

MSB NEWS

Monthly Newsletter



Department of

MSB Molecular and Systems Biology

Geisel School of Medicine at Dartmouth

Let's stay connected...

As the summer winds down and the academic year begins, your MSB newsletter has returned with many exciting events on the horizon. MSB has partnered with BCB to establish the new Discovery Science seminar series commencing on Monday, September 18 with famed cell biologist Tim Mitchison. The Integrative Neuroscience graduate program also has an exciting line-up of guest speakers. Dartmouth is [inaugurating our new president Sian Beilock](#) and hosting [seven former U.S. Surgeons General to discuss the nation's mental health crisis.](#)



At MSB, we welcome several new members to the department, as well as IND, MCB and QBS 1st year students in classes and research rotations. We have our department retreat in a few weeks and a flurry of activity is underway to renovate lab space on Remsen 6 and 7. There is much to

look forward to!

Remember this is
your newsletter.
Submissions are
welcome [here](#)

GEISEL CALENDAR



SUBMIT CONTENT



MSB CALENDAR



Discovery Science Seminar

“Microtubule drugs and the challenge of
targeting cancer cell mitosis.”

Timothy Mitchison, PhD

Hasib Sabbagh Professor of
Systems Biology
Harvard Medical School



Monday September 18, 2023

12:00pm-1:00pm

Chilcott Auditorium, Vail 120

For more information contact:

Jenni.Hinsley@dartmouth.edu



Discovery Science Seminar

“Regulation of lipid metabolism from the nuclear envelope”

Shirin Bahmanyar, PhD

Associate Professor of
Molecular, Cellular, and
Developmental Biology
Yale University

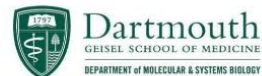


Monday September 25, 2023

12:15pm-1:15pm
Kellogg 200

Host: Chris Shoemaker, PhD

For more information contact:
Jenni.Hinsley@dartmouth.edu



UPCOMING EVENTS

MSB RETREAT



September 26 and 27, 2023
Lake Morey Resort, Fairlee VT



The Future of Mental Health and Wellness

An unprecedented conversation with the current and former U.S.
Surgeons General

Thursday, Sept. 28, 2023

1 to 3:30 p.m.

Alumni Gym, Lewinstein Athletic Center
16 E. Wheelock Street, Hanover

Capacity is limited and registration is required.



Integrative
Neuroscience
at Dartmouth

IND Speaker Series
Wednesdays 9:00-10:00 AM

Date	Speaker	Location
Oct. 4, 2023	Dr. Michael Miller https://www.mbmillerlab.org/home	DHMC Aud. F
Oct. 25, 2023	Dr. Vidita Vaidya https://www.tifr.res.in/~dbs/faculty/V_Vaidya.html	DHMC Aud. G
Jan. 17, 2024	Dr. Lauren Orefice https://www.oreficelab.org	DHMC Aud. H
Feb. 7, 2024	Dr. Tal Kenet https://researchers.mgh.harvard.edu/profile/2747188/Tal-Kenet	DHMC Aud. G
Feb. 21, 2024	Dr. Korie Handwerger (career speaker) https://www.linkedin.com/in/korie-handwerger-phd-cmpp-74b333187/	Kellogg 201
Apr. 10, 2024	Dr. Katie Drerup https://ntp.neuroscience.wisc.edu/staff/drerup-katie/	DHMC Aud. G
May 8, 2024	Dr. Kate M. Wassum https://wassumlab.psych.ucla.edu/people/kate-wassum-ph-d/	DHMC Aud. G

KUDOS

Congratulations to the Dunlap lab for the publication of two articles.

[Domains Required for the Interaction of the Central Negative Element FRQ with its Transcriptional Activator WCC within the Core Circadian Clock of Neurospora.](#)

Wang B, Dunlap JC. J Biol Chem. 2023 May 21:104850. doi:

10.1016/j.jbc.2023.104850. Online ahead of print. PMID: 37220856 Free article.

[A crucial role for dynamic expression of components encoding the negative arm of the circadian clock.](#)

Wang B, Zhou X, Kettenbach AN, Mitchell HD, Markillie LM, Loros JJ, **Dunlap JC**.
Nature Communications 2023 May 17:2023.

Congratulations Havrda Lab.

Kathleen Paul from the Havrda Lab awarded an 2023 Trainee Professional Development Award from the Society for Neuroscience for her abstract entitled, *Function of BRI3 in CD16 monocytes in Parkinson's disease*.

Karl Biggs from the Havrda Lab has been selected for a Nanosymposium presentation at the 2023 Annual Meeting of the Society for Neuroscience for his abstract entitled, *Uncovering the role of microglia derived NLRP3-dependent extracellular vesicles in neuroinflammation*.

Congratulations Juan Mercado Del Valle of the Gerber lab for successfully defendng his PhD thesis!!!

WELCOME TO MSB

Dr. Esteban Orellana



Esteban began his scientific career studying plant-pathogen interactions in his home country of Ecuador before moving to the United States to pursue a Ph.D. in Cancer Biology and Molecular Signaling at Purdue University. While there, he focused on using micro-RNA mimics to treat cancer as part of Dr. Andrea Kansinski's research group. Esteban then moved to Boston to conduct postdoctoral work in the lab of Dr. Richard Gregory at Boston Children's Hospital/Harvard Medical School, where he studied the role of RNA posttranscriptional modifications, or the epitranscriptome, in diseases, specifically cancer. Esteban joined MSB as an Assistant Professor in July and will continue to perform research on the role of RNA modifications, specifically on transfer RNAs (tRNAs), in human cancer and neurological diseases. tRNAs are essential for the production of proteins, and their proper functioning relies on chemical modifications. Despite their reputation as common "housekeeping" molecules, tRNAs are highly regulated, and even small changes in their abundance or nucleotide modification levels can lead to disease states. The Orellana Lab is dedicated to studying the causes and effects of tRNA dysregulation in human disease and developing tRNA-based therapeutics and diagnosis. The lab is currently recruiting at all levels for January 2024.

Dr. Paige Marsland



Paige graduated University at Buffalo in New York with a B.S. in Psychology, where she studied neuronal circuitry of fluid and water balance. She performed both her Master's and PhD in the Behavioral Neuroscience program at Binghamton University, where she studied the influence of adolescent alcohol on neuroinflammation and the HPA axis throughout the lifespan and into neurodegeneration. She is excited to explore the impact of prenatal alcohol on glia and neuroinflammation and how that will impact nervous system development with the Yeh lab.

Dr. Adrianna Milton

Adrianna joins MSB from Case Western Reserve University based in Cleveland, Ohio where she recently defended her thesis research investigating axon regeneration and forelimb recovery after a spinal cord injury. A Florida native, Dr. Milton has performed animal behavioral research for over ten years using rodent models of addiction and neurodegeneration and is keen to begin conducting research using the zebrafish model in the Halpern lab. Dr. Milton is a life-long scholar and Trekkie who enjoys reading and learning about self-development having earned her B.S. in Psychology in 2014.



Dr. Paola Montenegro



As a senior research scientist, Paola is currently working under the mentorship of Dr. Hermes Yeh. Her project is focused on revealing the mechanistic link between prenatal alcohol exposure and the development of Alzheimer's disease. Her background as an M.Sc. in molecular genetics and diagnostics (The University of Nottingham) and Ph.D. and post-doc in neuroscience (Purdue University and Harvard University), has involved gene therapy projects aimed at finding therapeutic strategies to treat Parkinson's and Alzheimer's disease. Her expertise in the manipulation of murine genetic models and stereotaxic brain surgeries in neonatal and adult mice allowed her

to optimize and standardize methodologies of gene delivery into specific areas of the mouse brain. Her long-term career goals are to understand the pathogenic mechanisms underlying neurological diseases in order to develop novel disease-modifying therapies to alleviate the suffering of patients.

Mac Aguirre



MCB graduate student Mac is from Tingo Maria (Peru) and received his bachelor's degree in Biology at Universidad Nacional Mayor de San Marcos (Peru), then a master's degree at Heinrich Heine Universitat Dusseldorf (Germany).

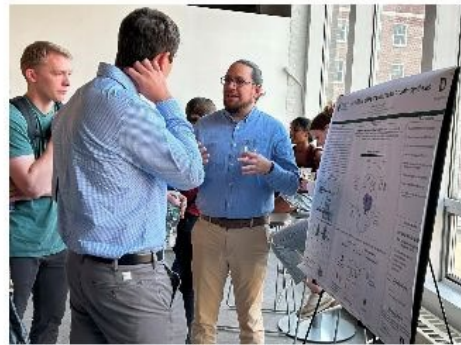
Mac is interested in understanding how human cells control the quality of mature tRNAs (in the Orellana Lab, co-mentored with Dr. Marnie Halpern).

In his free time, Mac helps Peruvian students through the programs "Serendipity Mentorship in Science" and "Research Experience for Peruvian undergraduates". He loves playing basketball, and music.

**Making Summer Better
2023**
Friends, food and fun.



**MCB ORIENTATION - MSB POSTER
SESSION**



RECIPE OF THE MONTH

Fresh Apple Cake, [Sally's Baking Recipes](#)

Ingredients

2 and 1/2 cups (313g) all-purpose flour (spooned & leveled)
2 teaspoons baking powder
3/4 teaspoon baking soda
1/2 teaspoon salt
2 teaspoons ground cinnamon
1/2 teaspoon ground nutmeg
1/4 teaspoon EACH ground ginger & allspice
1 cup (240ml) vegetable oil
1 cup (200g) granulated sugar

4 large eggs, at room temperature
1 teaspoon pure vanilla extract
2 Tablespoons (30ml) orange juice
3 cups (360g) peeled chopped apples (1/2-inch chunks, about 2–3 large apples)

Optional: Brown Sugar Glaze

1/4 cup (1/2 stick or 57g) unsalted

1/2 cup (100g) packed light or dark brown sugar
1 cup (180g) unsweetened applesauce
4 large eggs, at room temperature
1 teaspoon pure vanilla extract
2 Tablespoons (30ml) orange juice
3 cups (360g) peeled chopped apples (1/2-inch chunks, about 2–3 large apples)

butter
1 cup (200g) packed light or dark brown sugar
1/2 cup (120ml) heavy cream
small pinch of salt
1/2 cup (60g) confectioner's sugar, sifted



Instructions

1. Preheat the oven to 350°F (177°C) and grease a 9×13-inch baking pan.
2. **Make the cake:** Whisk the flour, baking powder, baking soda, salt, cinnamon, nutmeg, ginger, and allspice together in a large bowl. Set aside.
3. Whisk the oil, granulated sugar, brown sugar, applesauce, eggs, vanilla extract, and orange juice together in a medium bowl. Pour the wet ingredients into the dry ingredients and whisk until combined. Fold in the chopped apples until combined. It will seem like a lot of apples and that's ok!
4. Pour and spread batter evenly into the prepared pan. Bake for 45–50 minutes. Baking times vary, so keep an eye on it. Around the 30-minute mark, loosely tent with aluminum foil to prevent over-browning. The cake

is done when a toothpick inserted in the center comes out clean.

5. Remove the cake from the oven and set the pan on a wire rack. Allow to cool for at least 30 minutes before topping or serving.
6. Right before serving, you can top the slightly warm cake with a dusting of 2 Tablespoons (15g) confectioners' sugar or make the brown sugar glaze in the next step.
7. **Make the glaze:** As the cake cools, prepare the brown sugar glaze. Combine the butter, brown sugar, heavy cream, and pinch of salt in a medium saucepan over medium heat. Stir constantly until the butter has melted, and then stop stirring and let the mixture come to a rapid boil. Boil for 1 minute. Turn the heat down to low, give it a quick stir, and let simmer for 1 minute. Remove from heat and whisk in the sifted confectioners' sugar. Allow glaze to cool and slightly thicken for at least 20 minutes. Spoon glaze over the cake right before serving. (Cake can still be warm when glazing.) If your glaze thickened up too much as it cooled, warm in the microwave for 15 seconds and stir until smooth.
8. The cake (glazed, dusted, or plain) can be served warm or at room temperature. Cover leftovers and store at room temperature for 2 days or in the refrigerator for up to 5 days. If you topped with a dusting of confectioners' sugar, note that the sugar will melt and disappear into the cake after a few hours.

PET OF THE MONTH

My black cat's name is Aurora after aurora borealis and she's 5. She's extremely opinionated and knows how to use misbehavior to get what she wants because she's really smart. Hank is the tuxedo and he's 1 year old. He barely has functioning brain cells, but he's very cuddly. Their favorite thing to do is sit on the porch and watch birds.

They belong to Kathleen Paul of the Havrda lab.



[COVID-19 Resources](#)

If you test positive for COVID-19, wear a face mask and follow Dartmouth's isolation guidance: <https://covid.dartmouth.edu/isolation-guidance-faqs>.

Students, report your positive test to the Dartmouth College Health Service at dicks.house.nurse@dartmouth.edu.

Faculty and staff, report your positive test to Axiom Medical at 833-408-1338. If you have symptoms or were exposed to someone with COVID-19, read <https://dartgo.org/covid-protocol> for info.



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