EMBRIO

Emergent Mechanisms in Biology of Robustness, Integration & Organization

Thrust & Site Leaders Retreat
February 9 – 10, 2023
Indiana University, Bloomington, IN

PURDUE UNIVERSITY · INDIANA UNIVERSITY · MOREHOUSE COLLEGE · UNIVERSITY OF NOTRE DAME · Penn · UPR

<u>**Primary purpose of the retreat**</u>

Bring together all Thrust and Site Leaders for a State-of-the-Institute mid-Yr. 2 assessment, prepare for our NSF site visit, and collectively orient EMBRIO for success going into Yr. 3.

Products to be produced:

- Framework for tracking, evaluating, reporting research, education, and diversity integration

- Content and storyline for NSF Site Visit (March 3).

- Demonstrated points of progress within and across thrusts

- Documented challenges preventing progress, and potential solutions

- Integration gaps identified

- Data Integration next steps

- ABIDES plans and integration

- Core competencies (basic to mastery) for EMBRIO members mapped to each thrust

Logistics:

Hotel:
For those staying overnight at IU, single rooms in the [Biddle Hotel of Indiana Memorial Union](#) (IMU) are reserved in your name for the nights you've requested and will be billed to EMBRIO IU. You will not be charged.

Meeting Rooms:
Dogwood and Sassafras are the main meeting rooms, and they are located at the far end of the conference facility hallway, past all of the other smaller rooms in the IMU.
The breakout rooms are all located prior to the main rooms, with the Distinguished Alumni Room being the very first room along the long hallway.
All rooms have name placards on them, so it won't be hard to find the breakouts.

Thu Feb 09 – Main meeting room: Dogwood Thu Feb 09 – Breakout room: Hoosier Thu Feb 09 – Breakout room: Distinguished Alumni	Fri Feb 10 – Main meeting room: Sassafras Fri Feb 10 – Breakout room: Charter Fri Fen 10 – Breakout room: Redbud

Wi-Fi:

Guests visiting IU can access Wi-Fi by using the IU Guest network. Select "IU Guest" from the list of available networks and follow the instructions on the IU Guest page that will open.

Parking:

Parking next to the IMU is included and covered for those staying in the hotel. You may need to tell the attendant your hotel reservation info upon any exit. For those not staying over you will receive a parking pass during the retreat to use when exiting the parking lot. Address and Parking Info for the IMU.

Meals:

Breakfast will be on your own/small group. There is a Starbucks and a Bakery Café available for breakfast, and there are other local digs within walking distance open for breakfast.
 Group lunch Thursday at Tudor Room in the IMU. Friday lunch stay in IMU – possibly Tudor room again or multiple options for dining in the IMU.

Group Dinner Thursday evening will be likely be at Turkuaz Café, 301 E 3rd St, Bloomington, IN 15 minute walking distance from the IMU Biddle Hotel. There is on-street parking.

Airport Shuttle:

Recommended Shuttle to/from Indianapolis Airport & IMU. Indiana University is a 1 hr drive south of the airport.

Attendees (alphabetical by first name)**:**

 Adrian Buganza Tepole

 Ale Magana

 Anjali Iyer-Pascuzzi

 Brent Ladd

 Chris Staiger

 David Umulis

 Elsje Pienaar

 James Glazier

 Janice Evans

 Jeremy Zartman

 Juana Mendenhall

 Mary Mullins

 Mauricio Cabrera

 Qing Deng

 Stephanie Gardner

 Taeyoon Kim

 Tamara Kinzer-Ursem

Preparations for Thrust Leads:
Prior to the retreat, each thrust leader is asked to use the slide template "Thrust Leader Retreat template" to prepare answers to the key integration questions for the project(s) you lead. These questions align with how NSF will evaluate our progress and success.

The slide template is divided into Day 1 and Day 2 sessions of the retreat. Each Thrust lead will take 10 min to present the high-level overview of their answers for each session of the retreat. Please submit your slide file to Brent (laddb@purdue.edu) by end of business Tuesday, Feb. 7.

Agenda next page

Thrust and Site Leaders Retreat –Agenda-at-a-Glance (Draft)
Feb. 9-10, 2023
Indiana Memorial Union, Biddle Hotel, Indiana University, Bloomington, IN

Wed Feb. 8	Day 0 (Wed night – Dinner Group TBD for those staying at Biddle Hotel IMU this evening)
Thurs. Feb. 9	**Day 1: 10 am – 4pm, Indiana Univ. Memorial Union: Dogwood Room** Breakfast (IMU cafeterias) on own or small groups. Breakout rooms available: Hoosier, and Distinguished Alumni
10 am	**Welcome/State of the Institute/Purpose of Retreat** (David)
10:20	**Framework for Integration Progress and Reporting** (Steph)
11:00	**Preview of NSF Site Visit**
11:15	**Thrusts and Cross-Thrust Integration: Progress & Challenges** (Thrust Leads)
12:30 pm	Group Lunch Tudor Room (IU Memorial Union)
1:30	**Thrusts and Cross-Thrust Integration: Progress & Challenges (Con't)**
3:30	**Open Discussion**
5:30	Group Dinner in Bloomington
8:00	Evening (optional): Settlers of Catan game night
Fri. Feb. 10	**Day 2: 10am – 4pm, Indiana Univ. Memorial Union: Sassafras Room** Breakfast (IMU cafeterias) on own or small groups Breakout rooms available: Charter, and Redbud
10 am	**Thrusts and Cross-Thrust Integration: Big Picture** (Thrust Leads)
12:30 pm	Lunch (IU Memorial Union)
1:30	**Core Competencies Activity** **Working Groups Present Competencies** Break 10 min
3:30	**EMBRIO Upcoming Primary Events & Business**
4:00	**Parting Words & Adjourn** (David)

Thrust and Site Leaders Retreat – Detailed Agenda
Feb. 9-10, 2023
Indiana Memorial Union, Biddle Hotel, Indiana University, Bloomington, IN

Wed Feb. 8	Day 0 (Wed night – Dinner Group for those staying at IU this evening) Samira, 100 W 6th St, Bloomington, IN 47404
Thurs. Feb. 9	**Day 1: 10 am – 4pm, Indiana Univ. Memorial Union: Dogwood Room** Breakfast (IMU cafeterias) on own or small groups. Breakout rooms available: Hoosier, and Distinguished Alumni Coffee, tea, water provided during meeting
10 am	**Welcome/State of the Institute/Purpose of Retreat** (David) 20 min • EMBRIO vision, mission, main goals • Potential for cross-thrust integration • Purpose of this retreat
10:20	**Framework for Integration Progress and Reporting** (Steph) 40 min • Categories/metrics • Tracking & evaluating • Feedback and Discussion
11:00	**Preview of NSF Site Visit** (virtual, March 3, 10a – 2p) (Brent) 15 min • Visual collaboration network graph: Pre-Institute vs. Where we are now • NSF prescribed site visit slide template as basis for our talks today
11:15	**Thrusts and Cross-Thrust Integration: Progress & Challenges** (Thrust Leads) • Order: CORE, Data Integration, Thrust 4, ABIDES, Thrusts 3, 2, 1 • CORE talks (Adrian, David, Juana, Taeyoon, James, Mauricio) • Short talks 10 min@ using integration template by each Thrust Leader. Day 1 Questions 1-3.
12:30 pm	Lunch: Tudor Room Group Meal (IU Memorial Union) 12:30 – 1:30

1:30	**Thrusts and Cross-Thrust Integration: Progress & Challenges (Con't)** 2 hrs
	• Short talks 10 min@ plus discussion using integration template by each Thrust Lead. Day 1 Questions con't.
	• Order: CORE, including Data Integration, Thrust 4, ABIDES, 3, 2, 1
	   • Data Integration Next Steps (Mauricio and Elsje)
	   • Education Thrust 4 (Steph, *Ale will present Friday)
	   • ABIDES plans and activity (Anjali)
	   • Biology Thrust 3 (Mary, Qing)
	   • Biology Thrust 2 (Chris, Jeremy)
	   • Biology Thrust 1 (Janice, Tami)

3:30	**Open Discussion** 30 - 60 min
5:30	Group Dinner in Bloomington 5:30 – 7:00 TBD: Probably Turkuaz Café, 301 E 3rd St, Bloomington, IN 47401
8:00	Evening (optional) Settlers of Catan game night (IMU Rm TBD)

Fri. Feb. 10	**Day 2: 10am – 4pm, Indiana Univ. Memorial Union: <mark>Sassafras Room</mark>**
	Breakfast (IMU cafeterias) on own or small groups
	Breakout rooms available: Charter, and Redbud

10 am	**Thrusts and Cross-Thrust Integration: Big Picture** 2.5 hours
	• Short talks and discussion max 10min@ using integration template by each Research Thrust Lead: Day 2 Questions (plans for Y3, milestones and legacy looking ahead, trainee integration)
	Presentation Order:
	    •Biology Thrusts 1, 2, 3 (Janice, Tami, Chris, Jeremy, Mary, Qing)
	    •Education Thrust 4 (Steph, Ale – full slide set)
	    •ABIDES (Anjali)
	    •Core Thrusts (David, Juana, Mauricio)
	    •Data Integration (Elsje and Mauricio)

12:30 pm	Lunch (IU Memorial Union) 12:30 – 1:30

1:30	**Working Groups Determine Core Competencies** 45 min
	• Suggested Competency Levels:
	   o *Basic Knowledge* supporting interdisciplinary understanding,
	   o *Mastery* demonstrating technical skills and knowledge necessary to directly carry out the research
	• Using drafts presented Feb. 6, flesh out competencies working in small groups around competency categories
	• Specific training steps and actions required (reasonable timeline for attaining Basic and Mastery Levels for each Core competency)
	• Sources of training available, known costs, time etc
	• How to track and verify the competencies
	• What are the blind spots and barriers that could prevent success?
	• Ideas for badges, icons, graphic design
	
	Present Competencies per Category/Area 45 min total
	• Working groups present their competencies
	
	Break 10 min

3:30	**EMBRIO Primary Events & Business** 30 min • Preview Summer Imaging Training Workshop – Notre Dame, July 10-12 (Jeremy, Chris, others?); potential March workshop at Purdue. • All-Hands Annual Meeting – Purdue, July 13-14. • Overview and timeline Y2 annual report, Y3 activity, budgets, budget requests (Brent) • External Advisory Board in the spring • REU site proposal
4:00	**Parting Words & Adjourn** (David)

Thrusts	Institution	Name (Thrust Leads*)	Email	Thrusts Project	Planned Integration
1				THRUST 1	
1	Purdue	*Tamara Kinzer-Ursem	tursem@purdue.edu	T1 A1-2	T2, T3
1	Purdue	*Janice Evans	janiceevans@purdue.edu	T1 B1	T1A1-2
1	Purdue	Elsje Pienaar	epienaar@purdue.edu	T core (T1, modeling)	T2A1-2, T3B, T4A1
1	Purdue	Taeyoon Kim	kimty@purdue.edu	T core (T1, modeling)	T2A1-2, T3
1	Purdue	Deva Chan	chand@purdue.edu	T core (T1, imaging)	T2A1-2, T3
1	Purdue	Krishna Jayant	kjayant@purdue.edu	T core (T1 A1-2)	
2				THRUST 2	
2	Purdue	*Chris Staiger	staiger@purdue.edu	T2 A1-2, T2 B3	T1, T4
2	Notre Dame	*Jeremiah Zartman	jzartman@nd.edu	T2 B1-3	T1, T3, T4
2	Purdue	Elsje Pienaar	epienaar@purdue.edu	T core (T2, modeling)	T1, T3B, T4A1
2	Purdue	Deva Chan	chand@purdue.edu	T core (T2, imaging)	T1, T3
2	Purdue	Anjali Iyer-Pascuzzi	asi2@purdue.edu	T2 A1-2, ABIDES	
2	TAMU	Greg Reeves	gtreeves@tamu.edu	T2	T1
2	Purdue	Taeyoon Kim	kimty@purdue.edu	T core (T2, modeling)	T1, T3
3				THRUST 3	
3	U Penn	*Mary Mullins	mullins@pennmedicine.upen	T3 A1-2	T4
3	Purdue	*Qing Deng	qingdeng@purdue.edu	T3 B1-3	T4
3	Purdue	David Umulis	dumulis@purdue.edu	T core (T3)	T1, T2, T4
3	Purdue	Adrian Buganza-Tepole	abuganza@purdue.edu	T core (T3A1-2, B, modeling)	
3	Indiana	James Glazier	jaglazier@gmail.com	T core (T3B)	T4B1
3	Purdue	Taeyoon Kim	kimty@purdue.edu	T core (T3B, modeling)	T1A1-2, T2A1-2
3	Purdue	GuangJun Zhang	gjzhang@purdue.edu	T3 B1-3	
3	Purdue	Elsje Pienaar	epienaar@purdue.edu	T core (T3B, modeling)	T1, T4A1
4				THRUST 4	
4	Purdue	*Stephanie Gardner	sgardne@purdue.edu	T4A1-2, T4B1-2, T4C2, T	All
4	Purdue	*Alejandra Magana	admagana@purdue.edu	T4A1-2, T4B1, T4C2	Core, T1, T2
ABIDES	Purdue	Anjali Iyer-Pascuzzi	asi2@purdue.edu	ABIDES	ALL
4	Purdue	Jason Cannon	cannonjr@purdue.edu	T4B1-2	
4	Purdue	Elsje Pienaar	epienaar@purdue.edu	T core (T4A1)	T2A1-2, T3B
4	UPRM	Clara Isaza	clara.isaza@upr.edu	T core (T4B1, T4C1)	
4	UPRM	Mauricio Cabrera	mauricio.cabrera1@upr.edu	T core (T4B1, T4C1)	
4	Morehouse	Juana Mendenhall	Juana.Mendenhall@moreho	T core (T4C1)	
4	Indiana	James Glazier	jaglazier@gmail.com	T core C1	T3B1-3, T4B1
4	Purdue	Chris Staiger	staiger@purdue.edu	T2, A1-2	T1
4	Notre Dame	Jeremiah Zartman	jzartman@nd.edu	T2, B1-3	T1, T3
Core				CORE THRUST	
Core	Purdue	*Adrian Buganza-Tepole	abuganza@purdue.edu	T core C1	(T3A1-2, B1-3)
Core	UPRM	*Mauricio Cabrera-Rios	mauricio.cabrera1@upr.edu	T core C1, C2, Data Int.	T4B1, T4C1
Core	Purdue	*David Umulis	dumulis@purdue.edu	T core C2	T1, T2, T3, T4
Core	Morehouse	*Juana Mendenhall	Juana.Mendenhall@moreho	T core C3	T4C1
Core	Purdue	*Deva Chan	chand@purdue.edu	T core C3	T1, T2A1-2, T3
Core	Purdue	*Elsje Pienaar	epienaar@purdue.edu	T core C1, Data Int.	T2A1-2, T3B, T4A1-2
Core	UPRM	Clara Isaza	clara.isaza@upr.edu	T core C1, C2	T4B1
Core	Purdue	Taeyoon Kim	kimty@purdue.edu	T core C1	T1, T2A1-2, T3
Core	Indiana	James Glazier	jaglazier@gmail.com	T core C1	T3B1-3, T4B1
Core	Purdue	Xiaoqian (Joy) Wang	joywang@purdue.edu	T core C2	T2A1
Core	Purdue	Doug Brubaker	doug-brubaker@purdue.edu	T core C2	
Core	Purdue	Priyanka Baloni	pbaloni@purdue.edu	T core	T4
Core	Indiana	James Sluka	jsluka@indiana.edu	T core C1, C2	T3B1-3

Day 1 Instructions: Use this slide to convey the Thrust project(s) you lead in answering the following questions to aid in discussion during the Thrust Leads workshop. Provide distilled high-level answers for all questions on this single slide and use one slide per question for presenting further details.

Day 1:

A. What makes the topic of your Thrust project(s) a compelling integrative research problem that could not be addressed in other ways or from an individual grant?

B. What has been your most positive or exciting outcome to date from your Thrust project(s) towards integration in the Institute?

C. What have been the biggest challenges with your Thrust project(s) to date?

Day 1A:

What makes the topic of your Thrust project(s) a compelling integrative research problem that could not be addressed in other ways or from an individual grant?

Instructions: one slide per question for presenting further details. Inclusion of graphics, images or illustrations in the answer to these question is encouraged.

Day 1B:

What has been your most positive or exciting outcome to date from your Thrust project(s) towards integration in the Institute?

Instructions: one slide per question for presenting further details. Inclusion of graphics, images or illustrations in the answer to these question is encouraged.

Day 1C:

What have been the biggest challenges with your Thrust project(s) to date? How have these challenges impacted integration progress? What strategies and steps do you/your Thrust team plan to take to address the challenges?

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Day 2 Instructions: Instructions: one slide per question for presenting details. Inclusion of graphics, images or illustrations in the answer to these question is encouraged.

Day 2A:
What key outcomes do you hope to achieve from your Thrust project(s) distributed over the NSF timeline of the Institute (Time points: end of Y2, 5 yrs, and 10 yrs *should we receive renewal*)?

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Day 2 Instructions: Instructions: one slide per question for presenting details. Inclusion of graphics, images or illustrations in the answer to the questions is encouraged.

Day 2B:
If EMBRIO advances through 10 years of NSF funding, what do you envision as the potential legacy of the Institute beyond 2031, and how will your Thrust efforts contribute to this legacy?

Day 2C:
For trainees in your lab supported by EMBRIO funding, in general, how well do you feel they understand the broader context of the Institute and how their research project is connected?

What can we as Thrust Leaders and Directors do to improve the understanding of trainee connection and growth in EMBRIO?

What can we as Thrust Leaders and Directors do to improve individual investigator connection and growth in the Institute?

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NSF BII Prescribed Slides for EMBRIO Site Visit

Virtual Meeting Scheduled March 3, 10 am – 2 pm.

One to two presenters only. All EMBRIO members asked to attend, as everyone will be able to engage in the discussion. Format will be approximately 3 hrs, with questions and discussion throughout the time block. An extra hour is scheduled to be used if necessary.

Your BII Logo Here

Project Title
Award ID

PI name, affiliation

Presenter names, affiliations

Date, time

BII VSV Template

I. JUSTIFICATION [1-3 SLIDES]

What makes the topic of your BII a compelling integrative research problem that could not be addressed in other ways or from individual grants?

II. TYPE OF INTEGRATIVE RESEARCH QUESTION [1-2 SLIDES]

What type of integrative research question best describes the motivation behind your institute? *Select all that apply (or add a new option) and explain.*

a) **One-way** : *Applies a concept or approach from outside the field to a longstanding research question within a field (i.e., the contributions are primarily to a longstanding research question in one field).*

b) **Bridging** : *Applies a concept or approach from more than one field to address a research question that lies at the intersection of 2 more fields, closely aligned with the 2 fields.*

c) **Novel** : *Develops a novel concept or approach that lies outside well-defined field concepts or approaches of the participating projects.*

d) **Other** : *you tell us!*

III. TYPES OF RESEARCH INTEGRATION[1-3 SLIDES]

Clearly describe your approach to research integration as related to integration and flow of data, concepts, and models. For a project, explain what level(s) apply; see Site Visit Presentation for examples. It is assumed that all projects have a unifying conceptual model. If this is <u>not</u> (yet) the case, please indicate.

LEVEL A: *Two or more parallel workflows or steps that are not integrated until the end through a unifying model or synthesis result.*

LEVEL B: *One-way-connected workflows or steps that represent different sub-disciplines, where each step is carried out in serial fashion (i.e., the outcome of one step flows into the next step).*

LEVEL C: *Two more parallel workflows or steps that are periodically connected with a flow of data or model output.*

LEVEL D: *Research workflows or steps that are interdependent throughout the research activity, with sometimes novel steps or approaches introduced.*

Note: any type of integration is appropriate for the BII Program, one is not 'better' than the others.

IV. COMPONENTS OF INTEGRATION [1-4 SLIDES]

For the overarching research questions of your BII, describe the components of your research project where you are integrating across sub   -disciplines:

   a) Theories or concepts

   a) Data acquisition and analysis

   b) Methods and tools

   c) Synthetic or comprehensive modeling

(Note: you may not be integrating in all 4 areas, select all that apply and explain)

V. EXPECTED OUTCOMES FROM RESEARCH INTEGRATION [1-4 SLIDES]

What outcomes from your research integration do you expect from your institute, distributed over the timeline of the project? *Fill in all that apply and explain at a high-level.*

a) New knowledge of existing topics

b) New knowledge of an integrated topic

c) New theories/concepts of integrated topics

d) New datasets or databases of integrated topics to foster future research

e) New tools for the integrated topic

VI. ADDITIONAL SITE VISIT QUESTIONS [3 SLIDES]

a) What has been your most positive or exciting outcome to date from your work towards research integration?

b) What have been your biggest challenges to date in any of the above areas? And, what strategies do you plan to take to address them?

c) How will you know you have succeeded in research integration? What are you tracking or monitoring to ensure it will happen?