



Emergent Mechanisms in Biology of
Robustness, Integration & Organization

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

Issue 13: February 15, 2023

DIRECTORS' NOTE

The Institute's Thrust and Site Leaders gathered on Indiana University's campus last week for an engaging mid-Y2 assessment of progress, challenges, and longer-term goals feeding into developing a framework for planned integration activity in year three and beyond. Results of the retreat will provide some of the core content for our upcoming **NSF Site Visit taking place virtually, March 3, 10 am – 2pm**. ALL Members are encouraged by NSF to attend this virtual site visit. Please make sure you have this on your calendar! Participation link in the upcoming events section of this issue.

The member **spotlight this issue highlights Jazzmin Owens**, Ph.D. student in the Mendenhall Lab at Morehouse. Please welcome Jazzmin as she continues her work on EMBRIO research and collaborations. Along with Peter Brumm (Kinzer-Ursem Lab, Purdue), Jazzmin has volunteered to draft an aims page around her research interests for the upcoming Grant Writing Professional Development series. Speaking of which, **next Monday, Feb. 20th we will continue Grants Writing development for students and postdocs only** using the regularly scheduled Weekly Update time 3pm ET and zoom link.

In addition to the **ongoing** journal club focused on Multimodal Functions of Calcium guided by Jeremy Zartman and Linlin Li, Norma Perez is organizing **a new journal club focused on Calcium Imaging Techniques** that will begin February 27, 11am. The culminating goal is to co-write a review paper about these techniques and methods. Links and instructions for participating are found in this issue.

DEI in EMBRIO has transitioned to ABIDES (Access, Belonging, Inclusion, Diversity, Equity, Support). Dr. Anjali Iyer-Pascuzzi, EMBRIO ABIDES Director and Associate Professor at Purdue, is leading activities for Institute members. Please see the ABIDES section in this issue for information about engaging in completing your IDP (Individual Development Plan).

We recognize and congratulate Dr. James Glazier for his election to the newest class of fellows of the American Association for the Advancement of Science. This is one of the most distinguished honors within the scientific community, which recognizes outstanding contributions to the progress of science and research. Read more about Dr. Glazier in the Awards section.

A unique **opportunity to learn more about Teaming Science** will take place tomorrow, Thursday, Feb. 16, from 8:30 am – 12:30 pm in STEW 206 on the Purdue campus. Free Registration. The workshop is led by well-known expert in team science, Dr. L. Michelle

Bennett. Please see the details in the Upcoming Deadlines & Important Dates section below, and in the attached flyer.

An ongoing reminder for any 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 Feb. 24th for inclusion in the next issue of *Emergence*.

David, Chris, Stephanie, Anjali, and Brent

Notable Quotes

NASA Aeronautical Engineer, [Dr. Christine Darden](#) (b. 1942), whose life is chronicled in the book [Hidden Figures](#), encouraged all people, including her children, her grandchildren and her great grandchildren to *always be curious...* "I was able to stand on the shoulders of those women who came before me, and women who came after me were able to stand on mine."

QUICK LINKS

Journal Club – Calcium Imaging Techniques: [papers to be discussed](#)

[ABIDES Open Office Mondays 2:30 - 3 pm Zoom link](#)

ABIDES Monthly Informal Trainee Lunch Group with DEI Director in DLR 228c, Purdue campus. Noon – 1pm Feb. 16. [Zoom link for those off campus](#).

[Teaming Science Workshop Registration](#)

[Grants Writing Series](#) Box folder

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

[Weekly Meeting Recordings](#)

JOURNAL CLUBS: New *Calcium Imaging Techniques*– Starting Feb. 27, 11am ET

NEW CLUB CALCIUM IMAGING TECHNIQUES

Due to the need within our EMBRIO community to process and analyze Ca²⁺ Images, Director Umulis has proposed to discuss papers regarding methods and tools for analyzing calcium imaging as part of a new journal club. **The goal, beyond integrating these techniques, is to write a review paper.**

Norma Perez (nperezro@purdue.edu), EMBRIO Postdoc with the Buganza-Tepole and Umulis Labs, is leading the effort to organize this journal club, please contact her about joining the club. *Online participation link TBD.*

The club will discuss the following papers:

https://docs.google.com/document/d/1uESi45Zv_kGL369NW8sPW6oGByOAXme7-vr1XKBM18U/edit?usp=sharing

Students and postdocs, please select a paper you want to discuss and let Norma know your selection. She will add your name to this Google Sheet in order that the community knows the rotation.

<https://docs.google.com/spreadsheets/d/1RQOTEIncii3HlRaUK38sP8EpOmAeuAc5jP6wR4X7F98/edit?usp=sharing>

The presenter will prepare a presentation of the paper and lead the discussion during the meeting for about 1 hour.

Since the goal is to write a review paper, Norma is asking for each presenter to write a short 2-3 sentence summary, and I will add your text in the summary column of the spreadsheet.

On Google Sheets, you will also find a worksheet tab called “Tool Attribute Table”, the aim is to fill out that table through the discussion as a basis for the writing process. We can discuss the structure and the content of the Table in our meetings.

If you want to add an additional paper to the list, please let Norma know.

ONGOING CLUB: Multimodal Functions of Calcium in Tuning and Regulating Cytoskeleton Networks

Please contact Dr. Linlin Li (li2212@purdue.edu) for information. The club is currently entering 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/1Cpg77yjtioWiIuRmiDMCcAiAd4jNNX_J7s64RQk8xOU/edit?usp=sharing

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

DEI in EMBRIO has transitioned to ABIDES (Access, Belonging, Inclusion, Diversity, Equity, Support). Dr. Anjali Iyer-Pascuzzi, EMBRIO ABIDES Director and Associate Professor at Purdue, is leading activities for Institute members. Planned ABIDES activities for this semester (Zoom links are also shared in the [ABIDES folder in the EMBRIO BOX](#) account):

- **Individual Development Plans (IDPs) completed by Feb. 24.** You can use one of your own or one of the templates in the ABIDES folder in BOX Students: If you already filled out an IDP for your department you can use that one and do not need to do another. Please upload only the 'blank' template you chose to develop or use to the ABIDES folder, NOT your actual IDP! This is because these are private between you and your mentor, and not everyone may feel comfortable sharing the completed IDP with additional people. This way I have an idea of what types of IDPs people in the Institute are using.
- IDP survey coming the week of Feb. 27. Three questions (did you complete it, did your mentor/trainee complete it, did you discuss)! **Please complete by March 2 (link forthcoming).**
- Weekly open office 'hour' 2:30 – 3 pm (Eastern) each Monday before research update, started Feb. 13. Zoom link here: <https://purdue-edu.zoom.us/j/91942543564>
- Trainee lunch hour meeting **Feb. 16, 12 – 1 pm** (Eastern) in DLR 228c and by Zoom:
<https://purdue-edu.zoom.us/j/95281263014>

March 8th a session by NIH titled “**The Mental Health and Well-being of Your Trainees**” takes place online Noon – 2:15: [link](#)

EMBRIO TRAINEE PROFESSIONAL DEVELOPMENT *GRANTS* SERIES

These sessions are held once a month 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 February 20, 3pm ET. Materials and instructions for developing aims pages 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 ([recording](#))

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

Session 3: Demystifying the Craft of Developing an Aims Page

Monday, February 20, 2023, 3pm ET

Zoom link:

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

Instructions for Session 3:

1. Review one or both Jazzmin's and Peter's Aims pages available on the Box account folder here: <https://app.box.com/s/8ajo994qt51m14rzd3g3anj03ocjfcvq>
2. Using different shades of color coding, highlight the following key components for unmarked aims pages:
 1. What is the problem?
 2. What has been done already to address the problem?
 1. What is the gap that remains?
 2. How do you propose to address this gap?
3. Small Groups/Volunteers: Share what you identified for each section. Orally state the hypothesis. Is it clearly testable?
4. In 1-2 sentences describe the importance and impact of the work and any other feedback for Jazzmin and/or Peter.

EMBRIO STUDENT LEADERSHIP COUNCIL

Calling postdocs and undergrads to help lead student efforts through the newly formed EMBRIO Student Leadership Council. The SLC is in the early stages with graduate trainees organizing the council. The SLC is recruiting postdocs and undergrads to join the council leadership. Please reach out to Feyisayo Akande fakande@purdue.edu and David Gazzo dgazzo@nd.edu.

The Council presents the officers of the SLC:

President: **Feyisayo Akande**

Vice President: **Jazzmin Owens**

Treasurer: **Saumya Mehta**

Secretary: **Peter Brumm**

Executive Advisory Char: **Everyone** will participate

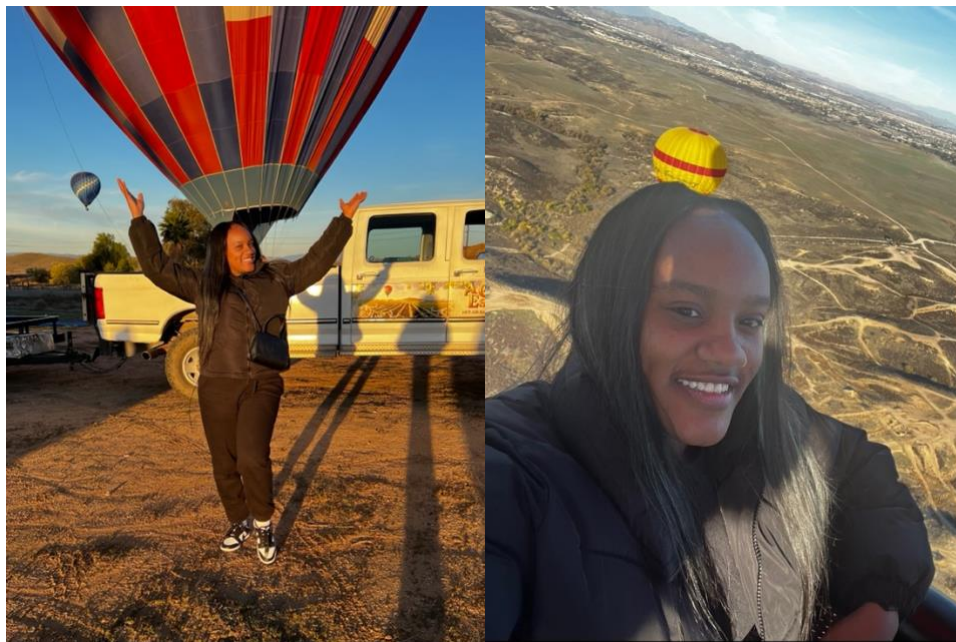
Marketing & Public Relations Chair: **Peter Brumm & Liz Teren** (Jazzmin Owens will assist)

Student Advisory & Outreach Chair: **Liz Teran**

Professional Development Chair: **David Gazzo**

Undergraduate Representative Chair: **Jonathan Banks**

MEMBERSHIP SPOTLIGHT: Jazzmin Owens



Jazzmin Owens, Hot Air Balloons Launch and Flight

Jazzmin Owens, Graduate Student at Clark Atlanta University, Vice-President of EMBRIO Student Leadership Council, Research Lab at Morehouse College, Mentor: Juana Mendenhall
Project Title: Calcium (Ca^{2+}) and Reactive Oxygen Species (ROS) crosstalk signaling in 3D cell culture to control inflammatory response at multiple length scales

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

Los Angeles, CA, I miss going to the beach and street tacos.

What are your hobbies? Reading, Bible Study, Travel, Creating content for my Instagram motivational page

What drew you into becoming a scientist or engineer (or both)? My curiosity to how things worked and how new inventions were discovered

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

To investigate calcium and ROS crosstalk at multiple length scales including nanoscale using AFM.

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!):

My research involves looking at how two second messengers communicate with each other to control inflammatory response using osteoarthritis as my model.

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

This month I will be completing my dissertation research proposal.

What's your various URL/social media handles that others can follow (prof. website, twitter, LinkedIn, blog, etc)? www.linkedin.com/in/jazzmin-owens-811b0b155

Motivational Instagram page : @youwereborntoroar

UPCOMING DEADLINES, IMPORTANT DATES, & INFO

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

Spring Semester 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 – NSF site visit debrief, next steps
- March 13 – Spring break, no meeting
- March 20 – Open for Discussion
- 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.

Feb. 16, 8:30-12:30, Teaming Science Workshop, STEW 206, Purdue Campus
[Registration.](#)

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

March 3, 2023. NSF – EMBRIO Virtual Site Visit, 10 am – 2pm ET. [Link to participate.](#)

April 5, 2023. [Frontiers in Biophysics Seminar Series](#), 1:30 p.m. in MJIS 1001. Joe Howard, the Eugene Higgins Professor of Molecular Biophysics and Biochemistry, Department of Molecular Biophysics and Biochemistry, Yale University, will present “Mechanical Stability of Microtubules.”

July 10-12, 2023. EMBRIO Trainees Workshop, Notre Dame University. Details 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)

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 Soumi 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-ALx1jzYlb7mOIXDdShsDDZyX0JG9WH DuoPOPdGknfEg-81n7OhvSwWpuNf.eYt3v1UYKs9Hln7E
Building a Welcoming and Inclusive Research Group	Jan 18, 2023 12:00-2:15 pm ET	https://nih.zoomgov.com/meeting/register/vJlscOurqjojGtH9Y_zDJPVHhg2Nm6zWNb0 Recording: https://nih.zoomgov.com/rec/play/CPD1_MTZUeVWLhGZQwlwbdK2Zc42MQC3UlaBEtfnLWMtA1ixYdB9SOWEr4GBmYmf5PxNnineGV10ZRhK.1LNzk4k5gzMkzxFG
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

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

James Glazier has been elected to the newest class of fellows of the American Association for the Advancement of Science. This is one of the most distinguished honors within the scientific community, which recognizes outstanding contributions to the progress of science and research.

Glazier is professor of intelligent systems engineering in the Luddy School of Informatics, Computing and Engineering at IU Bloomington and director of the Biocomplexity Institute, for the development of theoretical models of cellular morphogenesis, their application in multi-model open-source modeling software and disseminating computational biological modeling methods.

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/frd9275xc069gmtbe3y1osoz1j7ssk7>), or they have graduated, let Brent know their names and email contacts (laddb@purdue.edu)

Submit your items for the next newsletter by Feb. 24th to Brent
(laddb@purdue.edu)