

Faculty Mentoring Networks:

A model for promoting teaching scholarship in
quantitative biology education.

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University of Pittsburgh

NABT Undergraduate Biology Summit

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Denver Colorado



¹Presenting on behalf of the QUBES community.
See acknowledgements slide.



QUBES: A virtual synthesis center for quantitative biology education

**Quantitative
Undergraduate
Biology
Education and
Synthesis**

Synthesis Centers:

- Focus on big challenging problems
- Mobilize a community
 - Coordinate activities
 - Support collaboration
 - Provide key resources

Perceived barrier to getting more quantitative reasoning into biology

Access to high quality learning resources

- NSF has funded a diverse and robust collection of projects
- The barrier is not around finding them.



THE NATIONAL SCIENCE DIGITAL LIBRARY

Real barrier to getting more quantitative reasoning into biology

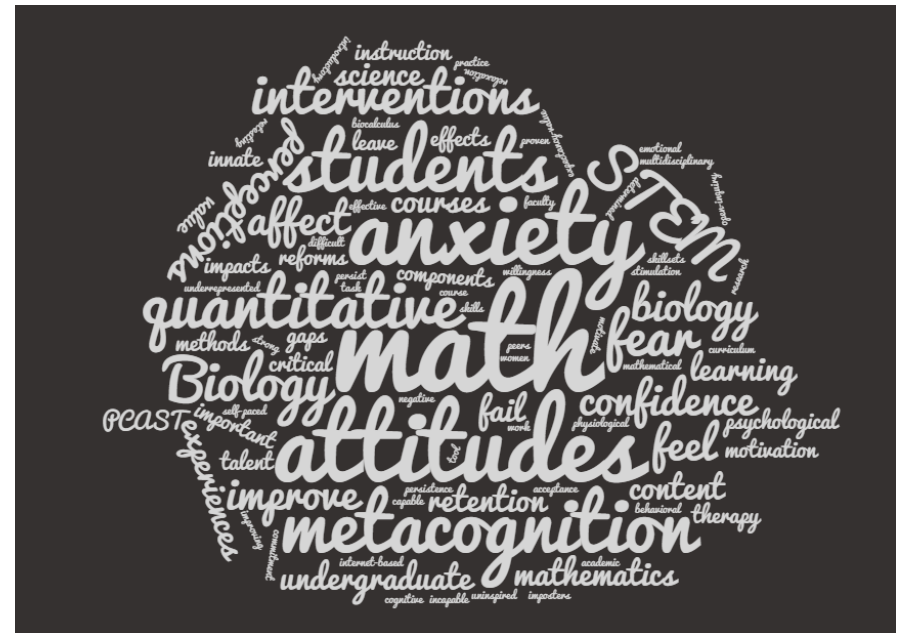
Faculty need support to:

- Develop their own skills and confidence, particularly around pedagogical content knowledge.
- Customize resources for use in their own specialized teaching setting, with their particular student audience.



Supporting professional development around quantitative biology is particularly tricky

- [illegible]



Reimagining Professional Development

Move toward a model that promotes faculty engaging in teaching scholarship.

Move much of the activity online.

Emphasize faculty learning communities with access to disciplinary expertise.

Partner with existing projects that have resources and needs.

Want to use real data in your classroom?



Join us at the Ecological Society of America annual meeting to kick-off an online network featuring hands-on, data-driven teaching modules!

Motivating quantitative biology with open-inquiry image analysis



ImageJ
Image Processing & Analysis in Java

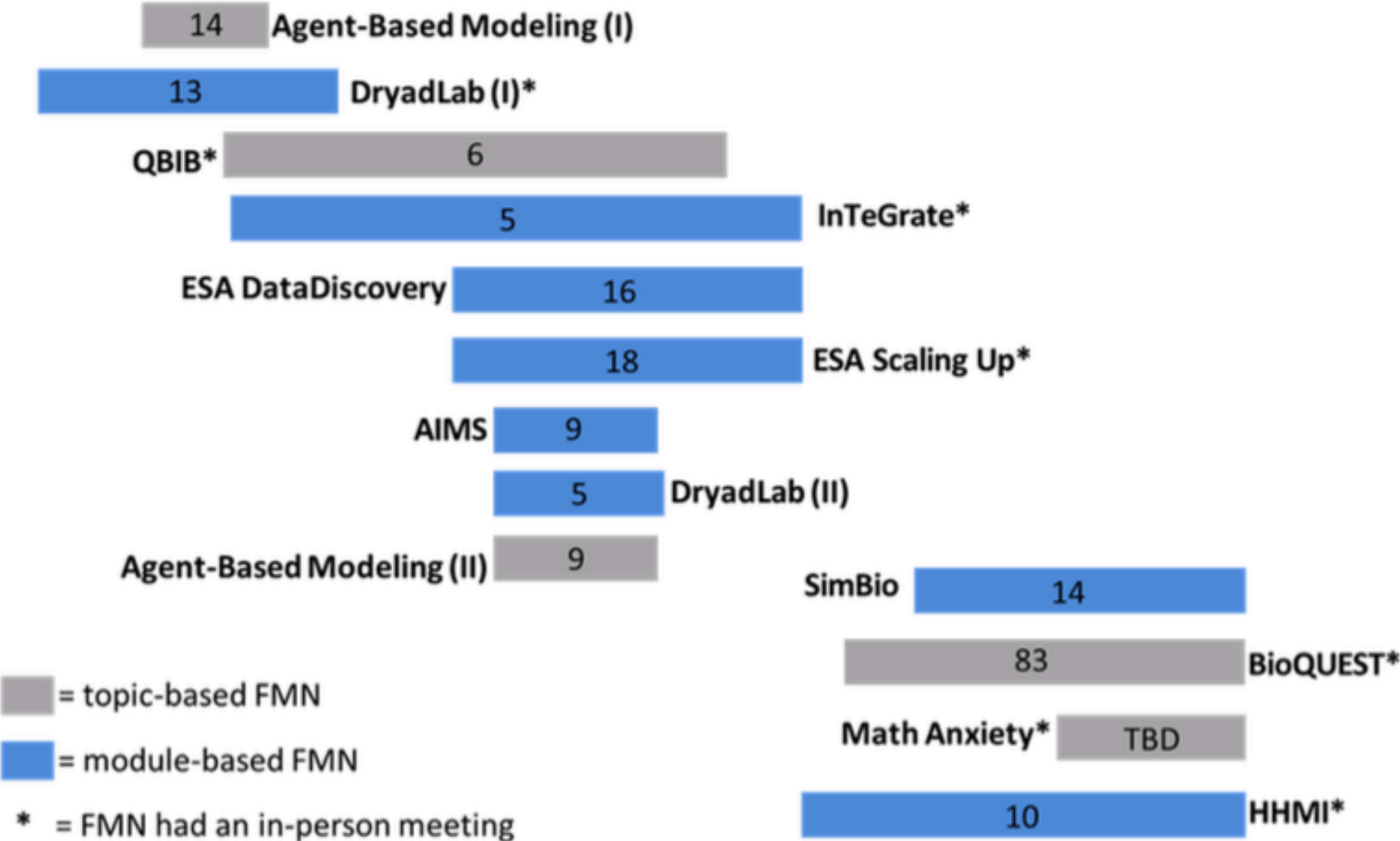
Learn the basics of image analysis, teach fascinating biology research stories, and get students motivated to do math and stats!

Teaching quantitative biology with agent-based models and NetLogo



Learn the basics of agent/individual-based modeling, Netlogo programming, and how to get your students using models!

July 2015	Sep 2015	Nov 2015	Jan 2016	Mar 2016	May 2016	July 2016	Sep 2016	Nov 2016
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QUBES FMN Participants



FMN design principles

Focus is on supporting faculty participation in a full cycle of a scholarly teaching project:

- identifying a need or question to address
- review a variety of existing resources
- learning new tools and techniques
- adopting and adapting materials for your teaching setting
- implement in your classroom
- reflect and write-up to share with the community

Social engineering in an online collaborative environment

Overview

Google Hangout

Meeting Notes

InTeGrate webinars

Pre-workshop assignments

Oct 12

Oct 20

Oct 26

Nov 2

InTeGrate Kick-Off at NABT

Post-workshop Assignments and Activities

Members

Announcements

Calendar

Collections

13

31

8



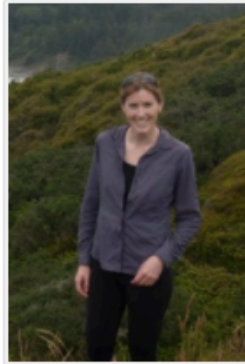
This is a collaborative space for the InTeGrate Faculty Mentoring Network

InTeGrate Modules:

1. Environmental Justice and Freshwater
2. Interactions between Water, Earth's Surface, and Human Activity
3. Climate of Change: Interactions and Feedbacks between Water, Air, and Ice
4. Natural Hazards and Risks
5. A Growing Concern: Sustaining Soil Resources through Local Decision Making
6. Map Your Hazards!



Professional recognition and tracking scholarly Impact



Kerry Byrne

Oregon Institute of Technology

Kerry is an assistant professor in the Natural Sciences Department at Oregon Institute of Technology. There, she teaches courses in general biology as well as upper division courses in plant ecology, evolution, and botany. She received her B.S. in Environmental Biology in 2004 from the University of California, Davis, then worked as a plant ecologist for an environmental consulting firm before receiving her PhD in Ecology in 2012 from Colorado State University. Her research interests include global change biology and plant conservation, in addition to student learning, attitudes, and confidence in STEM education.

Module: Investigating the footprint of climate change on phenology and ecological interactions in north-central North America

<http://ecoed.esa.org/index.php?P=FullRecord&ID=539>

<https://qubeshub.org/collections/post/1480>

esa.org/fed/2016scholars/



April Conkey

Texas A&M University-Kingsville

I'm an Assistant Professor in the Department of Animal, Rangeland, and Wildlife Sciences at Texas A&M University-Kingsville. I earned B.S. and M.S. degrees in biology from Texas A&M-Kingsville and a Ph.D. degree in Wildlife and Fisheries Sciences from Texas A&M University, College Station. My research focuses on wildlife ecology, human dimensions, and education and outreach. I teach undergraduate level courses on Principles of Wildlife Management, Wildlife Management Techniques, Human-Wildlife Conflict Resolution, and a graduate level Teaching Methods course.

Module: Exploring the population dynamics of wintering bald eagles through long-term data

<http://ecoed.esa.org/index.php?P=FullRecord&ID=320>

<https://qubeshub.org/collections/post/1486>

Outcomes of a FMN experience

Pedagogical
knowledge

Experience

Peer support

Products

Self-efficacy

Identity

Traditional
Teaching



Scholarly
Teaching

Upcoming FMNs

FACULTY MENTORING NETWORK

[APPLY NOW](#)



InTeGrate Faculty Mentoring Network

January 02–May 15, 2017

Are you interested in adopting interdisciplinary modules that address sustainability and climate change? Apply now to join us for the 2017 InTeGrate Faculty Mentoring Network. Participants will focus on how to use data-driven modules designed by the InTeGrate Project in undergraduate biology courses. Accepted applicants will participate in virtual sessions (including the January 2017 kick-off event) and then continue to collaborate and receive mentoring online as they customize and implement activities in their own classrooms. There are no costs to participate and faculty contributing instructor stories about their use of the materials will receive \$500 stipends.

Registration: Applications are due **November 28, 2016**

Contact: [Gabriela Hamerlinck](#)

[Apply now!](#)

FACULTY MENTORING NETWORK

[APPLY NOW](#)



DIG Into Data for the Biology Classroom and Data Discovery Faculty Mentoring Networks

January 02–May 15, 2017

The Quantitative Undergraduate Biology Education Synthesis (QUBES) Project and the Ecological Society of America (ESA) are inviting applications for two upcoming Faculty Mentoring Networks (FMNs). These online communities are professional development opportunities where participants work collaboratively to discover new teaching materials, pedagogical techniques, and quantitative content.

All faculty are welcome. We are actively seeking participation from faculty teaching at all undergraduate levels at diverse institution types and serving diverse student populations, including non-science majors.

Benefits to Participants in Both Networks

- Support for further development of pedagogical material focused on bringing research data into the biology/ecology classroom

qubeshub.org



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- Jeremy Wojdak



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