



Emergent Mechanisms in Biology of  
Robustness, Integration & Organization

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

Issue 5: October 5, 2022

## **DIRECTORS' NOTE**

Dear EMBRIO Members,

As summer fades and autumn takes its place, we shift into top gear for a busy October. The [Biomedical Engineering Society \(BMES\) 2022 Annual Meeting](#) runs from October 12-15, and this year's NSF BII Annual Meeting is the following week, taking place online October 18 - 19. Thanks to everyone that has [signed up](#) to represent our Institute at the BII meeting. All EMBRIO members are welcomed and encouraged to participate (schedule with Zoom link attached).

We want to call your attention to the internal **request for proposals for leadership positions to expand diversity, equity, inclusion, and broadening participation** activity for the Institute. Details on the RFP (due by Oct. 24) were emailed to investigators last Wednesday. The [RFP is available on our Box account](#). Please contact Brent ([laddb@purdue.edu](mailto:laddb@purdue.edu)) if you are interested in submitting a proposal.

Thanks to all who have completed surveys, interviews, presentations, and provided input to continually improve the Institute. A reminder that Soumi Mukherjee in Stephanie Gardner's lab is conducting research on the interdisciplinary nature of the Institute and will be incorporating results as part of the overall evaluation component for EMBRIO. If you haven't yet had a chance, please complete the [online schedule for one-on-one interviews](#) with her this semester.

**In honor of Indigenous People's Day and Hispanic Heritage Month, on October 10 we will not meet for our Weekly Update.** We invite you to learn more about [Hispanic Heritage Month](#), and to find ways to learn about and honor indigenous peoples that were and are inhabiting the location where you live. We'll return October 17 to engage with presentations from the Kinzer-Ursem Lab.

We want to hear about your news and announcements. Send them to Brent ([laddb@purdue.edu](mailto:laddb@purdue.edu)) by 10/14 for inclusion in the next issue of *Emergence*.

David, Chris, Stephanie, Brent, and Carl

## **QUICK LINKS**

[EMBRIO Internal RFP for DEI and BP Positions](#)

## [BII Meeting Participation sign up](#)

## [BII Meeting Zoom Link](#)

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

**Propose Breakout Room Topics during Weekly Updates (Email Brent: [Laddb@purdue.edu](mailto:Laddb@purdue.edu) )**

## **BII NSF ANNUAL MEETING**

This year's BII NSF Annual Meeting is taking place online October 18 - 19. Thanks to everyone that has signed up to attend. All EMBRIO members are welcomed and encouraged to participate. There are break out topics on Oct. 18 from 2-3 that will be useful to learn from, and the Team Science session with Jeni Cross (CSU) 10 – 11 am, Oct. 19 has been promised to deliver the goods. The full agenda for the conference is attached.

**Zoom Link for all sessions:**

<https://nsf.zoomgov.com/j/1611186556?pwd=V2lIM0lJNVBWMFNMeWFxeHBzeC8vQT09&from=addon>

**Meeting ID:** 161 118 6556

**Passcode:** 027598

**Phone:** 669 254 5252

## **INSTITUTE RFP FOR DEI AND BP POSITIONS**

Diversity, equity, inclusion, and broadening participation are crucial to the overall growth and success of EMBRIO, and directly to our trainees as next generation scientists. The Institute will expand its Leadership Team with one to two new faculty-led positions. All EMBRIO investigators interested in an active, leadership role focused on DEI and/or REU programs are invited to [apply via the internal RFP](#) (available on Box: EMBRIO Institute > EMBRIO RFP). Collaborative proposals are also welcomed. Contact Brent ([laddb@purdue.edu](mailto:laddb@purdue.edu)) if you are interested in applying. Deadline for proposals is October 24.

## **CELEBRATING HISPANIC, AND INDIGENOUS PEOPLES**

EMBRIO will pause our Weekly Update on Oct. 10 in honor of both Hispanic Heritage Month and Indigenous Peoples Day. The month-long period from September 15 – October 15, is nationally recognized as Hispanic Heritage Month. We especially recognize all EMBRIO members who identify as Hispanic. All members are encouraged to learn more about Hispanic culture and language, and events at the [National Hispanic American Heritage Month](#) activity site. Javier Muñoz, Ph.D. candidate and LATInE Fellow, is featured in this issue's Member Spotlight.

Monday, October 10, is now celebrated as Indigenous People's Day. Around 300 distinct languages were spoken in North America prior to European contact. According to the Bureau of Indian Affairs, there are 574 nationally recognized Native American tribes. However, during the Pre-Columbian era, there were thought to be over 1,000 Native American civilizations, all residing within what we would consider the United States today. In light of many decades of aggrandizing Columbus on this date in the U.S., the second Monday of October is especially a day to reflect upon and honor the voices, cultures, and memories of First Nations People. I personally remember and honor Nick Hockings, Ojibwe artist, human rights activist, educator, and member of the Lac du Flambeau Band of Lake Superior Ojibwe Indians (1942 – 2012), and

the Myaamia (Miami) tribe of Indiana. [Consider reading this short article](#) on celebrating Indigenous Peoples Day by Scott Shoemaker, Ph.D., Miami Tribal Member. This week we honor members of EMBRIO who identify as indigenous to North and South America.

## 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](mailto:laddb@purdue.edu)) with your breakout room topics for upcoming Weekly Update sessions.

## MEMBER SPOTLIGHT: Javier Muñoz



Javier Muñoz Briones is a current PhD candidate from PULSe Program in Purdue's Weldon School of Biomedical Engineering in the [Brubaker Lab](#), and a [2022 LATinE: Latinx Trailblazers in Engineering Fellow](#).

**What's your hometown, State, Country (and one thing you love, miss, remember, or want to tell others about it)?**

I am from Quito, Ecuador.

Quito is located at 4 hours from the most fantastic Ecuadorian beaches, 4 hours from the extraordinary Amazon region, 4 hours from the Chimborazo Mount, the furthest points on Earth from Earth's Center (6,263 meters), and 4 hours (flying) to unique Galapagos Islands.

All you need is nature love. All you need is Ecuador!

**What are your hobbies?**

I am big fan of outdoor activities with Gaby and Max, Philosophy, and Computational languages.

**What drew you into becoming a scientist or engineer (or both)?**

The excess of natural resources in Ecuador, and the lack of technical background to manage it sustainable was one of the main reasons to pursue an engineering career.

**Tell us the main point of your research as it relates to EMBRIO:**

In Brubaker Laboratory, in the Inflammatory Bowel Diseases subgroup, we are interested in implementing *in-vitro* systems to study gut inflammation and developing computational methods to integrate multiple signals from different modalities and inferring underlying inflammatory mechanisms. One of these computational methods, Latent Interacting Variable Effects (LIVE) Modeling is related to EMBRIO given LIVE modeling can translate correlational structures across scales and species, it allows us to combine multiple experiments from different biological systems.

**You find yourself alone on an elevator with the president of your university – who knows very little about your field: They ask you to tell them about your research (15 seconds - go!):**

There are complex host – microbiome interactions associated with multiple diseases such as Inflammatory Bowel Disease, Alzheimer, Human Reproduction and Osteoarthritis. By financing Systems and Synthetic Biology approaches, we have the opportunity to identify underlying disease

mechanisms, and determine relevant biomarkers of disease progression and drug response. It leads to develop personalized medicine strategies to cure these conditions.

**What's on the horizon for you (research, career, personal, whatever you want to share)?**

I would like to pursue an academic career, absolutely not for the excellent publishing system, but for mentoring. As postdoc and faculty, we have the opportunity not only to contribute to generate new knowledge in our research field, but also to generate a positive impact in the next generations by promoting the critical thinking. As a member of academia, we have a platform to attempt to identify and solve main society needs.

**What's your various URL/social media handles that others can follow (prof. website, twitter, LinkedIn, blog, etc)?**

LinkedIn: Javier Muñoz Briones

Twitter: @JavierMunoz\_B

*"Additionally, I will be working with Dr Gardner and Dr. Magana in the Thrust 4: Pedagogical Research, Training, Diversity, and Outreach. We are interested in exposing young researchers to scientific method, data-driven modeling, and results-based management methodology at early stages of their career to understand the significance of their research work in society, overcome different mentorship styles, and leverage of their research credits. Please stay tuned!"*

**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/?16898439-47uZv>

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](mailto:mukher42@purdue.edu).”

With Regards  
Soumi

## UPCOMING DEADLINES, IMPORTANT DATES, & INFO

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

Zoom link:

<https://purdue-edu.zoom.us/j/96053485465?pwd=eIVnY2owcm9kaFRtVUdPcmFHaGl1UTo9&from=addon>

- October 10 – **No meeting in observance of Indigenous People's Day, Hispanic Heritage Month** and Fall Break
- October 17 – Presenters Tami Kinzer-Ursem Lab, Breakout Rm. Topics
- October 24 – DEIA Topic: "Answering the Call: Embedding Social Justice and Equity into Research" by Brandon Allen, Ph.D., Program Manager DCI & EWD, ASPIRE ERC, Purdue
- October 31 – EMBRIO Aims Page Student Professional Development session
- November 7 – Presenter Dhulika Ravinuthala (Janice Evans Lab), Breakout Rm. Topics

**NSF BII Meeting: Oct. 6 deadline** to indicate your participation for sessions and/or posters:

[https://purdue.ca1.qualtrics.com/jfe/form/SV\\_9KpbIbln6tkQ84u](https://purdue.ca1.qualtrics.com/jfe/form/SV_9KpbIbln6tkQ84u)

**October 6, 2022. HLA Fall Seminar.** “Computational modeling of plant functions and traits: challenges and opportunities”, Dr. Shin-Han Shiu, Professor, Michigan State University. October 6, 3:30 pm. In person, HORT 117 (Purdue) or Zoom: <https://purdue-edu.zoom.us/j/99498520907>

**October 12-15, 2022.** The [Biomedical Engineering Society \(BMES\) 2022 Annual Meeting](#) will be held in San Antonio, Texas. Registration is open.

**October 18-19, 2022.** Our **NSF Biology Integration Institutes Annual Conference** will be held virtually and run by NSF BII Program Officers. ALL EMBRIO members are encouraged to participate, as you are able. Registration link, schedule, and topic session details are attached.

**October 24, 2022.** [EMBRIO DEI/BP Position Proposals](#) Due (email to [laddb@purdue.edu](mailto:laddb@purdue.edu) )

**October 28-30, 2022.** The [Louis Stokes Midwest Regional Center of Excellence \(LSMRCE\) conference](#), "STEM Ecosystem: Diversity, Partnership, and Empowerment," will be held October 28-30, 2022 at the Hyatt Regency Schaumburg.

**Nov. 9 – Nov. 12:** The [Annual Biomedical Research Conference for Minoritized Scientists \(ABRCMS\)](#) is a go-to conference for underrepresented groups in STEM fields.

**Jan. 2 – 6, 2023:** The BMES Cellular and Molecular Bioengineering Special Interest Group is seeking abstracts for the [BMES Conference \(CMBE\)](#) in Indian Wells, CA.

## Hot Off the Press: New EMBRIO Papers

Shoab, H., Madamanchi, A., **Pienaar, E., Umulis, D.M.**, and Cardella, M.E. “I Think I Am Getting There” Understanding the Computational Identity of Engineering Students Participating in a Computationally Intensive Thermodynamics Course. *Biomed Eng Education* (2022).

<https://doi.org/10.1007/s43683-022-00084-1>

**Li Linlin**, Wang Xu, **Chai Junyi**, **Wang Xiaoqian**, **Buganza-Tepole Adrian**, **Umulis David M.** Determining the role of advection in patterning by bone morphogenetic proteins through neural network model-based acceleration of a 3D finite element model of the zebrafish embryo. *Frontiers in Systems Biology* 2:2022. <https://doi.org/10.3389/fsysb.2022.983372>

**Yueyang Wang**, Lee D. Troughton, Fan Xu, **Aritra Chatterjee**, Han Zhao, Laura P Cifuentes, Ryan B Wagner, Jingjuan Chen, Shihuan Kuang, Daniel M Suter, Chongli Yuan, **Deva Chan**, Fang Huang, Patrick W Oakes, **Qing Deng**. Atypical peripheral actin band formation via overactivation of RhoA and Non-muscle myosin II in Mitofusin 2 deficient cells. bioRxiv preprint doi: <https://doi.org/10.1101/2022.10.03.510661> ; this version posted October 4, 2022.

*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.”**

## Awards

*Let us know about awards that you want to highlight.*

## Open Positions

### 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 ([jjartman@nd.edu](mailto:jjartman@nd.edu)) or Dr. Brandon Ashfeld ([lashfeld@nd.edu](mailto:lashfeld@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/frd9275xc069gmtbe3y1osozi7ssk7> ), or they have graduated, let Brent know their names and email contacts ([laddb@purdue.edu](mailto:laddb@purdue.edu) )

**Submit your items for the next newsletter by October 14 to Brent**  
([laddb@purdue.edu](mailto:laddb@purdue.edu))