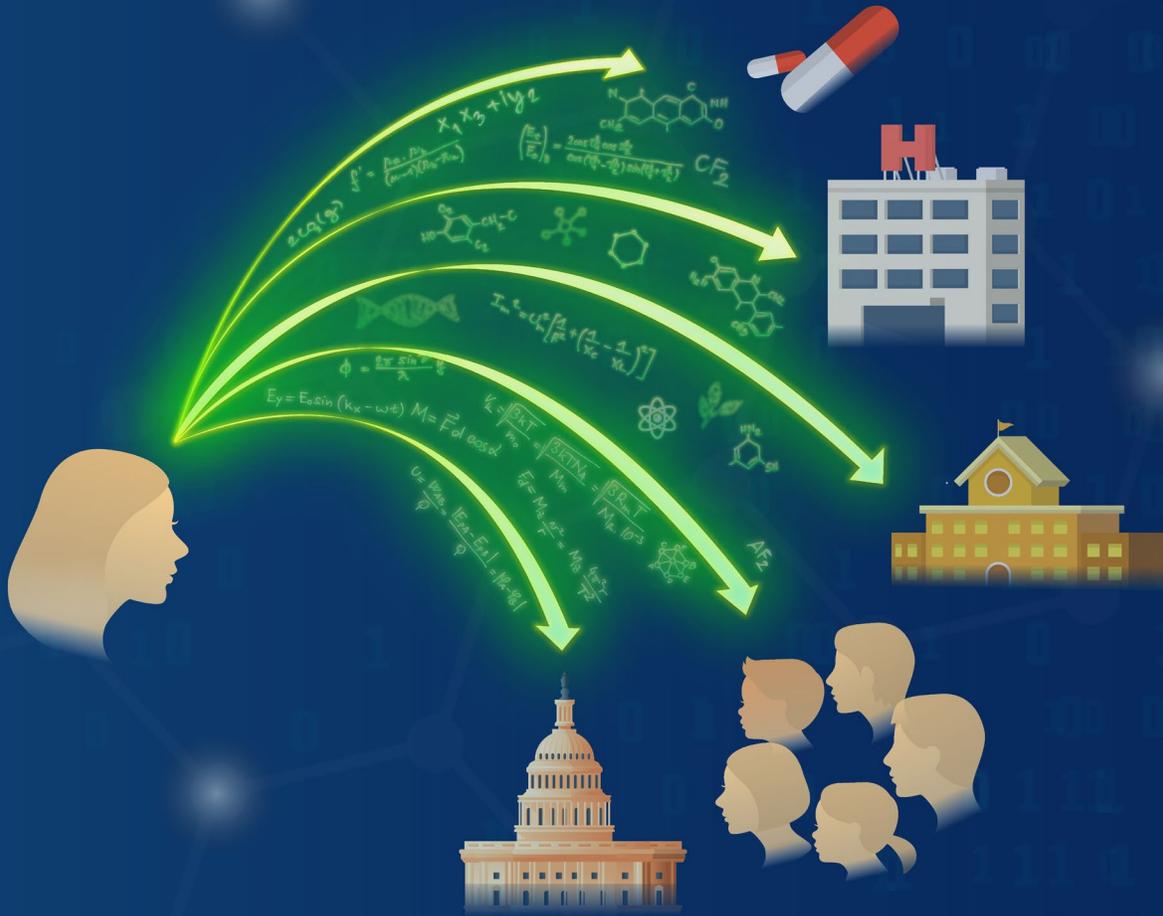


# IMAG | Interagency Modeling and Analysis Group



## Multiscale Modeling Consortium Meeting Translation and Dissemination

March 6-7, 2019





**2019 Multiscale Modeling Consortium Meeting**  
**Translation and Dissemination**

*With Gratitude to:*

**MSM Steering Committee**

<p align="center"><b>2017-2018</b>  <b>Silvia Blemker</b>  <b>Jeff Holmes</b>  <b>Ellen Kuhl</b>  <b>Bruce Lee</b>  <b>Andrew McCulloch</b>  <b>Terry Sanger</b></p>	<p align="center"><b>2018-2019</b>  <b>Mark Alber</b>  <b>Gianluca Lazzi</b>  <b>Shayn Peirce-Cottler</b>  <b>Steve Thomopoulos</b>  <b>Tom Yankeelov</b></p>	<p align="center"><b>2019-2020</b>  <i>Victor Barocas</i>  <i>David Basanta</i>  <i>Ross Carlson</i>  <i>Bill Cannon</i>  <i>Mounya Elhilali</i>  <i>Mike Henson (2<sup>nd</sup> year)</i></p>
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**2019 MSM Consortium Planning Committee**

<p align="center"><b>MSM Co-Chairs</b></p> <p align="center">Jeff Holmes Bruce Lee</p> <p align="center"><b>MSM Session Chairs</b></p> <p align="center">Mark Alber Jim Bassingthwaighe Silvia Blemker Bill Cannon Suvranu De Andrew Drach Guy Genin Jeff Holmes Bruce Lee Feilim Mac Gabhann Shayn Peirce-Cottler Jeff Saucerman Herbert Sauro Steve Thomopoulos Pingkun Yan</p>	<p align="center"><b>IMAG Moderators</b></p> <p align="center">Grace Peng, NIBIB Sarah Dunsmore, NIGMS Liz Ginexi, OBSSR Michele Grimm, NSF Tony Kirilusha, NIAMS Colleen Kuemmel, FDA Orlando Lopez, NIDCR Chi-Chi May, NSF Jerry Myers, NASA Rachel Slayton, CDC Barbara Sorkin, NIH/OD Ken Wilkins, NIDDK</p>	<p align="center"><b>NIBIB</b></p> <p align="center">Jacklyn Ebiasah, Analyst Lavorn Colclough, Tech Support Chris Cooper, NIBIB website Elaine Gibson, IMAG wiki Kolbi Harrison, IMAG wiki Rosslyn Hart, Admin Raymond MacDougall, Photographer Mangala Manivannan, IMAG wiki Vicki Rein, Admin Anuj Sharma, IMAG wiki developer Shaun Simms, Admin Isabella Yoo, Graphic Designer</p>
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**For extra support from:**

***The NIH National Institute of Biomedical Imaging and Bioengineering (NIBIB)***  
***The NIH The Office of Behavioral and Social Sciences Research (OBSSR)***  
***The National Science Foundation (NSF)***  
***The NIH Events Management Team***



## *Logistics*

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### Welcome to the 2019 Multiscale Modeling Consortium Meeting -- Translation and Dissemination!

We are excited to have you here to participate in the IMAG 12<sup>th</sup> Annual Multiscale Modeling (MSM) Consortium Meeting. This year the meeting theme of Translation and Dissemination naturally came together with the topics generated from the MSM Consortium. The sessions on Translating Models to Decisions, Quantitative Systems Pharmacology, Modeling in Behavioral & Social Sciences, Model Credibility and Model Repositories focus on the translation of MSM methodologies to the end user/stakeholders. The sessions on K-12 Dissemination, Funding & Review Challenges for MSM, Adding Diversity to Multiscale Modeling take a look at the successes and challenges in disseminating models to other communities. Finally, the sessions on Machine Learning in Multiphysics & Multiscale Computing and First Principles - Multiscale Materials Design & Synthesis: MD-to-3D highlight the continued commitment of the MSM Consortium in sharing the latest state of the art mathematical, statistical and computational techniques. We look forward to everyone's interactive participation throughout these two days. Enjoy the meeting!

#### **Check-In**

Check-in will begin at 8:00 AM on all meeting days.

#### **Meeting Topics**

Please use the [interactive agenda](#) on the IMAG wiki (**SEARCH: imag wiki**) to follow along and add your comments and questions during each talk in the session link noted by **\*\*!\*\***. Everyone is encouraged to contribute!

#### **Posters**

All posters should be displayed for the duration of the 2-day meeting. Poster board layouts and assignments were given to you separately. Please use the [Attendee Information and Presentation table](#) to view the abstracts and final posters online. Presenters should stand by their posters during the dedicated poster presentation times for Group 1 or Group 2 on Day 1 and Day 2.

#### **Wireless Access & IMAG wiki login**

Wireless internet is free and can be accessed using the network **NIH-Guest**.

We strongly encourage you to interact with the IMAG wiki (**SEARCH: imag wiki**), during the meeting. To add your comments to the wiki please login using your **IMAG wiki username and password**. If you don't have an account or forgot your login, use the following: **Username: conference\_guest;**  
**Password: IMAG2019MSM!**

**Videocast & Twitter**

The meeting will be videocast on both days to allow remote access attendees to participate and contribute feedback to the discussions. The videocast and future archive will be available on <https://videocast.nih.gov/> (SEARCH: NIH Videocast). Please use **#MSM2019** to contribute your questions and thoughts via Twitter.

**Breaks and Lunch**

The poster session will be located on the Natcher Atrium level. Pre-ordered lunch boxes will be ready for pick-up outside the Natcher Auditorium.

**Food and drinks cannot be brought into the auditorium.** \*\*Please note that refreshments will be provided at the meeting this year, during the morning and afternoon breaks. You can also buy snacks or lunch at the Natcher cafeteria, which is open from **6:30AM to 2:30PM**, and the Natcher concession stand, open from **7AM to 3:30PM**.

**Dinner**

Those who signed up for the dinner should plan to arrive at the **Shangri-La** restaurant in downtown Bethesda the evening of Day 1, March 21, 2017 at **6:00pm**. All dinner spots are currently filled. You are welcome check at the registration desk if there are changes in availability. Location information is found on **page 4** of this meeting booklet.

**Taxi information**

Please allow 20-30 minutes for taxis or Uber or Lyft to arrive!

The conference is located in Building 45 at the NIH. **Please ask to be picked up at** the NIH Security Gate called the **GATEWAY VISITORS CENTER** next to the MEDICAL CENTER METRO STATION or in front of the Natcher Building. Picking up in front of Natcher will take significantly longer as the cars must go through security.

Barwood Taxi	301-984-1900
Regency Cab	301-990-9000
Action Taxi	301-840-1000
Super Shuttle	1-800-BLUE-VAN

## Dinner Information

### Shangri-La Nepalese and Indian Cuisine

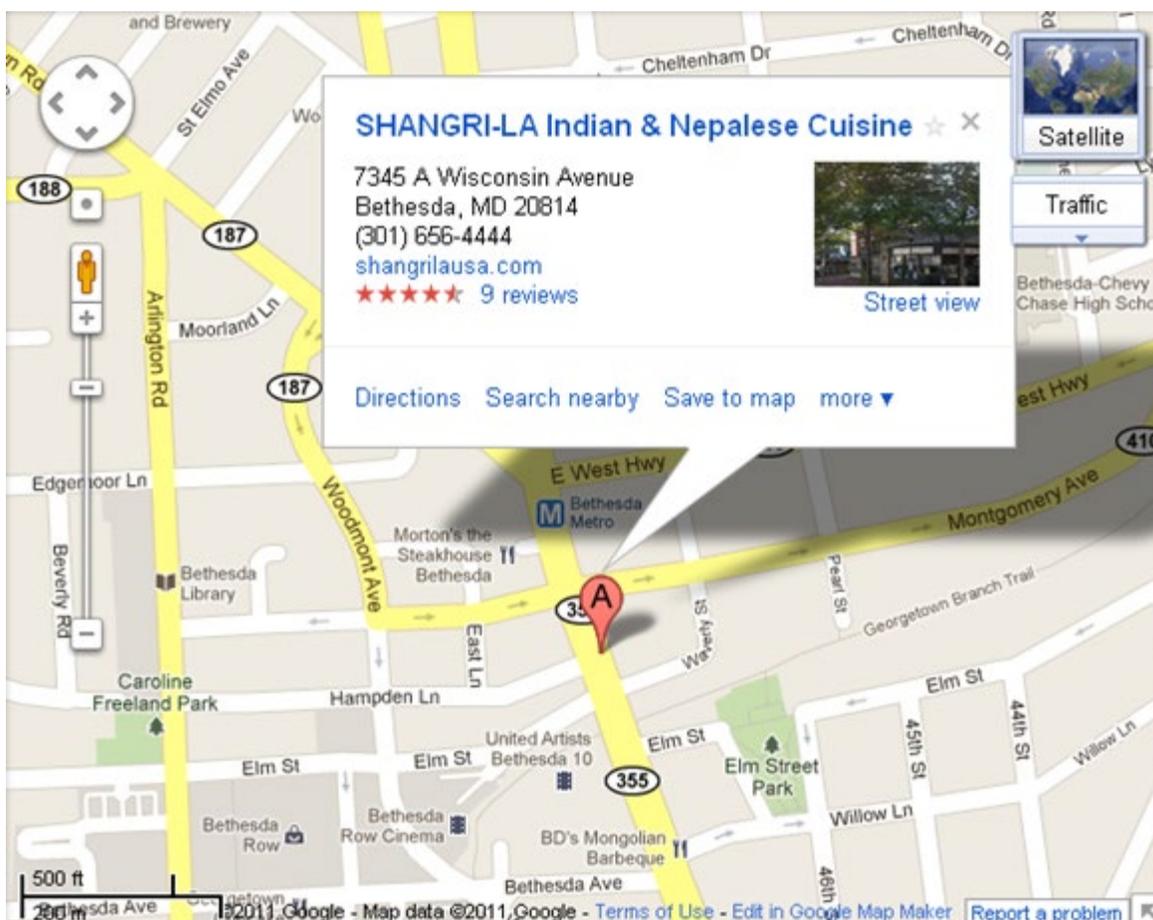
7345-A Wisconsin Ave, Bethesda, MD 20814

Phone: 301-656-4444

<http://www.shangrilausa.com/>

Those attending the group dinner should meet at Shangri-La Restaurant at **6:00pm** on Day 1, Wednesday, March 6<sup>th</sup>.

The restaurant is a short walk away from the **Bethesda Metro Station** and the **Hyatt Regency Bethesda**. Parking is available in public garages nearby. The buffet price is \$30 and includes one meal per person with a glass of wine or beer (includes tax and tip). **Please bring cash, if possible.**





## Agenda

### DAY 1: Wednesday March 6, 2019

\*All sessions from 8:45AM to 5:30PM will occur in the Auditorium

\*[Videocast](#) will be available from 8:45-5:30pm

**8:00 - 8:45am: Check-in, Set up posters**

**8:45 am:** Welcome from IMAG and MSM Co-Chairs: [Grace Peng](#), [Jeff Holmes](#) and [Bruce Lee](#)

**8:50 – 9:20am: Opening Remarks:** [Bruce Tromberg](#), Director, National Institute of Biomedical Imaging and Bioengineering (NIBIB)

**9:20 – 10:30am \*\*\* [Translating Models to Decisions](#)**

Organizers: Jeff Holmes, Bruce Y. Lee, Rachel Slayton (CDC) IMAG moderator

9:20-10:00 **Keynote:** *Charles Taylor, HeartFlow*

10:00-10:30 Panel Discussion: **Sarah Buzogany, Emily Stets, M. Mitchell Waldrop**

**10:30 – 11:00am: Break**

*Morning refreshments courtesy of the [Society of Mathematical Biology](#) – Thank You!*

**11:00 – 12:00pm \*\*\* [K-12 Dissemination](#)**

Organizers: Shayn Peirce-Cottler, Herb Sauro, Jeff Saucerman, Michele Grimm (NSF) IMAG moderator

11:00-11:15 **Stacey Finley**, *University of Southern California*

11:15-11:30 **Herbert Sauro**, *University of Washington*

11:30-11:45 **Jeff Saucerman**, *University of Virginia*

11:45-12:00 **Leyf Starling**, *Durham Academy*

**12:00 – 2:00pm Lunch and Poster Viewing ([Lunch Pre-orders](#) delivered outside Auditorium)**

12:00-1:00pm – **Group 1** Presenters

1:00-2:00pm – **Group 2** Presenters

**2:00 – 3:30pm \*\*\* [Quantitative Systems Pharmacology](#)**

Organizers: Jeff Saucerman, Feilim Mac Gabhann, Colleen Kuemmel (FDA), Sarah Dunsmore (NIGMS) IMAG moderators

2:00-2:15 **Brian Schmidt**, *Bristol-Myers Squibb*

2:15-2:30 **Jeff Saucerman**, *University of Virginia*

2:30-2:45 **Feilim Mac Gabhann**, *Johns Hopkins University*

2:45-3:00 **Denise Kirschner**, *University of Michigan*

3:00-3:30 Panel Discussion: **Jennifer Linderman** and all speakers



2019 Multiscale Modeling Consortium Meeting  
Translation and Dissemination

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**3:30 – 4:00pm Break**

Afternoon refreshments courtesy of the [Society of Mathematical Biology](#) – Thank You!

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**4:00 – 5:30pm \*\*\*!\*\*\* [Machine Learning in Multiphysics and Multiscale Computing](#)**

Organizers: Suvranu De, Pingkun Yan, Bill Cannon, Mark Alber, Ken Wilkins (NIDDK) IMAG moderator

4:00-4:15 **Ellen Kuhl**, Stanford University  
4:15-4:30 **George Karniadakis**, Brown University  
4:30-4:45 **Trey Ideker**, University of California San Diego  
4:45-5:00 **Danny Bluestein**, SUNY Stonybrook  
5:00-5:30 Panel Discussion

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**6:00-9:00pm: [Group Dinner](#)**

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**DAY 2: Thursday March 7, 2019**

\*All sessions from 8:45AM to 12:00PM will occur in the Auditorium

\*[Videocast](#) will be available from **8:45-12:00pm**

**8:00 - 8:45am: Check-in**

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**8:45am: Welcome back - Grace Peng, IMAG Chair**

- Announcements
  - Goals and objectives for Day 2
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**8:50 – 9:30am \*\*\*!\*\*\* [Modeling in the Behavioral and Social Sciences](#)**, Liz Ginexi (NIH/OBSSR), moderator  
**Dana Wolff-Hughes**, NIH Office of Behavioral and Social Sciences Research (OBSSR)  
**Sy-Miin Chow, Misha Pavel** - Intensive Longitudinal Health Behaviors Network (**ILHBN**)

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**9:30 – 10:30am \*\*\*!\*\*\* [Funding and Review Challenges for Multiscale Modeling](#)**

Organizer: Bruce Y. Lee, Grace Peng (NIBIB) IMAG moderator

Panel: **Craig Giroux, Shayn Peirce-Cottler, Colleen Clancy, Denise Kirschner, Bill Lytton**

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**10:30 – 11:00am Break**

Morning refreshments courtesy of the [Society of Mathematical Biology](#) – Thank You!

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**10:30 – 12:00pm** **\*\*!\*\*\*** [Model Credibility Plan Review and Best Practices](#)

Organizers: [Committee on Credible Practice of Modeling & Simulation in Healthcare](#), Andrew Drach (MSM), Jerry Myers (IMAG moderator)

- 10:30-11:00 Results of the 2018 Model Credibility Plan Review
- 11:00-11:15 Best Practices Talk 1 -- Bill Lytton, *SUNY Downstate*
- 11:15-11:30 Best Practices Talk 2 -- Ellen Kuhl, *Stanford University*
- 11:30-12:00 Group Discussion

12:00pm – End of Videocasting

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**12:00 – 2:00p Lunch and Poster Viewing**

1:00 – 2:00pm {Closed Session} **IMAG and MSM Steering Committee, Room D**

[Lunch Pre-orders](#) delivered outside Auditorium

12:00-1:00pm – **Group 2** Presenters

1:00-2:00pm – **Group 1** Presenters

Afternoon refreshments courtesy of the [Society of Mathematical Biology](#) – Thank You!

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**2:00 – 3:30pm Parallel Sessions**

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**2:00 – 3:30pm Model Credibility Plan Review Individual Consults, Rooms E1 and E2**

*This follow-up to the plenary session on Model Credibility will offer MSM PIs the opportunity to receive individualized feedback from the 2018 model credibility plan reviews.*

Organizers: [Committee on Credible Practice of Modeling & Simulation in Healthcare](#)

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**2:00 – 3:30pm** **\*\*!\*\*\*** [Model Repositories - Next Steps](#), **Balcony A**

Organizers: Jim Bassingthwaighte, Herbert Sauro, Orlando Lopez (NIDCR), Barbara Sorkin (NIH/OD) IMAG moderators

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**2:00 – 3:30pm** **\*\*!\*\*\*** First Principles - [Multiscale Materials Design and Synthesis: MD-to-3D](#), **Balcony C**

Organizers: IMAG Basic Science Models Task Force, IMAG Working Group on [Integrated Multiscale Biomaterials Experiment and Modeling \(I \$\mu\$ BEAM\)](#), Michele Grimm (NSF), Tony Kirilusha (NIAMS)  
IMAG moderators

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**2:00 – 3:30pm** **\*\*!\*\*\*** [Adding Diversity to Multiscale Modeling](#), **Balcony B**

Organizer: Silvia Blemker, Elebeoba May (NSF) IMAG moderator

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**3:30pm: Final Thoughts, Adjourn**

## Keynote Speaker

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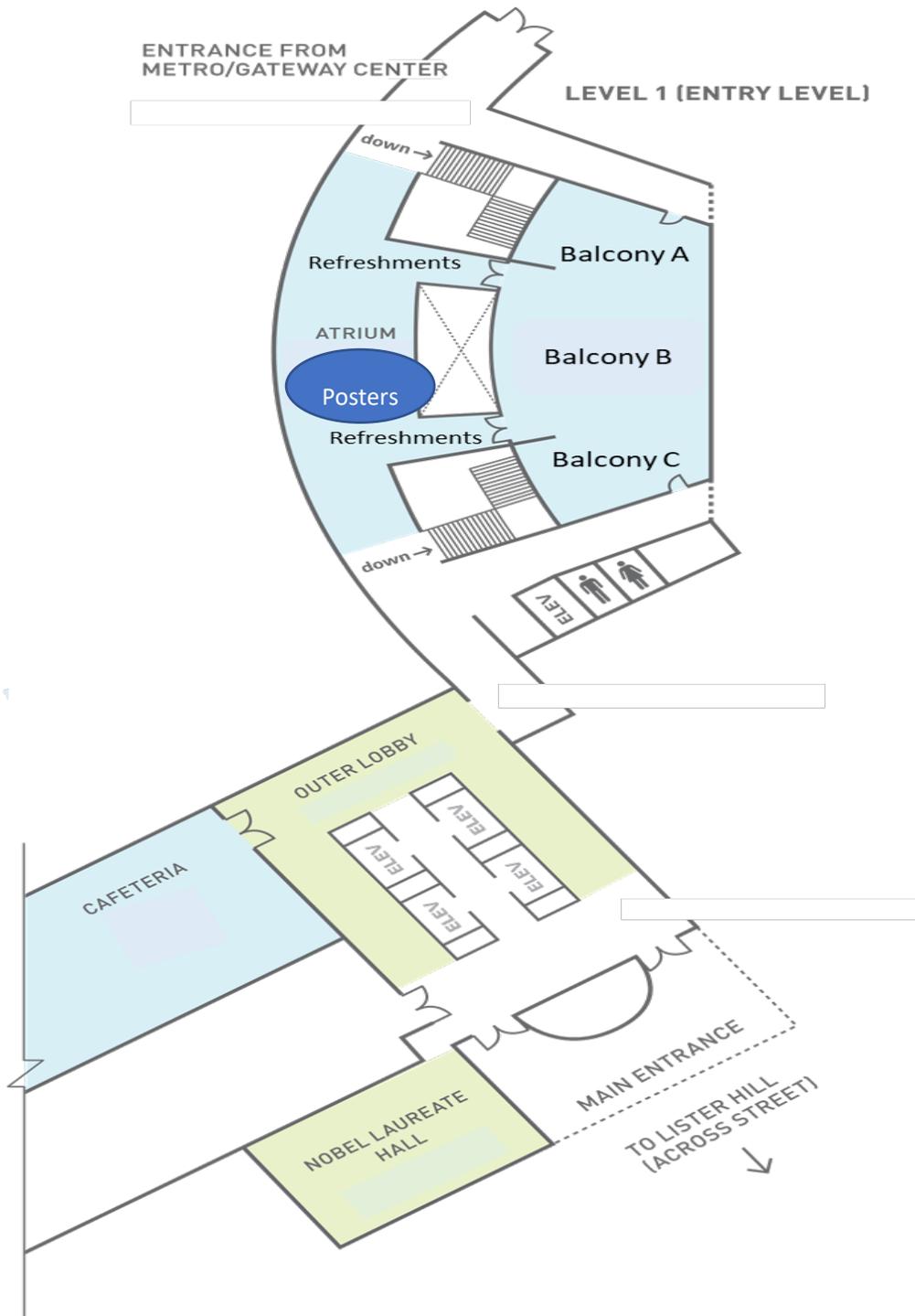
**Charles A. Taylor, Ph.D.**

*Founder, Chief Technology Officer, and Member of the Board of Directors*

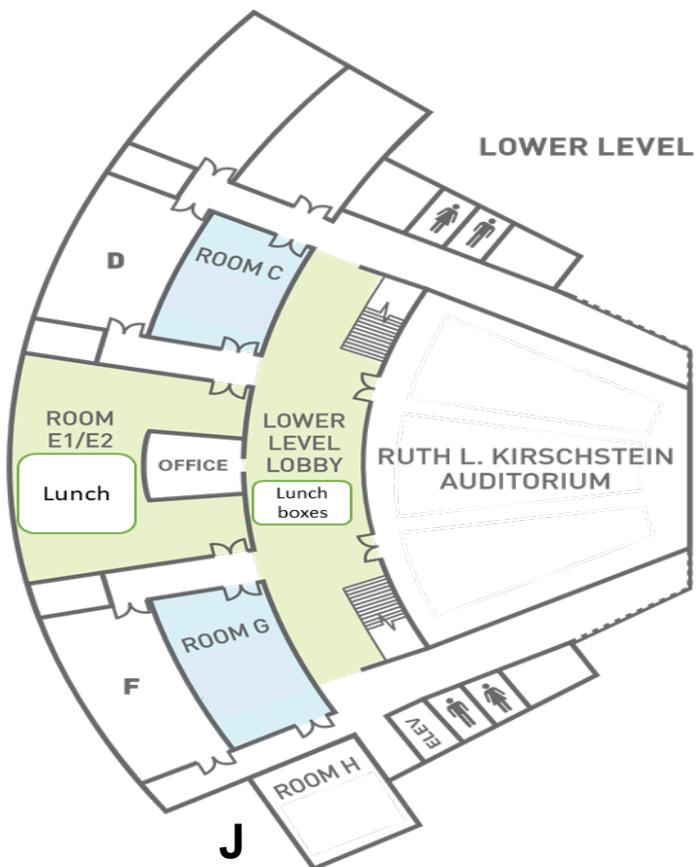
Dr. Taylor is a co-founder, Chief Technology Officer (CTO), and member of the Board of Directors of HeartFlow Inc. Previously, he was an Associate Professor in the Departments of Bioengineering and Surgery at Stanford University with courtesy faculty appointments in the Departments of Mechanical Engineering and Radiology. He is also currently a Consulting Professor of Bioengineering at Stanford University and a Part-time Professor of Biomedical Engineering at the Technical University of Eindhoven. He is internationally recognized for his pioneering work in combining computer simulation methods with medical imaging data for patient-specific modeling of blood flow to aid in the diagnosis and treatment of cardiovascular disease. Dr. Taylor has published over 350 peer-reviewed journal and conference papers and has over 220 issued or pending patents worldwide.

He received his B.S. degree in Mechanical Engineering, M.S. degree in Mechanical Engineering and M.S. degree in Mathematics from Rensselaer Polytechnic Institute and a Ph.D. in Mechanical Engineering from Stanford University.

## Natcher Building Meeting Rooms



## Natcher Building Meeting Rooms



**Lunch Tables**  
Rooms C, E, G

**Quiet/Speaker Ready**  
Room - Room H

**Attendee Storage**  
(luggage) - Room J

