



Emergent Mechanisms in Biology of  
Robustness, Integration & Organization

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

Issue 36: August 29, 2024

### **DIRECTORS' NOTE**

Best wishes to all EMBRIO members for a productive and successful Fall semester! We'll be kicking off our twice monthly all-hands meeting and seminar series (Monday's 3-4PM ET) the week after Labor Day, on September 9<sup>th</sup>. (Calendar invites with zoom link were sent a few weeks ago). This don't miss, first-in-the-semester meeting, is slated for a 'State of the Institute' presentation by Institute leadership with open discussion, including initial plans for "EMBRIO 2.0" regarding a full BII proposal to be submitted to NSF in February. We are anticipating several guest speakers this semester – stay tuned for details.

Following from our summer events, you can access the materials, slides, photos, and associated files from our recent annual retreat and summer school (along with previous year's retreats and summer workshops) on our shared Box account under "[Summer Workshops & Annual Retreats](#)". For anyone that missed getting a 2024 EMBRIO T-shirt during the summer events, please contact Brent with your size ([laddb@purdue.edu](mailto:laddb@purdue.edu)).

Everyone knows that the weather has been mighty hot lately. Well, the Institute's research has also been heating up! In the "Hot Off the Press" section toward top of this newsletter, check out the many recent journal papers communicating EMBRIO research. Congrats to all authors, and the graduate students, postdocs, and research scientists that are lead and co-lead authors on these recent publications! For a more complete [record of scholarly products](#) produced from EMBRIO members and collaborations see the updated list at our website. The [Institute's Google Scholar](#) page presents our publications and pre-prints. Please send citations and links for new, or missed, publications and preprints to Brent ([laddb@purdue.edu](mailto:laddb@purdue.edu)). (These must acknowledge the Institute's NSF award #2120200 for us to include them.)

There are several announcements and opportunities detailed below, including an NSF call for postdoctoral fellowships in biology, a tenure track position in computational biology at Baylor, and a seminar course offered by Anjali Iyer-Pascuzzi *Preparing for Post-PhD Careers* – see details in the ABIDES section below. Students/Postdocs are welcome to contact Anjali if you cannot attend all the lectures and just want to 'drop in', and non-Purdue students are welcome.

This summer, Alejandra Magana (T4), and Elsje Pienaar (Core) were nominated and accepted to join the leadership team. The team would like to thank Stephanie Gardner for serving as Assistant Director and representing the educational research, interdisciplinary framework and evaluation efforts of Thrust 4 on the leadership team during the first 2.5 years of the Institute. Steph has stepped into increasing roles in the Department of Biological Sciences and at the university level at Purdue and was appointed a PULSE Fellow, working with a group of leaders of life science

education across the United States (including Puerto Rico), and Canada. She will continue working within EMBRIO and supporting its mission through her research.

If you have new EMBRIO members joining your lab, please alert me with their names, emails, information, so that I can subscribe them to the listserv and Box account, and point them to our [Orientation to EMBRIO](#) folder.

**David, Chris, Anjali, Janice, Jeremy, Alejandra, Elsje, and Brent**

## **QUICK LINKS**

[All-Hands Meetings Recordings](#)

[Materials from Summer School & Annual Retreat](#)

[Institute Skills and Strengths Sharing Platform](#)

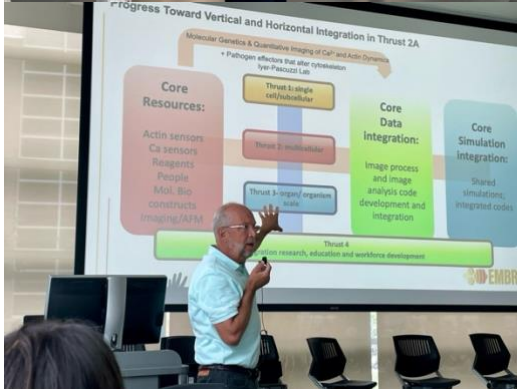
[Orientation to EMBRIO](#)

[ABIDES Cultural and Mentoring resources](#)

[Sign the Data Sharing Policy Agreement](#)

[EMBRIO Personnel List](#)

**[Scenes from EMBRIO Summer Events](#)**



## Hot Off the Press: New & Recent EMBRIO Journal Papers

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

[Check out our Google Scholar Page](#)

See a more complete list of [Scholarly Products produced under support of EMBRIO Institute](#)

Arigye, J., Lyon, J.A., Magana, A.J., and Pienaar, E. (2024). The reflective modeling practitioner: Promoting reflective practices through computational modeling assignments. *International Journal of Engineering Education*, 40(1).

Gazzo, D., Kinzer-Ursem, T.L., and Zartman, J.J. (2024) Proteins clump: Mechanics and transport during neurodegeneration, *Biophysical Journal*, 123,1-3. <https://doi.org/10.1016/j.bpj.2024.06.004>

Kumar, N., Mim, M. S., Dowling, A., & Zartman, J. J. (2024). Reverse engineering morphogenesis through Bayesian optimization of physics-based models. *npj Systems Biology and Applications*, 10(1), 49. <https://doi.org/10.1038/s41540-024-00375-z>

Kumar, N., Rangel Ambriz, J., Tsai, K., Mim, M. S., Flores-Flores, M., Chen, W., Zartman, J.J. & Alber, M. (2024). Balancing competing effects of tissue growth and cytoskeletal regulation during *Drosophila* wing disc development. *Nature Communications*, 15(1), 2477. <https://doi.org/10.1038/s41467-024-46698-7>

Magana, A.J., Arigye, J., Udosen, A., Lyon, J.A., Path, J., and Pienaar, E. (2024). Scaffolded team-based computational modeling and simulation projects for promoting representational competence and regulatory skills. *IJ STEM Ed* 11, 34. <https://doi.org/10.1186/s40594-024-00494-3>

Mim MS, Kumar, N., Levis, M., Unger, M.F., Miranda, G., Gazzo, D., Robinett, T., and Zartman, J.J. (2024) Piezo regulates epithelial topology and promotes precision in organ size control, *Cell Reports*, 43, Issue 7, 114398, ISSN 2211-1247, <https://doi.org/10.1016/j.celrep.2024.114398>  
[Also see In the News a local article about this research.](#)

Tan, S., Zhu, X., Zartman, J.J., and Deng, Q. (2024) Low-cost Polyethylene Terephthalate Lamination Microfluidics Designs for Multiplexed Zebrafish Imaging. Accepted Aug. 6, 2024, JoVE

Xiao, S., Yadav, S., & Jayant, K. (2024). Probing multiplexed basal dendritic computations using two-photon 3D holographic uncaging. *Cell Reports*, 43(7). <https://doi.org/10.1016/j.celrep.2024.114413>

Xu, L., L. Cao, J. Li, and C.J. Staiger. (2023). Cooperative actin filament nucleation by the Arp2/3 complex and formins maintains the homeostatic cortical array in *Arabidopsis* epidermal cells. *Plant Cell* 36: 764-789. <https://doi.org/10.1093/plcell/koad301>

### **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.”**

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

Dr. Anjali Iyer-Pascuzzi, EMBRIO ABIDES Director, Thrust 2 Co-Lead, and Professor at Purdue, leads activities for Institute members. Previous sessions on mentorship, project management, careers, and individual development plans are available on the Institute's shared [Box folder under ABIDES](#).

Anjali is leading a weekly seminar course Fall 2024 designed to introduce students to a variety of career paths available to researchers with a bio or bio-related PhD. **Preparing for Post-PhD Careers Course** (zoom link for weekly seminars on Thursdays 10:30 – 11:45 ET: <https://purdue-edu.zoom.us/j/95274307823?pwd=fWg581xWIC3QgpMOM4TmYazXOBW9o4.1> ).

**Students/Postdocs are welcome to contact Anjali if you cannot attend all the lectures and just want to 'drop in', and non-Purdue students are welcome.** Each week will feature a speaker from a different sector of basic and translational biology, including academia, industry, biotechnology law, scientific policy and science communication. Most speakers have a PhD in plant biology or pathology, but the information is relevant across fields. As part of their talk, speakers will discuss their day-to-day activities, the best and worst aspects of their jobs, work-life balance, and their career paths. Students can ask speakers questions during class.

## STUDENT LEADERSHIP COUNCIL CORNER

The Student Leadership Council has put together a resource to boost collaboration since collaboration is at the heart of EMBRIO. We have created a platform ([google slide deck](#)) where we can all share a little about who we are and what kinds of strengths we can and are willing to share with others. **We kindly request that all members take a few minutes to fill out a slide for themselves.** This way, we can also use this to gauge what topics would be of most value to EMBRIO for hosting workshops.

The SLC is recruiting new officers to represent your university and your perspective for EMBRIO. Reach out to David Gazzo ([dgazzo@nd.edu](mailto:dgazzo@nd.edu)), SLC 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.

## UPCOMING DEADLINES, IMPORTANT DATES, OPPORTUNITIES & INFO

### EMBRIO All-hands Meeting Schedule, Monday's 3-4pm ET. [Previous All Hands Recordings](#)

We're in the midst of scheduling a number of guest speakers for this semester – stay tuned.

Sept	2	Labor Day
Sept	9	State of the Institute and open discussion
Sept	23	
Oct	7 & 8	Fall Break at Purdue
Oct	14	

Oct 28  
Nov 11  
Nov 25  
Dec 9

### September 30 – October 1, 2024. Chicago Bioengineering Conference

(<https://www.czbiohub.org/events/chicago-bioengineering-conference-2024/> )

Sponsored by the Chan Zuckerberg Biohub Chicago. Plan to attend for great sessions on bioelectronics, synthetic and systems biology, proteomics, single cell analysis and other topics.

**October 23-26, 2024.** BMES 2024 Annual Meeting: <https://www.bmes.org/bmes2024>

**October 29-30, 2024.** International Lowe Syndrome Symposium, Purdue University: <https://www.bio.purdue.edu/lowe-syndrome/index.html>

**November 7, 2024.** NSF [Postdoctoral Research Fellowships in Biology](#) – Deadline November 7, 2024.

Supports postdoctoral research fellowships in biology, allowing early-career scientists to pursue independent research and training in three areas: promoting the inclusion of underrepresented groups and **advancing integrative** and plant genome research.

### Open Positions

**Baylor University seeking to fill a *tenure-track assistant professor position in computational biology***

Specifically, we are seeking the following:

- Assistant professor, tenure track in the field of Computational Biology, Bioinformatics or Biosystems Modeling <http://apply.interfolio.com/151396>

Our department is rapidly growing, and Baylor University is committed to supporting top tier research, has excellent research centers and support, and has a long-term aggressive growth plan for research.

### Aaron T. Wright, PhD

James R. Schofield Endowed Chair in Biomedical Sciences

Professor

Departments of Biology and Chemistry & Biochemistry

(254) 710-2108

[Wright Lab Website](#)

[Wright Lab on X \(Twitter\)](#)

### Awards

Let us know about your grants and other awards!

### **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](#) , or they have graduated, let Brent know their names and email contacts ([laddb@purdue.edu](mailto:laddb@purdue.edu) )