



Emergent Mechanisms in Biology of
Robustness, Integration & Organization

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

Issue 11: January 18, 2023

DIRECTORS' NOTE

This week is Diversity Awareness Week – celebrating Martin Luther King, Jr.'s leadership and incomparable efforts to establish equal rights and dignity for all that inspire so many today. We're announcing a **NEW section in this issue titled ABIDES** (Access, Belonging, Inclusion, Diversity, Equality, Support) that will be a regular corner of *Emergence* newsletter where members can learn about resources and upcoming Institute focused diversity activities. We are excited about the activities planned for this semester. Be sure to check these out!

January is National Mentoring Month. The NIH *Raising a Resilient Scientist* series continues today and into Feb. and March, with details listed below (you can access the recordings of previous topics).

This coming **Monday the 23rd, the Weekly Update will be devoted to a students and postdocs only professional development session on "Demystifying the Craft of Developing an Aims Page"**. All students and postdocs were emailed details for participating in this session of the Grant Writing Professional Development series. Members can access all previous Weekly Update research talks on our Institute Box cloud account in the "[Weekly Meeting Recordings](#)" folder. These are available *only for internal use* (unless PI gives permission).

Also, in this issue we recognize **new trainee and faculty members who have joined the Institute** during the past few months, along with highlighting the graduate and undergraduate student members serving on the **recently formed Student Leadership Council**. Things are just getting started with the new SLC, with great ideas and much more to come that will engage the entire student membership this Spring semester.

A quick note, with more details coming soon, we just received notice that we've been **awarded an Innovation Hub grant** from Purdue that will support the Institute to begin development of a cross-listed course serving the needs of undergraduates and first-year graduate students to best prepare them for research activity in EMBRIO.

A reminder that new members, or old members, who have not yet participated in the **Institute evaluation interview** with Soumi Mukherjee, please schedule this via the new When to Meet Poll <https://www.when2meet.com/?18327719-shNWM>

We want to hear about your news and announcements. Send them to Brent (laddb@purdue.edu) by January 27 for inclusion in the next issue of *Emergence*.

David, Chris, Stephanie, Anjali, and Brent

Notable Quotes

"Progress in science depends on new techniques, new discoveries and new ideas, probably in that order" -- Sydney Brenner (2002 Nobel Prize in Physiology or Medicine)

"Injustice anywhere is a threat to justice everywhere." – Martin Luther King, Jr.

QUICK LINKS

ABIDES Monthly Informal Trainee Lunch Group with DEI Director in DLR 228c, Purdue campus. Noon – 1pm Jan. 24. [Zoom link for those off campus.](#)

[ABIDES meet-up Mondays 2:30 - 3 pm Zoom link](#) (starts Feb. 13)

[Grants Writing Series](#) Box folder

[Schedule Your One-on-One Interview with Soumi](#)

[RAISING A RESILIENT SCIENTIST](#) NIH series

[Weekly Meeting Recordings](#)

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

DEI is transitioning to our new acronym, ABIDES (Access, Belonging, Inclusion, Diversity, Equality, Support). Anjali Iyer-Pascuzzi, EMBRIO DEI Director and Associate Professor at Purdue, will lead several activities for Institute members this semester. Tune in for her presentation at the Weekly Update on January 30. New ABIDES activities for this semester (Zoom links will be shared in the ABIDES folder in the EMBRIO BOX account):

- **ABIDES meet-up Mondays 2:30 - 3 pm via Zoom** before our weekly seminar. This is an opportunity for anyone to chat with Anjali about ABIDES-related issues - concerns, questions, things you'd like to see improved, etc. The first meet-up will be on **Feb. 13** at this link: <https://purdue-edu.zoom.us/j/91942543564>
- Anjali is starting **monthly informal meetings with students and postdocs** in person and through Zoom. Learn about things happening in EMBRIO and talk about a monthly theme (mentoring, careers, making science accessible, etc)! Lunches are BYO but Anjali will provide dessert.

The first one is **Tuesday, Jan 24, 12 – 1 pm** in DLR Room 228c (EMBRIO Suite)

Theme: **Introductions and what do you want from ABIDES this year?**

Zoom link for those off campus: <https://purdue-edu.zoom.us/j/98297622411?pwd=eVkeURQWUtValVxa2dQRVfVUWFodz09>

Meeting ID: 982 9762 2411
Passcode: 291647

EMBRIO TRAINEE PROFESSIONAL DEVELOPMENT *GRANTS* SERIES

These sessions are held during the regular Weekly Update time on Mondays at 3pm ET using the zoom link established for Spring semester. The next session in the series is scheduled for January 23, 3pm ET: De-Mystifying the Craft of Creating an Aims Page. Materials and instructions for this session can be accessed on EMBRIO Institute Box > Trainee Professional Development > [Grants Writing Series](#)

November 28th : The Grants Process and Federal Granting Agencies – Faculty Panel ([recording](#))

January 23rd : De-Mystifying the Craft of Creating an Aims Page

February 20th : Students present draft Aims page for Peer-Feedback (Jazzmin Owens and Peter Brumm share their aims pages)

March 27th: Students present draft Aims page for Peer-Feedback. Volunteers wanted!

MEMBERSHIP SPOTLIGHT: EMBRIO STUDENT LEADERSHIP COUNCIL

This past summer, during the EMBRIO annual meeting, students in the Institute gathered for an informal discussion to decide the level of interest in forming a leadership council that could represent and support student interests, development, needs, concerns, and ways to network socially. With an affirmative yes from all present, efforts started during Fall semester on the formation, mission, and goals of the council, while also drawing on participation from all Institute Partners. Stay tuned for a Spring semester calendar of social activities as well as professional and personal development offerings! The Institute Directors would like to thank these students for their work in forming and serving on the EMBRIO Student Leadership Council:

Indiana University
Saumya Hetalbhair Mehta

Morehouse University
Jazzmin Owens

Notre Dame University
David Gazzo

University of Pennsylvania
Bakary Samasa

University of Puerto Rico

Chiana Barski
Liz Teran

Purdue University
Feyisayo Priscilla Akande
Peter James Brumm
Morgan Alexis Murff

MEMBERSHIP SPOTLIGHT: Welcome New Members

We welcome into the fold the following students and faculty that have joined EMBRIO during the Fall semester. As our membership grows, you can check out the updated membership listing on our Box account ([Personnel file](#)). Especially helpful for me (Brent) to keep this list up to date, is if PI's can send me names and emails of students and postdocs that join their lab, or graduate.

- Lauren Hawthorne, PhD Grad, Notre Dame (Zartman Lab)
- Stephen Cini, PhD Grad, Notre Dame (Zartman Lab)
- Saumya Mehta, PhD Grad, Indiana (Glazier Lab)
- Sai Kodetham, PhD Grad, Indiana (Glazier Lab)
- Greg Reeves, Assoc. Prof. Texas A&M
- Priyanka Baloni, Asst. Prof. , Purdue
- (Aby) Abasiafak Udosen, PhD Grad, Purdue (Magana Lab)
- Joreen Arigye, PhD Grad, Purdue (Magana Lab)
- (Alex) Hong-Anh Alexandria Nguyen, PhD Grad, Purdue (Chan Lab)
- Nicole Branca, MS Grad, Purdue (Evans Lab)
- Shams Mowafak Saad, PhD Grad, Purdue (Evans Lab)
- Abigail (Abbie) Rogers, PhD Grad, Purdue (Iyer-Pascuzzi Lab)
- Shaheryar Ahmad Kahn, MS Grad, Purdue (Kinzer-Ursem Lab)
- Mothieshwar Jayaraman Krishnan, PhD Grad, Purdue (Umulis Lab)
- Ziyu Dong, PhD Grad, Purdue (Zhang Lab)

UPCOMING DEADLINES, IMPORTANT DATES, & INFO

Weekly Research & Education Zoom Meetings Spring Semester, Monday's 3 – 4 pm.

Spring Semester new Zoom link:

<https://purdue-edu.zoom.us/j/99819751005?pwd=UVlvWVpxRDB0cDVXbmxBU1NUTEZGZz09&from=addon>

- January 9 – Krishna Jayant, Asst. Prof., BME, Purdue
- January 16 – Martin Luther King, Jr. Day – No Meeting, please volunteer locally
- January 23 – Trainee Professional Development, Grants Series Session #2
- January 30 – Anjali Iyer-Pascuzzi, Assoc. Prof., BPP, Purdue, DEI Director, EMBRIO
- February 6 – Thrust & Site Leads Update Meeting
- February 13 – Priyanka Baloni, Asst. Prof, HHS, Purdue
- February 20 – Trainee Professional Development, Grants Series Session #3
- February 27 – Bakary Samasa, Mary Mullins Lab
- March 6 – Thrust & Site Leads Update Meeting
- March 13 – Spring break, no meeting

- March 20 – Open
- March 27 - Trainee Professional Development, Grants Series Session #4
- April 3 – Thrust & Site Leads Update Meeting
- April 10 – TBD
- April 17 – TBD
- April 24 – TBD
- May 1 – Thrust & Site Leads Update Meeting
- May 8 – Javier Munoz, Brubaker Lab

Weekly Update Zoom Breakout Rooms:

Are you looking for a collaborator? Would you like to get conversation started about a specific research topic with other EMBRIO members? Email me (Brent, laddb@purdue.edu) with your breakout room topics for upcoming Weekly Update sessions.

Nov. 9, 2022 – March 8, 2023. NIH [RAISING A RESILIENT SCIENTIST](#) series.

Jan. 13, 2023: EMBRIO REU Purdue campus student nominations and project details due for first consideration. Please complete the [online survey](#) to submit your project details, and student information if you have a student already in mind.

Feb. 9-10, 2023. EMBRIO Thrust & Site Leaders Workshop. Indiana University.

March 3, 2023. NSF – EMBRIO Virtual Site Visit, 10 am – 1pm ET. [Link to participate.](#)

July 10-12, 2023. EMBRIO Trainees Workshop, Notre Dame University. More information forthcoming.

July 13-14, 2023. EMBRIO All-Hands Annual Meeting, Purdue University. More information forthcoming.

INSTITUTE EVALUATION: SIGN UP FOR YOUR ONE-ON-ONE INTERVIEW (hint: it's mandatory)

“My name is Soumi Mukherjee, and I am a Graduate Student at the Department of Biological Sciences at Purdue. Along with my advisor Dr. Stephanie Gardner, I will be conducting an institute wide evaluation study as a part of Thrust 4 initiative. The process will help in capturing your experiences as a member of EMBRIO, which will be utilized to create a formative evaluation report for NSF at the end of each year. Your participation will not only aid in furthering the goals of the institute for providing an interdisciplinary collaborative environment essential for promoting knowledge integration across all the four thrusts, but also enable us to structure activities catered towards your own professional development.

If you are a member of the EMBRIO institute currently doing a research project, we would like to invite you for participating in this study. Participation in the evaluation process is MANDATORY for all the members of the institute.

As a part of the evaluation process, you will take part in an online session (via Zoom), which includes an interview and a brief survey, and the entire process should be completed in less than an hour. Interviews will be conducted annually for the total duration of your participation in the institute and the session would not exceed an hour and would be completed in a day.

Please fill in all the times you may be available for our interviews using the link below with either your name or email address. This information is requested so that we may contact you to set up an online session, but we will use a randomly generated 4-digit code in place of your name to identify all your information for the data collection and analysis.

<https://www.when2meet.com/?18327719-shNWM>

Your participation will not affect any aspect of your association with the EMBRIO institute. If you have any doubts regarding the evaluation process, please reach out to me at mukher42@purdue.edu.”

With Regards
Soumi

NIH Raising a Resilient Scientist Series

The NIH OITE is pleased to offer the [RAISING A RESILIENT SCIENTIST](#) series for faculty, staff scientists, and administrators who mentor students and postdoctoral fellows in the biomedical, behavioral, and social sciences. The goal of the Raising a Resilient Scientist series is to promote the mental health and well-being of the academic research community by supporting faculty and administrators to develop self-management, relationship-management, and mentoring skills.

For questions regarding this series, please contact the OITE at OITE@mail.nih.gov Please include "PI Series" in the subject line.

All webinars will be recorded and are available 24 - 48 hours after the session using the links posted below.

Raising a Resilient Scientists Units	Workshop Date	Registration
Communication Skills to Build Trainee Resilience	Nov 9, 2022 12:00-2:15 pm ET	Webinar: https://nih.zoomgov.com/meeting/register/vJlsdeyhrjwsG3qSl89jFIF9zUdzoYlz4Vw Recording: https://nih.zoomgov.com/rec/share/MR7KLeoKyuMY8r7gr5bxhR9jY-3kdebR2-PUW6e29F6YKbnf3MILLpJsnOQWcsVi.ZSS3NyL55v9wPalA
Promoting Trainee Resilience	Dec 14, 2022 12:00-2:15 pm ET	https://nih.zoomgov.com/meeting/register/vJlsc-uvpzovGbw2kGLBSbihRcERfN2raTc Recording: https://nih.zoomgov.com/rec/play/bm1NfesB3y-AoFUe6zOvn-ALx1jzYIb7mOIXDdShsDDZyX0JG9WHDDuoPOPdGknfEg-81n7OhvSwWpuNf.eYt3v1UYKs9HIn7E

Building a Welcoming and Inclusive Research Group	Jan 18, 2023 12:00-2:15 pm ET	https://nih.zoomgov.com/meeting/register/vJltcOurqjojGtH9Y_zDJPVHhg2Nm6zWNb0
Difficult Conversations, Conflict, and Feedback	Feb 8, 2023 12:00-2:15 pm ET	https://nih.zoomgov.com/meeting/register/vJlsc-CgrTsiHfcOa91MnLLO-REQmdOQ2l
The Mental Health and Well-being of Your Trainees	Mar 8, 2023 12:00-2:15 pm ET	https://nih.zoomgov.com/meeting/register/vJlscuCpqT4pEzjHEmDI2E604ncYzhOrhm4

There is no charge for participation, but advanced registration is required. For more information, and to register, please visit their [webpage](#). Participation in the entire series is recommended but is not required.

Hot Off the Press: New EMBRIO Journal and Conference Papers

Simultaneous inhibition of the Arp2/3 complex and formins enhances *de novo* actin filament nucleation in *Arabidopsis*

Liyuan Xu, Lingyan Cao, Jiejie Li, Christopher J. Staiger

bioRxiv 2022.08.03.502536; doi: <https://doi.org/10.1101/2022.08.03.502536>

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

REMINDER: EMBRIO Acknowledgement for Scholarly Papers.

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.”**

Conference Presentations:

Let us know about your conference presentations.

Awards

Innovation Hub Grant. **“Design and Instruction of a Team-Based Transdisciplinary Cross-Listed Course in Computational Understanding of Biological Systems and Data.”** EMBRIO PIs: Brent Ladd, Janice Evans, Alejandra Magana, Elsje Pienaar. Funded

via Office of the Provost, Purdue's Lilly Endowment award for Transformative Education 2.0. Project period 01/23 – 8/23.

Open Positions

Postdoctoral Fellow Position in Interdisciplinary Biomedical Research and Data Science, Purdue University

A full-time postdoctoral fellow position is available immediately for interdisciplinary research in computational systems biology and collaborative data science at Purdue University. The postdoctoral position is associated with EMBRIO (Emergent Mechanisms in Biology of Robustness, Integration, and Organization), an NSF Biology Integration Institute with six university partners. The postdoctoral fellow will be broadly involved in the EMBRIO Institute, with efforts engaged in computational systems modeling and simulation research, as well as building expertise, guidance, and collaboration support and research in data management and data analysis for EMBRIO teams. The postdoctoral fellow will conduct research under the guidance of Dr. Elsje Pienaar (<https://engineering.purdue.edu/PienaarLab>) and be co-advised by Dr. Adrian Buganza Tepole (<https://engineering.purdue.edu/tepolelab/>).

As part of the work with the Pienaar lab the fellow would build and calibrate computational models of Calcium signaling in multicellular environments and its diverse downstream effects. Together with the Tepole lab the fellow would work to leverage machine learning (ML) tools to speed up and automate model evaluation, and to complement closed-form models with multi-modality ML metamodels for improved accuracy. The work is highly interdisciplinary and highly integrative across multiple systems. The fellow will work closely with experimental experts in zebrafish, plant and tissue culture biology within the EMBRIO Institute to build and parameterize the models. The fellow will also have opportunities to work closely with other computational faculty, staff and students on innovating new ways to integrate and analyze models and data across biological scales and systems.

As these specific projects progress, the postdoctoral fellow will have the opportunity to collaborate with investigators and interdisciplinary teams to research and deliver secure systems of data collection, storage, sharing, and analysis to produce new and actionable knowledge. This work will research and provide regular guidance and training in data science best practices and serve as a point of contact for all things data related. The postdoctoral fellow will have the opportunity to co-write proposals and to develop research components around the data-rich interdisciplinary modeling and simulation environment of EMBRIO.

A Ph.D. degree in Data Science, Computer Science, Biomedical Engineering, Chemical Engineering, Mechanical Engineering, Mathematics, Physics or related fields is required. Previous experience in computational modeling, systems biology, stochastic modeling, numerical methods, and associated statistical analysis, data science, or research data management is desired. Successful applicants will be detail oriented, eager to learn new methods, and enthusiastic about computationally rigorous modeling, collaborating across disciplines, working

with experimental biologists and chemists, and advancing and supporting the research data realm of EMBRIO Institute. Salary to be negotiated.

To apply for this position, please submit to Dr. Pienaar (epienaar@purdue.edu) and Dr. Buganza Tepole (abuganza@purdue.edu): (1) your CV, (2) a cover letter explaining your background, interest and qualifications for the position, and (3) contact information for three references, including your relationship to the reference, their phone number, email address, and mailing address. Please contact Dr. Pienaar (epienaar@purdue.edu) for formal inquiries.

Postdoctoral Fellow Position in Interdisciplinary Biochemical Cancer Research, University of Notre Dame

A full-time postdoctoral fellow position is available immediately for Multidisciplinary Cancer Research at the University of Notre Dame, affiliated with the Harper Cancer Research Institute, the Notre Dame Warren Drug Delivery Center and Notre Dame Institute for Precision Health. The perspective candidate will conduct an interdisciplinary research on projects studying the basic molecular mechanisms of multiple birth defects, cancer progression and neurodegeneration and developing novel therapies to combat them. The postdoctoral fellow will receive crossdisciplinary training in biochemistry, cell biology, synthetic organic chemistry, and drug discovery utilizing a broad range of biochemical assays related to phenotypic screening and protein-protein interactions. The postdoctoral fellow will conduct research under the guidance of a mentoring team, including Dr. Jeremiah Zartman (<http://sites.nd.edu/zartmanlab/>) and Dr. Brandon Ashfeld (<https://ashfeldlab.nd.edu/>).

A Ph.D. or M.D. degree in cell or molecular biology, genetics, biochemistry, chemistry or a related discipline, is required. Previous experience in genetics, screening technologies and associated statistical analysis, synthetic chemistry, imaging or mouse modeling is desired. Successful applicants will be detail oriented, eager to learn new techniques, and enthusiastic about biology, exploring the interface between chemistry and biology, and working in an academic lab environment. Salary is commensurate with experience.

To apply this position, please submit: (1) your CV, (2) a cover letter explaining your background, interest and qualifications for the position, and (3) contact information for three references, including your relationship to the reference, their phone number, email address, and mailing address. Please contact Dr. Jeremiah Zartman (jzartman@nd.edu) or Dr. Brandon Ashfeld (bashfeld@nd.edu) for formal inquiries.

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/frd9275xc069gmtbe3y10soz1j7ssk7>), or they have graduated, let Brent know their names and email contacts (laddb@purdue.edu)

Submit your items for the next newsletter by Jan. 27 to Brent (laddb@purdue.edu)