



Emergent Mechanisms in Biology of
Robustness, Integration & Organization

Emergence: A biweekly newsletter of discovery, education, and outreach from the EMBRIO Institute

Issue 25: November 1, 2023

DIRECTORS' NOTE

November is [Native American Heritage Month](#), we honor the 19 million veterans who have served in the U.S. military on [Veterans Day](#) (Nov. 11), celebrate [Thanksgiving](#) (Nov. 23), and vote in local elections (don't forget – Nov. 7th nationally is voting day, and early voting times are open now. [Check out who's on your voting ballot, times and locations to vote](#)). Oh, and we “fall behind” on the clocks Nov. 5th – an “extra” hour of rest! ([what is daylight saving time and why was it created?](#))

Thank you to the ABIDES team for organizing and presenting “*The role of culture and communication in mentoring*” mini-workshop last week that provided us with insights into our own individual leanings regarding our Core Cultural Values ([handout](#)) and how this can influence how we mentor and receive mentoring – [view the video session here](#), and check out slides and resources in the ABIDES > [Mentoring folder](#).

Next **Monday the 6th our All-Hands session** (formerly titled Weekly Update) **will feature a tutorial on VCell** by Dr. Michael Blinov with the Center for Cell Analysis and Modeling at UConn Health. **To those of you interested in learning more about computational modeling - this November 6th seminar is for you!** There are many different platforms for modeling cell biological events, and LinLin Li covered using Python and MatLab earlier this semester. This Monday's seminar will be about the platform called VCell (short for "Virtual Cell") is a comprehensive platform for modeling cell biological systems. The seminar by Dr. Michael Blinov, one of the faculty associates of VCell, will cover what VCell can do for you -- with the added bonus that VCell can write and solve differential equations for you!

Check out these VCell links for more on the capabilities and models of this tool:

1. VCell website: <https://vcell.org/>
2. Publications that use VCell: <https://vcell.org/vcell-published-models>
3. VCell help: <https://vcell.org/support>:
4. Video tutorials: <https://www.youtube.com/@compcellbiol8898>

Please note the changes in the format and frequency of our regular Weekly update. As the Institute has evolved, we aim to best organize a regular all-hands meeting that reflects the diverse needs of our community. Taking into consideration all the input we've gathered, and to best accommodate the need for thrust level meetings that are not already taking place, **a regular All-Hands meetup will move to a biweekly schedule** (see the remaining schedule in this issue). The two weeks per month that we *don't* meet will allow thrust leaders to organize their own meetings for the blocked 3-4pm Monday times. Starting now, we will hold an all-hands online meeting bi-weekly rotating with either a research seminar or professional development offering. Starting Spring semester, we will feature a thrust level progress/collab report-out once a month. This will allow everyone to hear each of the four research

thrusts on progress, challenges, upcoming activities once per semester and encourage more cross-thrust discussions.

Purdue labs looking/planning for undergraduate researchers now or next summer (and our partner institutions who have students who want to come to Purdue), Brent has been in touch with the Engineering Undergraduate Research Office. See the info from Kay Kobak, their new Assoc. Director in this issue.

The graduate students in biology education research at Purdue have organized a seminar series with the next seminar this Friday, November 3rd at 11:30 am ET in [Zoom](#). Dr. Emily Holt (U of N. Colorado) and Postdoctoral Scholar Ash Heim (Cornell) will be presenting *What Do Teaching Philosophy Statements Tell Us?*

We want to hear about your news and announcements. Send them to Brent (laddb@purdue.edu) by November 10th for inclusion in the next issue of *Emergence*.

David, Chris, Stephanie, Anjali, Janice, Jeremy, and Brent

Notable Quote

“[No matter what you do, whether it’s science or not], take the time to discover who it is that you are, and then...be true to what that person is,” Dr. Paquita Zuidema, atmospheric scientist at the University of Miami, Florida. ([hear the full set of audio interviews on sage advice from scientists to students](#))

QUICK LINKS

[ABIDES Culture and Mentoring resources](#)

[VCell website](#)

[Weekly Update Meeting Recordings](#)

EMBRIO ABIDES (Access, Belonging, Inclusion, Diversity, Equity, Support)

Dr. Anjali Iyer-Pascuzzi, EMBRIO ABIDES Director and Professor at Purdue, leads activities for Institute members. A series of mentoring topics have been presented at the beginning of Weekly meetings, and a continuation of the Mentoring Panel topics from the annual retreat was presented October 23rd during the EMBRIO Weekly with a deeper dive into how culture impacts our mentoring and team thinking.

BTW, if you missed “The role of culture and communication in mentoring” mini-workshop – [view it here](#), or the previous “mentoring snacks” check out the slides and resources in the ABIDES > [Mentoring folder](#), and listen to “[The Secret of Great Teams](#)” episode of The Hidden Brain podcast.

JOURNAL CLUBS

Journal Club on Calcium Imaging Techniques meets Monday’s 11am ET

Due to the need within our EMBRIO community to process and analyze Ca²⁺ Images, Dr. Norma Perez Rosas (nperezro@purdue.edu) is helping lead this club in discussing papers regarding methods and tools for analyzing calcium imaging. **The goal, beyond integrating these techniques, is to write a review paper.** The Club is meeting weekly on Mondays at 11am. Please contact Norma about participating.

Journal Club on Multimodal Functions of Calcium in Tuning and Regulating Cytoskeleton Networks

Please contact Dr. Linlin Li (li2212@purdue.edu) for information. The club is in the writing stage for organizing and publishing a review paper on the topic. It isn't too late to join. Here is the link to the current working documents:

https://docs.google.com/document/d/1Cpg77yjtioWiluRmiDMCcAiAd4jNNX_J7s64RQk8xOU/edit?usp=sharing

Undergraduate Researchers Opportunities for EMBRIO Labs and Students

Note from Kay Kobak, Assoc. Dir., EURO, Purdue:

Hello Undergraduate Research Allies,

Thank you to those of you who have already posted a [First Time Researcher project](#). We are still **inviting faculty project postings** but **the final date to post is TODAY, WEDNESDAY (11/1)**. I've maintained a table below of all our opportunities so you can keep them in mind moving forward.

We will also be asking for SURF applications in the coming weeks, so begin to think about your Summer 2024 needs now.

?

Program Name	Description	Student Compensation	In-Lab Time Commitment	Funding provided by	Call for applications*
First Time Undergraduate Researcher (FTR) Fellowship	Spring Semester program for undergraduate students who haven't conducted a full semester of college level research before (students you began mentoring this semester are welcome to apply).	A total of \$1000 scholarship.	~10 hours of in-lab time/week	Cost shared 1:1 between EURO and the lab.	Accepting project proposals NOW for Spring 2023 here . Applications close Wednesday 11/1
Summer Undergraduate Research Fellowships (SURF)	Summer program for both Purdue Internal and external students, full time research experience.	A total of \$6000 paid over 12 weeks.	30-40 hours/week	Cost shared 1:1:1 between EURO, the College, and the lab.	Summer 2024 cohort proposals to open in November

OUR Scholars	Full-time undergraduate researcher for TWO semesters.	\$1000 scholarship (\$500/semester)	By agreement with faculty	Cost shared between OUR and the College	Fall 2023/Spring 2024 application closed.
First Year Investigator's Program (Office of Undergraduate Research)	Fall semester program for First-Year students.	\$15/hour	6-10 hours/week	Office of Undergraduate Research	Fall 2023 application closed

**if you have already identified a student you wish to work with for a given time period, we still ask you post the project so we can maintain that information for our records. We can expedite the selection process and then close the project to other applicants if you already have someone in mind.*

Additional opportunities if you're currently hosting undergraduate researchers:

[EURO Travel Grant](#): For Purdue affiliated undergraduates who will be presenting their research at a conference - \$500 awarded by EURO

[OUR Fall Expo](#): While the abstract deadline has passed for those wishing to give a talk, undergraduate researchers can still request to present virtually or give a poster Nov. 14-21.

Other undergrad researcher funding opportunities can be found [here](#), [here](#), and [here](#).

Please feel free to reach out if you have any questions,

Kay Kobak, Ph.D.

she, her, hers

Associate Director, Engineering Undergraduate Research Office

DUDL 2526 | o.765-496-2349 |

STUDENT LEADERSHIP COUNCIL CORNER

The SLC is recruiting new officers to represent your university and your perspective for EMBRIO. Reach out to David Gazzo (dgazzo@nd.edu), incoming president, for more information, and [log your ideas for future topics or events](#) that the SLC could organize. [Access SLC slides and documents](#), and consider [signing up to give or receive mentoring](#) for/from EMBRIO trainees in helping support and orient to the EMBRIO mission and interdisciplinary framework.

EMBRIO SUMMER WORKSHOP RESOURCES

EMBRIO Institute's 2nd Annual Summer Training Workshop took place July 10-12. [Workshop Schedule of Sessions](#). Hosted by Dr. Jeremiah Zartman at the University of Notre Dame with a theme of *Image Acquisition, Processing, and Analysis*, tutorials and hands-on sessions were specifically aimed at benefiting

trainees from both computational and experimental domains. Slides, handouts, and video recordings from this workshop are available on our shared Box account: <https://app.box.com/s/mzo5ihlqiq4tfeig2psx2l6rmmdxto0c>

EMBRIO ALL-HANDS ANNUAL RETREAT MATERIALS

EMBRIO Institute’s Annual Retreat was hosted in the Weldon School of Biomedical Engineering on the Purdue University West Lafayette Campus, July 13-14, 2023. The annual retreat brought together the large majority of EMBRIO members in one physical place, with more than 60 of us engaging in research talks, poster presentations, programmatic discussions, and informal gatherings. Slide decks and posters from the annual retreat can be accessed here: <https://app.box.com/s/rmsiuvydlsccecxzhugyjp2b5v72xl9l>

UPCOMING DEADLINES, IMPORTANT DATES, & INFO

EMBRIO All-hands Meeting Schedule, Monday’s 3-4pm ET. [Zoom link](#). [Weekly Update Meeting Recordings](#)

Aug	14	Benchling Workshop - SLC (Feyisayo)
Aug	21	Student Leadership Council - Grads and Postdocs Only Session
Aug	28	Faculty Investigators Only
Sept	4	Labor Day no meeting
Sept	11	Dr. Linlin Li: Part I: Solving mathematical modeling with ODE or PDE in MatLab or Python (Google Colab)
Sept	18	Dr. Linlin Li: Part II: Solving mathematical modeling with ODE or PDE in MatLab or Python (Google Colab)
Sept	25	Dr. Adrian Buganza Tepole: Part I: Physics informed machine learning
Oct	2	Dr. Adrian Buganza Tepole: Part II: Physics informed machine learning
Oct	9	Fall Break - no meeting
Oct	16	Open Discussion and Thrust Project Breakout Rooms
Oct	23	ABIDES: Culture, Mentoring, & Teams Mini Workshop
Oct	30	No meeting. Thrust Leads organize own meetings
Nov	6	VCell tutorial by Dr. Michael Blinov, Center for Cell Analysis and Modeling, UConn
Nov	13	No meeting. Thrust Leads organize own meetings
Nov	20	Dr. Weiwei Zhang, Staiger Lab, Thrust 2 Integrations
Nov	27	No meeting. Thrust Leads organize own meetings
Dec	4	Javier Muñoz (Brubaker/Green Lab)
Dec	11	No meeting. Thrust Leads organize own meetings
Winter Break		

November 3, 2023. Biological Sciences Seminar Series. The graduate students in biology education research at Purdue have organized a seminar series with the next seminar this Friday, November 3rd at 11:30 am ET in [Zoom](#). Dr. Emily Holt (U of N. Colorado) and Postdoctoral Scholar Ash Heim (Cornell) will be presenting *What Do Teaching Philosophy Statements Tell Us?*

January 2 – 6, 2024. BMES – CMBE Conference. San Juan, Puerto Rico. Accepting abstracts – deadline September 12. Conference details: <https://www.bmes.org/cmbe2024>

BII Annual Conference - January 22nd - Hold the Date. Details on the agenda will be shared when available. NSF is planning a hybrid one day meeting. Expecting most will be virtual, with a few of us in person at NSF headquarters.

March 6-10, 2024. The Allied Genetics Conference (TAGC24). Washington D.C. (Genetics Society of America). <https://genetics-gsa.org/tagc-2024/> Note: EMBRIO is organizing a workshop for this conference. More TBA.

Hot Off the Press: New EMBRIO Journal Papers

Let us know about new papers you want to highlight for the EMBRIO community!

REMINDER: EMBRIO Acknowledgement for Scholarly Papers and Posters.

For EMBRIO related research publications, NSF requires acknowledgement of EMBRIO NSF funding for our Institute to claim the work in our reporting back to NSF. Please include the following acknowledgement in your journal and conference papers and posters: **“This work is based upon efforts supported by EMBRIO Institute, contract #2120200, a National Science Foundation (NSF) Biology Integration Institute.”**

New Lab Members?

Did you recently have new students or staff members join your EMBRIO projects? We want to add them to the listserv, Box account, demographics survey, and Personnel List for ensuring their inclusion in communications and participation. If they are not already on our Personnel spreadsheet (<https://app.box.com/s/frd9275xc069gmtbe3y1osoz1j7ssk7>), or they have graduated, let Brent know their names and email contacts (laddb@purdue.edu)

Submit your items for the next newsletter by **Nov. 10th** to Brent (laddb@purdue.edu)