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The challenges of a global pandemic and national racial unrest we faced this year have been and continue to be unlike anything I’ve experienced in my twenty-five years at UW–Madison. The pandemic has shown us that the health of our nation’s citizens relies on their ability to understand the scientific process and evaluate scientific information to make informed decisions. The racial unrest has shown us that the preservation of our nation’s democracy relies on the equal access and full engagement of all our citizens. WISCIENCE’s mission to improve STEM education and support STEM learners from diverse backgrounds, especially those who are members of historically excluded groups, has never been more important.

The story of this year’s annual report is one of resilience, flexibility, and creativity. Again, and again, WISCIENCE staff members worked collaboratively with our partners to find ways to pivot to remote delivery of courses and programs that maintained both high quality STEM learning experiences and inclusive participant engagement. Since March 2020, WISCIENCE staff have engaged in countless hours of professional development and hard work to deliver high-quality online programs to our participants. They created online STEM Immersion Orientation programs to welcome incoming first–year and transfer students to the UW–Madison STEM community; they supported BioCommons Ambassador peer leaders to produce YouTube videos that deliver academic and social support to students finding their way in online STEM classes; they developed and taught a novel course to keep undergraduate research students engaged in reading scientific literature even though they were unable to go to the lab; they restructured classes to foster an increased sense of community and student engagement; and they worked with the Madison Metropolitan School District to find ways to remotely deliver Science Club programming to elementary school children in high needs districts across the city. The impact of these innovations is seen in the evaluation data and outcomes of our programs, and particularly in the reflections offered by our participants. These are just a few of the accomplishments reflected in this report.

Never before have I been prouder to represent WISCIENCE and the extraordinary students and staff members who work there. In addition, I am sincerely grateful for our university and community partners who collaborate with us to make a difference in STEM education for students at UW–Madison and beyond. I invite them to take pride in all we’ve accomplished together this past year.

Janet L. Branchaw, PhD
Assistant Professor, Department of Kinesiology, School of Education
Director, WISCIENCE
VISION, MISSION, AND GOALS

Vision:
Advancing the practice and impact of STEM.

Mission:
Enhance engagement and strengthen success in STEM through equitable and inclusive initiatives, collaborations, service, and scholarship.

Goals:
WISCIENCE will...
I. Build and support communities of STEM learners, leaders, and practitioners.
II. Deliver courses and programs that:
   a. Develop knowledge and skills for success in STEM.
   b. Build STEM identities and confidence.
   c. Provide professional development in teaching, public service, leadership, and research in STEM.
   d. Provide opportunities to engage in teaching, public service, leadership, and research in STEM.
III. Foster equity and inclusion in STEM through initiatives and programs that support diverse populations.
IV. Lead and collaborate on local and national efforts to improve STEM education by developing and disseminating evidence-based programs, curricula, resources, and other scholarly products.
Our history dates back to 1988/89 with the founding of the Center for Biology Education, a cross-campus unit within the Provost's office focusing on improving biology education. We have gone through multiple transformations over the years in response to campus needs but we have always remained a cross-campus unit, serving the entire university as well as the surrounding community.

In 2004/05, the Center became the core entity from which the Institute for Cross-College Biology Education was created. The Institute was an experiment to combine several biology-related programs whose audiences went beyond any single school/college. A major grant from the Howard Hughes Medical Institute in 2010 allowed an expansion of programming for first-year students in the biological sciences. Our name was changed in 2011 to the Institute for Biology Education to better reflect our entire mission, both across campus and beyond.

In 2013/14, a review of the Institute and its largest academic program found that although our experiment had been very successful in some areas, the Institute needed changes. Responsibility for academic programs like undergraduate majors and course sequences was reassigned to units within schools/colleges. The core programs and initiatives that had grown from the original Center for Biology Education were recognized as making significant contributions, particularly with regard to facilitating cross-campus collaboration and expanding access to science education for groups underrepresented in science. To support further development of this work, our mission was expanded beyond the biological sciences to all of STEM. To match the mission, our name was changed to WISCIENCE, the Wisconsin Institute for Science Education and Community Engagement.

In 2016/17, we joined the Collaborative for Advancing Learning and Teaching (CALT), a partnership of cross-campus units at UW–Madison that unites and leverages a collective wealth of wide-ranging expertise to advance teaching and learning in the classroom and beyond.
PERSONNEL

Leadership
Janet Branchaw, PhD Director
Jessica Belcher, MPA Administrative Director
Amber Smith, PhD Associate Director

Staff
Liza Chang, PhD Research Mentor and Mentee Training Coordinator
Anna Courtier, PhD Director of Community-Based Learning
Robert Bohanan, PhD Outreach Program Manager
Jerí Bryant, PhD Director of BioCommons
Keegan Buscaino, BS Office Manager
Amanda Butz, PhD Director of Evaluation & Research
Jon Hess Jr, MBA Director of Marketing & Communications
Kevin Niemi, PhD Director of Outreach Programs
Jessica TeSlaa, PhD Community-Engaged Curriculum Developer & Instructor
Cara Theisen, PhD Director of Professional Development in Teaching & Learning
Brit Wagner, PhD Postdoctoral Research Associate
Jahmese Williams, PhD Director of First-Year and Retention Programs in Science
OVERVIEW

Our programs promote diversity, educational innovation, engaged scholarship, outreach and collaboration. We provide cross-campus services to undergraduate students, graduate students, postdoctoral scholars, staff, and faculty to support the University’s strategic goal of excellence in education.

Who We Impact

We reach individuals at all stages of training and levels of exposure to STEM, from K-12 students to undergraduate students to community professionals and citizen scientists. In 2019/20, we reached 3,325 participants. Note: Data is only of recorded participants and does not include all participants who may have attended but didn’t formally register.

<table>
<thead>
<tr>
<th>Discipline</th>
<th>%</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Sciences</td>
<td>27%</td>
<td>332</td>
</tr>
<tr>
<td>Arts &amp; Humanities</td>
<td>1%</td>
<td>32</td>
</tr>
<tr>
<td>Education</td>
<td>1%</td>
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</tr>
<tr>
<td>Engineering, Math, Computer Science</td>
<td>22%</td>
<td>734</td>
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<tr>
<td>Medical</td>
<td>7%</td>
<td>232</td>
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<tr>
<td>General Course – BA or BS Degree</td>
<td>24%</td>
<td>794</td>
</tr>
<tr>
<td>Social Science, Behavioral Science, Economics</td>
<td>5%</td>
<td>166</td>
</tr>
<tr>
<td>Other</td>
<td>1%</td>
<td>32</td>
</tr>
<tr>
<td>Not Reported</td>
<td>8%</td>
<td>107</td>
</tr>
<tr>
<td>Other</td>
<td>1%</td>
<td>32</td>
</tr>
<tr>
<td>Physical Sciences</td>
<td>5%</td>
<td>166</td>
</tr>
<tr>
<td>Not Reported</td>
<td>8%</td>
<td>107</td>
</tr>
</tbody>
</table>

Total Number of Participants: 3,325

K-12: 3 events
Ugrad: 50 events
Grad: 24 events
Postdoc: 10 events
Faculty/Staff: 18 events
Community: 9 events
Demographics of Participants Compared to UW–Madison

Note: UW–Madison data comes from Fall 2019 Semester in 2019-20 Data Digest (https://apir.wisc.edu/data-digest/). WISCIENCE data represent only 35% of all participants (1,169).

Race/Ethnicity

- American Indian/Alaska Native
- Asian
- Black/African American
- Hispanic/Latino
- Native Hawaiian/Pacific Islander
- Other
- White
- Unknown

Note: UW–Madison data comes from Fall 2019 Semester in 2019-20 Data Digest (https://apir.wisc.edu/data-digest/). WISCIENCE data represent only 35% of all participants (1,169). UW Data reports gender with Male and Female categories only.

Gender

- Female
- Male
- Other

Note: UW–Madison data comes from Fall 2019 Semester in 2019-20 Data Digest (https://apir.wisc.edu/data-digest/). WISCIENCE data represent only 35% of all participants (1,169).

First-Generation & Transfer Students

- WISCIENCE
- UW

Note: UW–Madison data comes from Fall Semester Undergraduate Enrollment, First Generation and New Transfer Students and Fall Semester FTE Enrollment in 2019-20 Data Digest (https://apir.wisc.edu/data-digest/). WISCIENCE Data come from participants in courses and programs for undergraduates where this information was collected (N = 996).
Course and Program Alignment to Goals

In 2019/20, we offered 34 different types of courses and programs in alignment with our Institute’s goals. Full details on course and program alignment to goals can be found in the next section. A list of course and program descriptions can be found in the appendix.

Percentage of Courses and Programs that Address Each WISCIENCE Goal:

Goal I
Build and support communities of STEM learners, leaders, and practitioners.

91%  
31 courses/programs

Goal II
Deliver courses and programs that:

A. Develop knowledge and skills for success in STEM.
82%  
28 courses/programs

B. Build STEM identities and confidence.
74%  
25 courses/programs

C. Provide professional development in teaching, public service, leadership, and research in STEM.
76%  
26 courses/programs

D. Provide opportunities to engage in teaching, public service, leadership, and research in STEM.
65%  
22 courses/programs

Goal III
Foster equity and inclusion in STEM through initiatives and programs that support diverse populations.

85%  
29 courses/programs

Goal IV
Lead and collaborate on local and national efforts to improve STEM education by developing and disseminating evidence-based programs, curricula, resources, and other scholarly products.

38%  
13 courses/programs
## Course and Program Alignment to Goals

<table>
<thead>
<tr>
<th>Course/Program Name</th>
<th>Goal I</th>
<th>Goal II</th>
<th>Goal III</th>
<th>Goal IV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STEM Student Explorations</strong></td>
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<tr>
<td>BioHouse Seminar (INTEGSCI 110)</td>
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<tr>
<td>Exploring Biology (INTEGSCI 100)</td>
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<td>Exploring Research (INTEGSCI 150)</td>
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<tr>
<td>Exploring Service (INTEGSCI 140)</td>
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<tr>
<td>STEM Immersion</td>
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<tr>
<td>Transfer STEM Immersion</td>
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<tr>
<td><strong>STEM Student Engagement</strong></td>
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<tr>
<td>Biological Interactions Summer Research Program</td>
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<tr>
<td>Entering Research Part 1 (INTEGSCI 260)*</td>
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<tr>
<td>Entering Research Part 2 (INTEGSCI 261)*</td>
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<tr>
<td>Service with Youth in STEM (INTEGSCI 240)</td>
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<tr>
<td>Service with Youth in STEM Practicum (INTEGSCI 341)</td>
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<tr>
<td>Research Mentor Training Workshops</td>
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<tr>
<td><strong>STEM Student Leadership</strong></td>
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<tr>
<td>Exploring Discipline-Based Leadership (INTEGSCI 230)</td>
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<tr>
<td>IMPACT Leadership Program</td>
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<tr>
<td>Peer Leader Interns</td>
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<tr>
<td><strong>STEM Professional Development</strong></td>
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<tr>
<td>Mentoring Fellows</td>
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<tr>
<td>Culturally Aware Mentoring</td>
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<tr>
<td>Research Mentor Training (INTEGSCI 660)</td>
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<tr>
<td>Research Mentor Training Workshops</td>
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<tr>
<td>Service Fellows</td>
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<tr>
<td>Public Service in STEM (INTEGSCI 675)</td>
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<td>Relationships and Materials Development in STEM (INTEGSCI 675)</td>
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<tr>
<td>Mentored Practicum in Public Service in STEM (INTEGSCI 675)</td>
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<td>Teaching Fellows</td>
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<td>College Science Teaching (INTEGSCI 650)</td>
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<td>Instructional Materials Design (INTEGSCI 750)</td>
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<td>Practicum in Science Teaching (INTEGSCI 850)</td>
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<td>Scientific Teaching for TAs (INTEGSCI 605)</td>
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<tr>
<td><strong>WISCIENCE Partnerships</strong></td>
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<tr>
<td>Integrated Initiatives</td>
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<tr>
<td>BioCommons</td>
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<tr>
<td>After school science programs</td>
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<tr>
<td>HHMI Inclusive Excellence</td>
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<tr>
<td>Connections and Collaborations</td>
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<tr>
<td>ARIS/ CASIR</td>
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<td>AILS – Broader Impacts Project</td>
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<tr>
<td>APSI - Biology</td>
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<tr>
<td>Science Alliance</td>
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<tr>
<td>Research Mentor &amp; Mentee Training Presentations &amp; Consultations</td>
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<tr>
<td>Inclusive Teaching</td>
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<tr>
<td>LTER/Citizen Science</td>
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<tr>
<td>PEOPLE</td>
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<tr>
<td>Wisconsin Scientific Teaching Design Institute</td>
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*Course not offered due to constraints of the COVID-19 pandemic
Overall Course/Program Satisfaction

As part of our ongoing evaluation efforts, WISCIENCE examines the extent to which our courses and programs are meeting the mission and goals of the institute. WISCIENCE leadership and program directors evaluate their programs using multiple sources of data, including participant information, common evaluation questions, and course and program data. The collective results of this evaluation effort follow.

The majority of WISCIENCE course participants were satisfied with their experience. N=436

Evaluation results (excellent, very good, good, fair, and poor)

- 82% would rate their experience in our course or program as good, very good, or excellent. 13% would rate their experience as fair and 5% said poor. N=431

Evaluation results (strongly agree, agree, neutral, disagree, and strongly disagree)

- 68% agreed or strongly agreed that they would recommend this course or program to other potential participants. 15% felt neutral about recommending and 17% disagreed or strongly disagreed with recommending. N=431

- 72% agreed or strongly agreed that activities and assignments completed as part of this program or course enhanced their learning. 17% felt neutral. N=429

- 81% agreed or strongly agreed that they are likely to apply what they learned in this program or course in the future. 11% felt neutral. N=431

- 84% agreed or strongly agreed that their course or program met the stated goals or objectives. 12% felt neutral. N=433
Online Learning Satisfaction

Due to the constraints of the COVID-19 pandemic, academic staff shifted spring 2020 courses from in-person learning to online learning. The following evaluation data comes from 4 undergraduate and 6 graduate courses offered during Spring 2020.

Evaluation results (strongly agree, somewhat agree, neutral, somewhat disagree, and strongly disagree)

- **78% strongly agreed** that instructors provided adequate support to students when transitioning the course from in-person to online. 16% somewhat agreed, 3% were neutral, and 3% strongly disagreed. N=67

What about the online version of this course worked well in supporting your learning?

I really liked how the course pages were organized. It made it clear what tasks we needed to complete. I also thought the work level was very comparable to what we would have done in class because I could usually get my online work done during the class time.

— Undergraduate Program Participant

I guess just the sense of normalcy the instructors created worked best in continuing to support my learning though the change. Their individual check-ins were nice, and I really liked how we all had a say in how the course would run (via surveys, personal e-mails, and class discussions).

— Graduate Program Participant
Course/Program Evaluation Results Highlighted by Goal

Evaluation data is collected from all WISCIENCE programs and courses to measure the extent to which they are meeting the Institute's goals. The following outlines evaluation results aligned to institutional goals.

Goal I: Build and support communities of STEM learners, leaders, and practitioners.

Evaluation results (strongly agree, agree, neutral, disagree, and strongly disagree)

- **82% agreed or strongly agreed** our program or course created a community that supported their learning and growth as a learner, leader, or practitioner in STEM. 13% felt neutral. N=430

Goal II: Deliver courses and programs that:

Evaluation results (strongly agree, agree, neutral, disagree, and strongly disagree)

A. Develop knowledge and skills for success in STEM.

- **78% agreed or strongly agreed** they developed their abilities and skills in the subject areas/topics covered in our program or course. 15% felt neutral. N=430

B. Build STEM identities and confidence.

- **64% agreed or strongly agreed** that our program or course strengthened their STEM identify. 24% felt neutral and 12% disagreed or strongly disagreed. N=431

- **67% agreed or strongly agreed** that participating in our program or course has increased their confidence in their ability to be successful in STEM. 24% felt neutral. N=430

C. Provide professional development in teaching, public service, leadership, and research in STEM.

- **75% agreed or strongly agreed** that our program or course provided opportunities for them to grow as a STEM professional or aspiring STEM professional. 17% felt neutral. N=431
D. Provide opportunities to engage in teaching, public service, leadership, and research in STEM.

- **65:** Undergraduate students served as Peer Leaders
- **8:** Research Peer Leader drop-in events held at BioCommons
- **6:** Graduate students and postdocs completed Teaching Fellows Program
- **4:** Graduate students who completed Service Fellows Program in 2019/20

**Goal III: Foster equity and inclusion in STEM through initiatives and programs that support diverse populations.**

Evaluation results (strongly agree, agree, neutral, disagree, and strongly disagree)

- **66% agreed or strongly agreed** that participating in our program or course has helped them feel like they belong in STEM. 25% felt neutral. N=430

**Goal IV: Lead and collaborate on local and national efforts to improve STEM education by developing and disseminating evidence-based programs, curricula, resources, and other scholarly products.**

**Manuscripts:**

2 currently in revision or review


10 peer-reviewed papers published or in press


### 22 Presentations & Workshops Offered by WISCIENCE Staff at Conferences:

- **Branchaw, J.** - Keynote Address and Workshop: The Importance of Mentoring in Undergraduate Research, Virginia Tech
- **Branchaw, J.** - Panelist: National Academies of Science, Engineering and Medicine Convocation on Faculty Promotion and Advancement
- **Branchaw, J.** - Workshop: Research Mentor Training, University of Virginia Medical School
- **Branchaw, J.** - Workshops: Entering Research Facilitator Training (CIMER collaboration)
- **Chang, L.** - Invited Speaker & Workshop Facilitator, Getting the Most Out of Your Mentoring Relationship, American Physical Society National Mentoring Community Conference
- **Courtier, A.** - Panel: Stem Cell and Regenerative Medicine Center Fall Conference Career Panel.
- **Courtier, A.** – Presentation: Service Learning in the Sciences, Mount Mary University
• Courtier, A. – Workshop: Service-Learning Workshop for STEM Scientists and Engineers, Rutgers University (postponed due to Covid-19)

• Courtier, A. and TeSlaa, J. - Presentation: A Public Service Fellows Program - Preparing Graduate Students for Community Engagement, National Science Foundation Principal Investigators meeting, January 2020.


• Niemi, K. – Presentation: Interdisciplinary and Innovative Broader Impacts Programming. ARIS Summit


• Smith, A. – Presentation: Uncovering What Is Hidden: Supporting First-Generation Researchers, UW-Whitewater

• Smith, A. - Presentation: Can I do this? : The Role of Self-Efficacy in Mentoring, UW-Madison Academic Staff Institute

• TeSlaa, J. - Panel: Integrating 21st century skills in STEM learning outside of the classroom: communication centers, makerspaces, and community-engaged science, Symposium on College Internship Research.


---

8 STRATEGIES FOR SUCCESS IN REMOTE COURSES

1. Connect with your classmates
   • Reach out to form study groups and get to know other students
   • Use online collaboration tools to connect
   • Participate actively in course assignments

Cara Theisen giving a presentation at UW-Madison
Grants and Funding

Grants:

4 grants submitted to the following funding sources during 2019/20
- Genentech (1 proposal submitted)
- National Institutes of Health (1 proposal submitted)
- National Science Foundation (2 proposals submitted)

2 new grants awarded in 2019/20

<table>
<thead>
<tr>
<th>Funding Agency</th>
<th>Project Title</th>
<th>Principal Investigator</th>
<th>Funding Amount</th>
<th>Funding Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Institutes of Health</td>
<td>Collaborative Project with iBiology: Online Courses for Navigating Research Mentoring Relationships</td>
<td>Janet Branchaw, PhD Amanda Butz, PhD (Co-I)</td>
<td>$932,720</td>
<td>08/01/2020 – 07/31/2025</td>
</tr>
<tr>
<td>Genentech Foundation for Biomedical Science</td>
<td>Genentech Foundation Summer Scholarship</td>
<td>Amber Smith, PhD</td>
<td>$47,125</td>
<td>02/01/2020 – 01/31/2021</td>
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</table>

Other current grant funding

<table>
<thead>
<tr>
<th>Funding Agency</th>
<th>Project Title</th>
<th>Principal Investigator</th>
<th>Funding Amount</th>
<th>Funding Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Howard Hughes Medical Institute</td>
<td>Beyond Access to Success: Creating Flexible Pathways to STEM Degrees for Transfer Students in the UW-System</td>
<td>Janet Branchaw, PhD</td>
<td>$1,010,000</td>
<td>09/01/2018 – 08/31/2023</td>
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<td>National Science Foundation</td>
<td>NSF-REU Site: SIGNALS Summer Research Program</td>
<td>Janet Branchaw, PhD</td>
<td>$348,454</td>
<td>03/01/2015 – 02/29/2021</td>
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<td>National Science Foundation</td>
<td>NSF IGE: A Public Service Fellows Program - Preparing Graduate Students for Community Engagement</td>
<td>Anna Courtier, PhD Jessica TeSlaa, PhD (Co-PI)</td>
<td>$490,101</td>
<td>09/01/2018 – 08/31/2021</td>
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<tr>
<td>National Science Foundation</td>
<td>Center for Advancing the Societal Impacts of Research (Subaward from the University of Missouri-Columbia)</td>
<td>Kevin Niemi, PhD</td>
<td>$48,036</td>
<td>09/15/2018 – 08/31/2023</td>
</tr>
</tbody>
</table>

Funding Sources:

The funding source table to the right, reflects WISCIENCE’s ability to seek innovative grant funding for projects that build novel and pioneering initiatives that bring STEM to all. These grants enable WISCIENCE to capitalize 101 funding to create stability and longevity of our innovative initiatives.
EXPLORING, ENGAGING, AND LEADING
Undergraduate and Graduate Student Programs and Courses

i. STEM Student Explorations......Page 20
   BioHouse Seminar (INTEGSCI 110; INTEGSCI 375)
   Exploring Biology (INTEGSCI 100)
   Exploring Research in STEM (INTEGSCI 150)
   Exploring Service in STEM (INTEGSCI 140)
   STEM Immersion Orientation Program
   Transfer STEM Immersion Orientation Program

ii. STEM Student Engagement......Page 21
   Bioscience Research Discussion (INTEGSCI 375)
   Biological Interactions Summer Research Program
   Entering Research Part 1 (INTEGSCI 260)*
   Entering Research Part 2 (INTEGSCI 261)*
   Research Mentee Training Workshops
   Service with Youth in STEM (INTEGSCI 240)
   Service with Youth in STEM Practicum (INTEGSCI 341)
   * Course not offered due to constraints of the COVID-19 pandemic

iii. STEM Student Leadership......Page 23
   Exploring Discipline Based Leadership (INTEGSCI 230)
   IMPaCT Peer Leadership Program
      BioCommons Ambassadors
      Exploring Biology Peer Leaders
      Research Peer Leaders
      Service with Youth in STEM Peer Leaders
      STEM Immersion Peer Leaders and Coordinators
      Transfer STEM Immersion Peer Leaders
STEM Student Explorations

WISCIENCE STEM Student Explorations are courses and programs designed to benefit diverse populations of first-year or novice STEM students.

Target Audiences for STEM Student Exploration Programs

<table>
<thead>
<tr>
<th>Course/Program Name</th>
<th>Semesters offered</th>
<th>Director</th>
<th>Target Audience</th>
<th>Total Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>BioHouse Seminar (INTEGSCI 110; INTEGSCI 375)</td>
<td>Fall, Spring, Summer</td>
<td>William Karasov &amp; M. Kotelnicki</td>
<td>K-12</td>
<td>62</td>
</tr>
<tr>
<td>Exploring Biology (INTEGSCI 100)</td>
<td></td>
<td>Cara Theisen with Teaching Fellows</td>
<td>Grad</td>
<td>197</td>
</tr>
<tr>
<td>Exploring Research in STEM (INTEGSCI 150)</td>
<td></td>
<td>Amber Smith &amp; Liza Chang</td>
<td>Ugrad</td>
<td>24</td>
</tr>
<tr>
<td>Exploring Service in STEM (INTEGSCI 140)</td>
<td></td>
<td>Anna Courtier</td>
<td>Postdoc</td>
<td>14</td>
</tr>
<tr>
<td>STEM Immersion Orientation Program</td>
<td></td>
<td>Jahmese Williams</td>
<td>Facultly/Staff</td>
<td>164</td>
</tr>
<tr>
<td>Transfer STEM Immersion Orientation Program</td>
<td></td>
<td>Jahmese Williams</td>
<td>Community</td>
<td>9</td>
</tr>
</tbody>
</table>

STEM Student Explorations: Participant Feedback

"I am so glad I got into Biohouse! It was an amazing way to meet new people from all different walks of life. It was great having, essentially, a built-in group of friends that are all interested in the same majors and careers.

– BioHouse Participant"

"The open discussions were very informational and all of the topics we talked about related to one another. Also, the service was very impactful and fun.

– Exploring Service in STEM Participant"

"I really love the transfer community on campus, it’s something I probably wouldn’t have looked into if I hadn’t done this.

– Transfer STEM Immersion Participant"
STEM Student Engagement

WISCIENCE STEM Student Engagement Programs provide learning experiences that build science literacy. These programs develop participants’ skills, knowledge and confidence as a STEM learner and future professional.

Target Audiences for STEM Student Engagement Programs

<table>
<thead>
<tr>
<th>Course/Program Name</th>
<th>Semesters offered</th>
<th>Director</th>
<th>Target Audience</th>
<th>Total Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry Research Discussion (INTEGSCI 375)</td>
<td>Fall</td>
<td>Liza Chang</td>
<td>Ugrad</td>
<td>9</td>
</tr>
<tr>
<td>Biological Interactions Summer Research Program</td>
<td></td>
<td>Amber Smith &amp; Liza Chang</td>
<td>Ugrad</td>
<td>15</td>
</tr>
<tr>
<td>Entering Research Part 1 (INTEGSCI 260)*</td>
<td></td>
<td>Amber Smith &amp; Liza Chang</td>
<td>Ugrad</td>
<td>Not offered</td>
</tr>
<tr>
<td>Entering Research Part 2 (INTEGSCI 261)*</td>
<td></td>
<td>Amber Smith</td>
<td>Ugrad</td>
<td>Not offered</td>
</tr>
<tr>
<td>Research Mentor Training Workshops</td>
<td></td>
<td>Amber Smith &amp; Liza Chang</td>
<td>Ugrad</td>
<td>433</td>
</tr>
<tr>
<td>Service with Youth in STEM (INTEGSCI 240)</td>
<td></td>
<td>Anna Courtier; Kevin Niemi</td>
<td>Ugrad</td>
<td>36</td>
</tr>
<tr>
<td>Service with Youth in STEM Practicum (INTEGSCI 341)</td>
<td></td>
<td>Anna Courtier; Kevin Niemi</td>
<td>Ugrad</td>
<td>19</td>
</tr>
</tbody>
</table>

* Course not offered due to constraints of the COVID-19 pandemic

**In response to the COVID-19 pandemic:**

Find a mentor workshops were converted to an 8-video series on YouTube in Spring 2020.

These videos were viewed 469 times between mid-March and mid-August 2020.

The new online course, Bioscience Research Discussion (INTEGSCI 375), was developed to support students who would have normally been involved in Entering Research Parts 1/2 (INTEGSCI 260/261). This new course was designed to keep students engaged in research through reading and discussing the research literature.

13 Mentee training workshops offered during academic year 2019/20

14 After School Science Clubs hosted by Service with Youth in STEM students in Fall 2019

22 After School Science Clubs hosted in Spring 2020

In response to the COVID-19 pandemic:

The Biological Interactions Summer Research Program was offered online.
STEM Student Engagement Programs: Participant Feedback

I have gotten much better at picking up a paper no matter the topic and being able to read and find understanding and ask questions that would further my understanding.

– Bioscience Research Discussion Participant

It was a learning experience to have certain expectations of myself and feel like I never met those expectations in one hand and to hold the reactions of the kids in the other. I got hugs and waves when I left, and it reminded me that the actual impact you have on kids isn’t always visible.

– Service with Youth in STEM Participant

Given the situation and not being able to have face-to-face interactions, I think the instructors did a wonderful job in trying to give us the most realistic class environment that they could. I also really appreciate the fact that Anna made it clear that we could feel free to talk about our frustrations and concerns with the situation; this really made the environment feel open and friendly.

– Service with Youth in STEM Participant

Being in the company of people like me with similar goals and experiences as well as people who are experienced in research was something new for me and extremely helpful in fostering my own development as a scientist. I now have a much greater understanding of myself, my abilities, and the research process.

– Biological Interactions Summer Research Program

A UW-Madison student in Service with Youth in STEM works on a snap circuit experiment with an elementary school student (photo taken before pandemic)
STEM Student Leadership

WISCIENCE STEM Student Leadership programs and courses help students develop leadership knowledge and skills through the personal and professional development of themselves and others.

Target Audiences for STEM Student Leadership Programs

<table>
<thead>
<tr>
<th>Course/Program Name</th>
<th>Semesters offered</th>
<th>Director</th>
<th>Target Audience</th>
<th>Total Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploring Discipline Based Leadership (INTEGSCI 230)</td>
<td>Fall</td>
<td>Spring</td>
<td>Summer</td>
<td>Jahmese Williams</td>
</tr>
<tr>
<td>IMPaCT Peer Leader Program</td>
<td></td>
<td></td>
<td>Jahmese Williams</td>
<td>65</td>
</tr>
<tr>
<td>BioCommons Ambassadors</td>
<td></td>
<td>Jeri Bryant</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Exploring Biology Peer Leaders</td>
<td></td>
<td>Cara Theisen</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Research Peer Leaders</td>
<td></td>
<td>Amber Smith &amp; Liza Chang</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Service with Youth in STEM Peer Leaders</td>
<td></td>
<td>Anna Courtier</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>STEM Immersion Peer Leaders and Coordinators</td>
<td></td>
<td>Jahmese Williams</td>
<td></td>
<td>47</td>
</tr>
<tr>
<td>Transfer STEM Immersion Peer Leaders</td>
<td></td>
<td>Jahmese Williams</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

98% Of peer leaders agreed or strongly agreed that their peer leadership experience was rewarding.

88% Students served by peer leaders found them to be very or extremely effective.

Keegan Buscaino presenting at an IMPaCT Peer Leader in-service training (photo taken before pandemic)
STEM Student Leadership Highlights: Participant Feedback

My peer leader was amazing and she got me involved in student orgs and research I was interested in and I was very fortunate to have her as my peer leader.

– Exploring Biology Student

They genuinely care about us and our well-being. Every time I came to class, [peer leader] asked me how my weekend was and greeted me with a smile. No other instructor did this.

– Exploring Biology Student

Jeni Bryant and her IMPaCT Peer Leaders/BioCommons Ambassadors at the WISCIENCE Senior Send Off celebration (photo taken before pandemic)

Transfer STEM Immersion Leaders showing Badger pride with the Dub "W" sign on Engineering Mall
i. **STEM Professional Development**

STEM Public Service Fellows Program
- Public Service in STEM (INTEGSCI 640)
- Relationships and Materials Development in STEM (INTEGSCI 740)
- Mentored Practicum in Public Service in STEM (INTEGSCI 840)

Scientific Teaching Fellows Program
- Practicum in Science Teaching (INTEGSCI 850)
- College Science Teaching (INTEGSCI 650)
- Instructional Materials Design (INTEGSCI 750)

Scientific Teaching for TAs (INTEGSCI 605)

Research Mentor Training (INTEGSCI 660)

Research Mentor Training Workshops
STEM Professional Development

WISCIENCE STEM Professional Development programs are courses and multi-semester programs to train graduate students, postdoctoral scholars, and faculty in teaching and mentoring.

### Target Audiences for STEM Professional Development Programs

<table>
<thead>
<tr>
<th>Course/Program Name</th>
<th>Semesters offered</th>
<th>Director</th>
<th>Target Audience</th>
<th>Total Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STEM Public Service Fellows Program</strong></td>
<td></td>
<td>Anna Courtier</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Service in STEM (INTEGSCI 640)</td>
<td></td>
<td>Anna Courtier; Jessica TeSlaa</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Relationships and Materials Development in STEM (INTEGSCI 740)</td>
<td></td>
<td>Anna Courtier; Jessica TeSlaa</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Mentored Practicum in Public Service in STEM (INTEGSCI 840)</td>
<td></td>
<td>Anna Courtier; Jessica TeSlaa</td>
<td></td>
<td>4</td>
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<tr>
<td><strong>Scientific Teaching Fellows Program</strong></td>
<td></td>
<td>Cara Theisen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practicum in Science Teaching (INTEGSCI 850)</td>
<td></td>
<td>Cara Theisen</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>College Science Teaching (INTEGSCI 650)</td>
<td></td>
<td>Cara Theisen</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Instructional Materials Design (INTEGSCI 750)</td>
<td></td>
<td>Cara Theisen</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td><strong>Scientific Teaching for TAs (INTEGSCI 605)</strong></td>
<td></td>
<td>Cara Theisen</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td><strong>Research Mentor Training (INTEGSCI 660)</strong></td>
<td></td>
<td>Amber Smith; Liza Chang</td>
<td></td>
<td>118</td>
</tr>
<tr>
<td><strong>Research Mentor Training Workshops</strong></td>
<td></td>
<td>Amber Smith; Liza Chang</td>
<td></td>
<td>97</td>
</tr>
</tbody>
</table>

UW–Madison students engaging in research and mentorship (photos taken before pandemic)
STEM Professional Development Programs: Participant Feedback

“I found all aspect of the training useful. I never mentored before, so this class provided a good framework and made me aware of things I need to think about when I am interacting with my mentee.”
– Research Mentor Training Participant

“The Public Service Fellow program is set up to have such a great impact; to bring to life the knowledge and experience that these students have and put it to work in the community.”
– Feedback from Community Partner

“Fellows described how, after two semesters with the PSF program, they have a better working knowledge of historical and local contexts for community engagement and of how to carry it out in a "mindful" way.”
– Focus Group Feedback from Public Service Fellows

“Getting hands on experience teaching students was very useful and was the most beneficial aspect of the entire program. I learned a lot about everything that goes into designing, implementing, and executing a course.”
– Teaching Fellow

Teaching Fellows brainstorm with their peers to create their lesson plans for the course section they will teach to UW-Madison students (photo taken before pandemic)

Public Service Fellow in action working on their practicum project with the UW-Madison Arboretum (photo taken before pandemic)
WISCIENCE PARTNERSHIPS:
Collaborations to Increase Impact and Access of STEM Programming

i. STEM Integrated Initiatives......Page 29
   BioCommons
   After School Science Clubs
   MSCR After School Workshop

ii. HHMI Inclusive Excellence Project......Page 30
    HHMI Inclusive Excellence: Faculty, Advisor and Peer Leader Development Programs
    HHMI Inclusive Excellence: Transfer Student Development Programs
    HHMI Inclusive Excellence: Institutional Change

iii. Connections and Collaborations......Page 31
    ARIS/ CASIR
    AISL – Broader Impacts Project
    APSI - Biology
    Science Alliance
    Inclusive Teaching
    LTER/Citizen Science
    PEOPLE
    Wisconsin Scientific Teaching Design Institute
STEM Integrated Initiatives

STEM Integrated Initiatives involve multiple WISCIENCE partners, programs, and staff.

Target Audiences for STEM Integrated Initiatives

<table>
<thead>
<tr>
<th>Course/Program Name</th>
<th>Semesters offered</th>
<th>Instructor(s)/Director</th>
<th>Target Audience</th>
<th>Total Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>BioCommons</td>
<td>Fall</td>
<td>Jeri Bryant</td>
<td>K–12 Students</td>
<td>2,600</td>
</tr>
<tr>
<td>After School Science Clubs</td>
<td>Spring</td>
<td>Anna Courtier; Kevin Niemi</td>
<td></td>
<td>540</td>
</tr>
<tr>
<td>MSCR After School Workshop</td>
<td>Summer</td>
<td>Kevin Niemi</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

During 2019/20, WISCIENCE students and staff served:

- 540 K–12 Students at 27 different sites
  - Allied Learning Center
  - Allis Elementary
  - Bridge Lake Point Neighborhood Center
  - Elver Park Neighborhood Center
  - Emerson Elementary
  - Falk Elementary
  - Glendale Elementary
  - Goodman Community Center
  - Hawthorne Elementary
  - Juvenile Detention Center
  - Kennedy Heights
  - Lake View Elementary
  - Lincoln Elementary
  - Lindbergh Elementary
  - Lowell Elementary
  - Lussier Community Education Center
  - Meadowood Neighborhood Center
  - Mendota Elementary
  - Mt. Zion Academic Learning Center
  - Nuestro Mundo Community School
  - Orchard Ridge Elementary
  - Randall Elementary
  - Sandburg Elementary
  - Schenk Elementary
  - Shorewood Hills Elementary
  - Theresa Terrace Neighborhood Center
  - Thoreau Elementary

- 301 events and programs hosted by BioCommons drew 2,600 participants
- 523 of participants were affiliated with a WISCIENCE program or course
HHMI Inclusive Excellence Project

The collaborations supported by the Howard Hughes Medical Institute (HHMI) Inclusive Excellence (IE) Project has yielded:

- 7 STEM transfer pathway course packages, all designed to help transfer students receive the best preparation possible to successfully transfer from a two to a four-year institution
- 4 professional development events
- 4 workshops for transfer students

In addition, the HHMI IE Leadership Team visited with 144 faculty, staff and administrators, 5 Wisconsin Technical Colleges, and 13 UW System Institutions to discuss dissemination of the transfer model across the systems.

<table>
<thead>
<tr>
<th>Course/Program Name</th>
<th>Semesters offered</th>
<th>Instructor(s) /Director</th>
<th>Target Audience</th>
<th>Total Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHMI Inclusive Excellence: Faculty, Advisor and Peer Leader Development Programs</td>
<td>Fall</td>
<td>Cara Theisen</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>HHMI Inclusive Excellence: Transfer Student Development Programs</td>
<td>Spring</td>
<td>Amber Smith</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>HHMI Inclusive Excellence: Institutional Change</td>
<td>Summer</td>
<td>Janet Branchaw</td>
<td>144</td>
<td></td>
</tr>
</tbody>
</table>

STEM transfer students attending a mock lecture at UW–Madison (photo taken before pandemic)
Connections & Collaborations

WISCIENCE Connections & Collaborations increase the reach and impact of STEM programs and courses through partnerships between WISCIENCE and other programs on and beyond campus.

Target Audiences of Connections & Collaborations

<table>
<thead>
<tr>
<th>Course/Program Name</th>
<th>Semesters offered</th>
<th>Instructor(s) /Director</th>
<th>Target Audience</th>
<th>Total Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advancing Research Impact in Society</td>
<td>Fall Spring Summer</td>
<td>Kevin Niemi</td>
<td></td>
<td>Not offered</td>
</tr>
<tr>
<td>Advancing Informal STEM Learning/Broader Impacts Design</td>
<td></td>
<td>Kevin Niemi</td>
<td></td>
<td>163</td>
</tr>
<tr>
<td>The Advanced Placement Summer Institute–Biology</td>
<td></td>
<td>Kevin Niemi</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Citizen Science</td>
<td></td>
<td>Robert Bohanan</td>
<td></td>
<td>62</td>
</tr>
<tr>
<td>Conversations about Conservation</td>
<td></td>
<td>Robert Bohanan</td>
<td></td>
<td>67</td>
</tr>
<tr>
<td>PEOPLE</td>
<td></td>
<td>Robert Bohanan</td>
<td></td>
<td>209</td>
</tr>
<tr>
<td>Science Alliance</td>
<td></td>
<td>Kevin Niemi</td>
<td></td>
<td>758*</td>
</tr>
<tr>
<td>Wisconsin Scientific Teaching Design Institute</td>
<td></td>
<td>Cara Theisen</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Inclusive Teaching Workshops</td>
<td></td>
<td>Jessica TesLaa</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Research Mentor/Mentee Training Presentations &amp; Consultations</td>
<td></td>
<td>Amber Smith; Liza Chang</td>
<td></td>
<td>317</td>
</tr>
</tbody>
</table>

*Not reflected in participation data
WISCIENCE and Beyond

Our courses and programs impact the Collaborative for the Advancement of Learning & Teaching (CALT), UW–Madison, the State, and the Nation through our partnerships, service, and outreach. A full detailed list of all engagements can be found in the following section.
**WISCIENCE and the Collaborative (CALT) Collaborations/Partnerships**
Delta
MTLE
Office of Undergraduate Advising

**BioCommons-hosted events**
Delta
Office of Undergraduate Advising
WISCIENCE

**Service**
Delta Steering Committee

**WISCIENCE and UW–Madison Collaborations/Partnerships**
Center for the Improvement of Mentored Experiences in Research
Precollege Enrichment Opportunity Program for Learning Excellence
UW Arboretum
Science Alliance
Wisconsin Scientific Teaching Design Institute

**BioCommons-hosted events**
Alpha Omega Epsilon
Animal Sciences
Bioscience Advising Team
Cellular and Molecular Biology
Cereals Breeding and Quantitative Genetics Lab
Chemistry
College of Agricultural and Life Sciences
Academic Affairs/ Career Services
Equity and Diversity Committee
College of Letters and Science
Career Services
Collegiate Farm Bureau UW Madison
Data Science Hub
Design Lab
Division of Diversity Equity and Educational Achievement
Life Sciences Communication
Partners in Giving
Pharmacology and Toxicology
Society for Advancement of Chicanos and Native Americans in Science
University Archives
UW-Madison Libraries

**WISCIENCE and UW–Madison (continued) Presentations & Workshops**
Academic Staff Executive Committee
Atmospheric and Oceanic Sciences
BioHouse
Biophysics
Cellular and Molecular Biology
Center for Academic Excellence
Center for Demography and Ecology
Chemistry
College of Agricultural and Life Sciences
Computer Science
Entomology and Agronomy
First Generation Student Success
Organization
Genetics
The Graduate School
Health Occupations Students of America
Health Services Research in Pharmacy
Life Sciences Communication
Morgridge Center for Public Service
Nutritional Sciences
Pharmacy
Psychology
SciMed GRS
Soil Science
Stem Cell and Regenerative Medicine Center
UW – Madison Academic Staff Institute
Waisman Center
Women in Science and Engineering

**WISCIENCE and the State Collaborations/Partnerships**
Department of Health Services
Elver Park Community Center
Feeding Wisconsin
Madison Schools and Community Recreation
UW System collaborations:
  - UW System Administration,
  - UW-Eau Claire,
  - UW-Green Bay,
  - UW-LaCrosse,
  - UW-Milwaukee,
  - UW-Oshkosh,
  - UW-Parkside,
  - UW-Platteville,
  - UW-River Falls,
  - UW-Stevens Point,
  - UW-Stout,
  - UW-Superior,
  - UW-Whitewater
Wisconsin Youth Company
WTCS System Collaborations:
  - WTCS System Administration,
  - Madison College,
  - Milwaukee Area Technical College,
  - Chippewa Valley Technical College,
  - Nicolet College,
  - Western Technical College

**BioCommons – hosted events**
American Red Cross
Cargill
Madison Metropolitan School District

**Presentations and Workshops**
Madison College STEM Center
Madison School and Community Recreation
WI Master Naturalists
Friends of Pheasant Branch Conservancy
WI DNR
US Geological Survey
University of Wisconsin – Whitewater

**WISCIENCE and the Nation Service**
POD Network

**Presentations & Workshops**
Advancing Research Impacts in Society
American Association for the Advancement of Science
American Educational Research Association*
American Physical Society
Annual POD Network Conference
Center for the Improvement of Mentored Experiences in Research
Mount Mary University
National Academics of Science, Engineering and Medicine
National Science Foundation
National Science Foundation: Advanced Technological Education
National Science Foundation: Disabilities and the STEM Workforce
National Science Foundation: Materials Research Science and Engineering Centers
OPID Conference on Teaching and Learning*
Rutgers University*
Symposium on College Internship Research
Virginia Polytechnic Institute and State University
University of Virginia Polytechnic Institute and State University
University of Virginia Medical School

*indicates event was cancelled or postponed due to COVID-19

WISCIENCE and the State (continued)
APPENDIX

Explorations

BioHouse Seminar (INTEGSCI 110) is for BioHouse residential learning community students. Careers in biology are explored as well as how biology can help solve current problems. Students develop skills in cooperative learning, integrating information across disciplines, and science communication. Goals: I, IIa, IIb, III

Exploring Biology (INTEGSCI 100) is a first-year seminar for students interested in majoring in the biosciences. Students explore biology core concepts and research, and learn about careers, on-campus opportunities, and how to connect with a bioscience community on campus. Goals: I, IIa, IIb, III, IV

Exploring Research in STEM (INTEGSCI 150) is a seminar course that introduces students to STEM research at UW–Madison. Students explore how scientists from different disciplines approach research, are provided guidance in finding a research mentor, and help in building their scientific thinking skills. Goals: I, IIa, IIb, IIc, III

Exploring Service in STEM (INTEGSCI 140) supports first-year students interested in becoming STEM majors as they explore the public purpose of STEM. Students learn about successful university-community partnerships and experience public service opportunities firsthand. Goals: I, IIa, IIb, IIId, III

STEM Immersion prepares low-income, underrepresented, and first-generation college students for success at UW-Madison through an immersive, STEM-focused orientation program the week before they begin classes. Goals: I, IIa, III

Transfer STEM Immersion prepares transfer undergraduate students for success at UW-Madison through an immersive, STEM-focused orientation program. Goals: I, IIa, III
Engagement

Biological Interactions Summer Research Program provides intensive, full-time bioscience research and professional development for undergraduate students as they prepare for graduate school and research careers in biology. Goals: I, IIa, IIb, IIc, IIe, III

Entering Research Summer Program provides opportunities for UW–Madison undergraduate students to engage in high impact learning through coursework and authentic research experiences. Goals: I, IIa, IIb, IIc, IIe, III

Entering Research Part 1 (INTEGSCI 260)* is for first-time research students taking 1–3 independent research credits in science, technology, engineering, or math (STEM). Students develop skills and knowledge to foster a successful mentor/mentee relationship and tailor research experiences to meet their interests and goals. Goals: I, IIa, IIb, IIc, IIe, III

Entering Research Part 2 (INTEGSCI 261)* is for students with 1 or more semesters of research experience who are taking 1–3 independent research credits in STEM. Students improve scientific communication skills, build independence and confidence as researchers, and develop plans to guide their STEM professional development and careers. Goals: I, IIa, IIb, IIc, IIe, III

Service with Youth in STEM (INTEGSCI 240) teaches community building, communication, the needs and learning styles of children, and how to assess informal (non-classroom) STEM learning experiences. Students practice what they learn by serving as leaders of after-school science clubs in the Madison area while reflecting on their learning in individual and group settings. Goals: I, IIa, IIb, IIe, III

Service with Youth in STEM Practicum (INTEGSCI 341) matches students who have completed Service with Youth in STEM with after-school science clubs. The practicum gives UW–Madison students experience with new community partners with a variety of missions and leadership styles, and experience with different student populations and different science curricula. Goals: I, IIa, IIb, IIe, III

Research Mentee Training Workshops. WISCIENCE fulfills requests by the UW-Madison community to implement workshops in research mentee training for departments and programs across campus. Goals: I, IIa, IIb, IIc, IIe, III

Leadership

Exploring Discipline Based Leadership (INTEGSCI 230) A course in which students learn leadership theories and practical peer leadership skills. The course provides a community of peers who support and offer insight as students learn and reflect on their personal experiences. In particular, students learn to think critically about issues of privilege and identity. Goals: I, IIc, III

* Course not offered due to constraints of the COVID-19 pandemic
IMPaCT Peer Leadership A program that prepares students for leadership within and beyond the STEM classroom. Participants take INTEGSCI 230, serve as peer leaders, and take in-service training sessions where they continue to develop leadership competencies. Goals: I, IIb, IIC, IIId, III

- **BioCommons Ambassadors** guides their undergraduate peers who participate in BioCommons programs by helping them to navigate the STEM landscape at UW-Madison and beyond. Ambassadors lead through one-on-one engagement and event planning and coordination.

- **Exploring Biology Peer Leaders** are mentors, role models, and points of connection to the larger university community for first-year students taking Exploring Biology. They develop leadership and mentoring skills, deliver informative presentations on campus resources and college experiences, and support student success in and out of the classroom.

- **Research Peer Leaders** facilitate WISCIENCE research-related workshops, and serve as peer mentors, role models, and points of connection to the larger university community for students interested in or participating in research on campus.

- **Service Peer Leaders** provide mentoring and guidance to students in the Exploring Service and Service with Youth in STEM courses. Their perspective bridges the experiences of instructors and students. As leaders, they also reflect on how their own perspectives and identities have changed during their involvement in science education in the Madison community.

- **STEM Immersion Leaders and Coordinators** help facilitate STEM Immersion, an orientation program for first-year and transfer students. They guide participants during the program and maintain connections with participants throughout their first year at UW-Madison.

**Professional Development**

**STEM Public Service Fellows** was established in 2019 with funding from the National Science Foundation. It connects graduate students with the Madison-area community in one of four pathways (community-engaged teaching, direct service, policy, and social entrepreneurship). Fellows complete a practicum with a community partner to address issues of public concern in their chosen pathway. Goals: I, IIa, IIb, IIC, IIId, III, IV

- **Public Service in STEM (INTEGSCI 675)**
- **Relationships and Materials Development in STEM (INTEGSCI 675)**
- **Mentored Practicum in Public Service in STEM (INTEGSCI 675)**

**Scientific Teaching Fellows** is a year-long intensive professional development experience for graduate students and postdocs. The program integrates training in college teaching with practical teaching experience. Teaching Fellows learn about research-based and inclusive teaching, develop instructional materials that engage students in active learning, and then teach an undergraduate STEM course (INTEGSCI 100). Goals: I, IIa, IIb, IIC, IIId, III, IV

- **College Science Teaching (INTEGSCI 650)**
- **Instructional Materials Design (INTEGSCI 750)**
- **Practicum in Science Teaching (INTEGSCI 850)**
Scientific Teaching for TAs (INTEGSCI 605) gives new TAs survival skills in scientific teaching through theory, practice, and learning community. TAs learn the core themes of scientific teaching (active learning, assessment, and diversity) and apply them in real time to the courses they are teaching. Goals: I, IIa, IIb, IIc, III

Research Mentor Training Workshops. WISCIENCE fulfills requests by the UW-Madison Community to implement workshops in research mentor training for departments and programs across campus. Goals: I, IIa, IIb, IIId, IIc, IIId, III

WISCIENCE Partnerships

STEM Integrated Initiatives

After School Science Clubs: WISCIENCE trains UW–Madison students to lead science clubs with elementary school children through the Service with Youth in STEM service learning course (INTEGSCI 240) to provide Madison-area after-school programs with science club leaders and programming. Goals: I, IIa, IIb, IIc, IIId, III, IV

BioCommons is a collaboration with Steenbock Library to build community for STEM students. Physical and virtual spaces serve to connect students, faculty and staff; provide venues for departments, schools and colleges to host events; offer professional development, networking and wellness events for students; and provide peer support through BioCommons Ambassador peer leaders. Goals: I, IIa, IIb, IIc, IIId, III, IV

HHMI Inclusive Excellence

HHMI Inclusive Excellence: Beyond Access to Success is an initiative to create flexible pathways to STEM degrees for transfer students in Wisconsin. A comprehensive 2-year to 4-year transfer model program and policy changes are in development to transform the way UW System universities and Wisconsin Technical Colleges prepare and support STEM transfer students for success. Goals: I, IIa, IIb, IIc, IIId, III, IV

Connections & Collaborations

Advancing Research Impact in Society (ARIS): WISCIENCE partners with The Center for Advancing Research Impact in Society (ARIS) to fulfill ARIS’s mission. The ARIS Center, located at the University of Missouri-Columbia and funded by the National Science Foundation, works with scientists and engagement practitioners to build capacity, advance scholarship, grow partnerships and provide resources to help them engage with, and demonstrate the impact of research in their communities and society. Goals: I, IIa, IIb, IIc, IIId, III, IV

Advancing Informal STEM Learning (AISL)/Broader Impacts Design Project: WISCIENCE partners with the Discovery Outreach group at the Wisconsin Institutes for Discovery to advance informal science education through Broader Impacts Design, an NSF Advancing Informal STEM Learning grant. Goals: I, IIa, IIc, IIId, IV
The Advanced Placement Summer Institute—Biology is a partnership with the School of Education that offers professional development for AP biology teachers. Goals: IIc, III

LTER/Citizen Science: WISCIENCE and the North Temperate Lakes Long-term Ecological Research (LTER) Education and Outreach group partner with schools and communities throughout Wisconsin to develop, disseminate and evaluate programs and to develop curriculum and training that incorporate long-term ecological research. Faculty, staff and students collaborate with educational and environmental organizations to provide resources and expertise related to environmental issues. Goals: I, IIa, IIb, IIc, IId, IV

PEOPLE: WISCIENCE collaborates with the Precollege Enrichment Opportunity Program for Learning Excellence (PEOPLE) program to develop, implement and evaluate learning experiences for their program that integrate UW–Madison STEM research. Goals: I, IIa, IIb, IIc, III

Science Alliance is an informal science outreach group at UW–Madison and in the Madison community. WISCIENCE staff organize meetings and coordinate communication among the members. Goals: I, IIc, IId, IV

Wisconsin Scientific Teaching Design Institute is a pilot program to train graduate students and postdoctoral fellows the core principles of scientific teaching. It is a partnership between WISCIENCE and Tiny Earth (WID), where participants will apply their learning to develop a new Tiny Earth course. Goals: IIa, IIc, III, IV

Inclusive Teaching Workshops. Workshop participants learn about issues impacting underrepresented students’ academic performance and well-being and develop knowledge and skills to teach more inclusively. Goals: I, IIc, III, IV

Research Mentor and Mentee Training Presentations and Consultations. WISCIENCE fulfills requests by the UW-Madison community to give presentations and provide consultations to support research mentor and mentee training in STEM for departments and programs across campus. Goals: IV