
Stuart Behling	Rupali Gupta	Jenna McHenry	Marc Sommer
Mor Ben-Tov	Nathan Hall	James McNamara	Divya Subramanian
Robin Blazing	Victoria Hall	Audrey Mercer	Saraswathi Subramaniyan
Diego Bohorquez	Thomas Harmon	Valerie Michael	Janani Sundararajan
Kevin Bolding	Jordan Hatfield	Akira Min	Michael Tadross
Bonnie BoWell	Mariah Hazlett	Melyssa Minto	Tetsuya Takano
Tyler Bradshaw	Jake Heffley	Aaron Mitchell-Dick	Jun Takato
Sam Brudner	Ashley Henderson (Martfeld)	Jeff Mohl	Nathan Taylor
Nicolas Brunel	Ricardo Hernandez-Martanez	Moawiah Naffaa	Paul Thompson
Caley Burrus	David Herzfeld	Maira Nagai	Eric Thomson
Sasha Burwell	Erin Hisey	Shiva Nagappan	Stefanie Tokiyama
Jon Cafaro	Roarke Horstmeyer	Arthy Narayanan	Marios Tringides
Zachary Caffall	Thuy Hua	Eva Naumann	Katie Tschida
Nicole Calakos	Court Hull	Max Nikitchenko	Fuminori Tsuruta
Corrie Camalier	Dolores Irala	Elizabeth O'Gorman	Brandon Turner
Urann Chan	Yong-hui Jiang	Matt Oliver	Francesco Paolo Ulloa Severino
Bin Chen	Miaomiao Jin	Leslie Osborne	Alex Vaz
Joe Corless	Shuyang Jin	Caitlin Paisley	Aashutosh Vihani
Jamie Courtland	Na Young Jun	Gregory Payne	Jonathan Viventi
Timothy Darlington	Maya Kaelberer	Robin Perelli	Rutesh Vyas
Jennifer David	Breanna Kalmeta	Louis-Jan Pilaz	Fan Wang
Bryson Deanhardt	Boris Kantor	Cameron Prigge	Jingjing Wang
Ping Dong	Jeremy Kay	Jiaxuan Qi	Nick Ward
Fabiola Duarte Ortiz	Matt Kearney	Sivaprakasam Ramamoorthy	Zack Weaver
Shataakshi Dube	Marguerita Klein	Indira Raman	Anne West
Timothy Dunn	Christopher Kozlowski	Juan Ramirez	William Wetsel
Hala El-Nahal	Achint Kumar	Robin Rasor	Shawn Willett
Greg Field	Chay Kuo	Corey Roach	Ashley Wilson
Elizabeth Fleming	Amanda Lewis	Maria Pia Rodriguez Salazar	Dong Yan
Kevin Franks	Jennifer Li	Suva Roy	Haidun Yan
Neil Gallagher	Thiri Lin	Kiersten Ruda	Huanghe Yang
David Gallegos	Steve Lisberger	Kristina Sakers	Rebecca Yang
Maxwell Gillett	Fang Liu	Miranda Scalabrino	Michael Young
Lindsey Glickfeld	Winston Liu	Meredith Schmehl	Yang Zhang
Victoria Goldenshtein	Hiro Matsunami	Charlie Sheehan	