In what ways does fostering a diverse and inclusive community affect pathways to sustainability? Implemented in 2017, this Dow Sustainability Fellows application essay question encourages applicants to apply a personal lens in reflecting on issues related to the intersection of diversity, equity, inclusion, and sustainability.
COLLABORATIVE APPROACHES FOR THE GREATER GOOD

THE DOW SUSTAINABILITY FELLOWS PROGRAM AT THE UNIVERSITY OF MICHIGAN 2013–2018

Made possible by The Dow Chemical Company Foundation, the mission of the Dow Sustainability Fellows Program is to prepare future leaders who will make a positive difference in organizations worldwide. We achieve this goal through a unique combination of program components, all of which are informed by three guiding principles:

A SOLUTIONS-DRIVEN APPROACH
Dow Sustainability Fellows look for answers to the most challenging sustainability issues of our time. Among the diverse issues being addressed are: infrastructure, energy efficiency, healthy communities, consumption and waste reduction, transportation, climate change, biodiversity, human behavior, environmental law, and public policy.

TRANSDISCIPLINARY COLLABORATION
The success of this program is due in large part to the multidisciplinary composition of our cohorts. Dow Sustainability Fellows represent dozens of disciplines—from engineering to medicine, public policy, and the humanities. By engaging with each other on a continual basis, fellows leverage their expertise, broaden their perspectives, enhance their problem-solving abilities, and amplify their impact.

A FOCUS ON PRACTICAL OUTCOMES
Dow Sustainability Fellows focus on finding practical and actionable solutions to real-world problems. Working in partnership with stakeholders, they pursue high-impact projects with the potential to benefit communities large and small.
THE DOW SUSTAINABILITY FELLOWS PROGRAM BENEFITS FROM AND SUCCEEDS BECAUSE OF CAMPUS-WIDE INVOLVEMENT. THIS PAST YEAR, STUDENTS AND SCIENTISTS FROM 12 OF THE U-M’S 19 SCHOOLS AND COLLEGES PARTICIPATED IN THE PROGRAM.

ENGAGED SCIENCE AND LEARNING

Despite their diverse academic backgrounds, all U-M Dow Sustainability Fellows share one important trait—they are committed to finding sustainable solutions that are actionable and meaningful. The University of Michigan is known for the breadth and depth of its expertise, for its leadership commitment to sustainability, and for its unwavering focus on interdisciplinary teaching and research. Together, these factors make U-M uniquely qualified to support the drive for discovery that is at the heart of this program—and to serve as a training ground for future leaders in sustainability science and practice.

INNOVATIVE AND PRACTICAL SOLUTIONS

From tackling public health issues to exploring new career resources, Dow Sustainability Fellows apply their innovative, solutions-driven approach to a host of challenges.

MASTERS & PROFESSIONAL FELLOWS

34 Fellows | 1-year

Members of the current cohort are pursuing master’s, and graduate-level professional degrees in engineering, business, natural resources, architecture, health, law, medicine, policy, social work, and other disciplines. These fellows receive financial support for their studies and complete an applied, interdisciplinary team project. For details, see pages 6–7.

DOCTORAL FELLOWS

18 Fellows | 2-years

Historically, scholars pursuing doctoral degrees and postdoctoral research activities across U-M have participated in this program component. With a proven track record of leading innovative research in their fields, these Dow Sustainability Fellows have collaborated across disciplines to explore practical solutions for ongoing challenges. Due to changes in program scope, new cohorts were not recruited in the past year. For details, see pages 8–9.

DISTINGUISHED AWARDS FOR INTERDISCIPLINARY SUSTAINABILITY

15 Seed (small) grants, 2-3 Major Awards (large grants)

This competition attracts U-M students at all academic levels who have developed action plans for high-impact sustainability collaborations. In total, $150,000 is awarded annually to support these multidisciplinary sustainability projects. For details, see page 10.
BY THE NUMBERS

Total fellows, students, and faculty engaged since program inception

867

315 Total Dow Fellows (masters, professional, doctoral, and postdoctoral)

77 Total organizations served as clients for projects supported by the Dow Fellows Program

75 Total projects supported by Dow Distinguished Awards Competition

435 Total students supported through the Dow Distinguished Awards Competition

315 Total engaged U-M schools & colleges

NUMBER OF DOW FELLOWS CURRENTLY PARTICIPATING BY SCHOOLS AND COLLEGES

15 COLLEGE OF ENGINEERING

13 SCHOOL FOR ENVIRONMENT AND SUSTAINABILITY

11 COLLEGE OF LITERATURE, SCIENCE, AND THE ARTS

10 ROSS SCHOOL OF BUSINESS

9 SCHOOL OF PUBLIC HEALTH

5 FORD SCHOOL OF PUBLIC POLICY

4 TAUBMAN COLLEGE OF ARCHITECTURE AND URBAN PLANNING

3 LAW SCHOOL

3 SCHOOL OF INFORMATION

3 SCHOOL OF MEDICINE

2 SCHOOL OF SOCIAL WORK

1 SCHOOL OF EDUCATION
THE MASTERS COHORT
The 2018 cohort consists of 34 Master’s and professional degree students, selected from a highly competitive pool, with each of U-M’s 19 schools and colleges eligible to nominate up to 10 students for consideration. Each participating Master’s Fellow receives a stipend to assist with tuition and other expenses. Approximately 50% of the fellows are dual-degree students who are simultaneously pursuing two graduate degrees, in addition to participating in the Dow Fellows co-curricular program.

ACTION-BASED PROJECTS
Teams of four to five fellows are working together on seven applied interdisciplinary action-based projects addressing engineering, transportation, economic issues, and other sustainability challenges.

Each group of fellows receives an additional $3,000 to support project efforts. Some teams have also applied for and received Distinguished Awards to enhance and provide additional support for their project. All teams work with clients from outside the U-M and receive guidance from a U-M faculty advisor, practitioners, and others.

The sample projects below address a wide range of sustainability challenges in Michigan and around the world. In 2018, project challenges include:

- Recovering Detroit’s Tree Canopy in Detroit, MI
- Building Sustainable Water Policy through Mapping Water Sector Actors in Mexico City, Mexico
- Addressing Energy Equity through Community-Specific Solutions in Keweenaw Bay, MI
- Waste Watchers (Electronic Waste) in the Ann Arbor area
- Co-Designing Resilience: Community-Directed Green Infrastructure Design Using 3D-Interactive Visualization in Detroit, MI
- Making the Case for Renewable Energy in Traverse City, MI
- Community Benefits Ordinance (CBO) Development in Detroit, MI

FROM ENGINEERING TO MEDICINE
Disciplines represented by the 2018 cohort include law, public policy, medicine, environmental engineering, civil engineering, chemical engineering, landscape architecture, integrative systems and design, urban planning, business administration, information, environmental health sciences, environment and sustainability, and social work.
CONNECTING INSPIRATIONAL LEADERS AND COLLABORATORS
During their first two months in the program, fellows carefully select projects and form diverse teams. Through this team-based approach, students learn critical skills that help prepare them for leadership roles—like cultivating professional relationships, project management, networking, and proposing practical approaches to problem-solving similar to those they will encounter throughout their careers.

ESSENTIAL PARTNERS
In 2018, student teams (Distinguished Award and Master’s Fellows) are engaging the following partners, with several groups working with multiple partners, including:

- City of Detroit, Office of Sustainability, Detroit, MI
- Community Action to Promote Healthy Environments, Detroit, MI
- Great Lakes Environmental Law Center, Detroit, MI
- Isla Urbana, Mexico City, Mexico
- WPPI Energy (non-profit regional power company), Sun Prairie, WI
- Western Upper Peninsula Planning and Development Region, Houghton, MI
- Eastside Community Network, Detroit, MI
- Groundwork Center for Resilient Communities, Traverse City, MI
- Doing Development Differently in Metro Detroit, Detroit, MI
- Donde JaviTours Asociación, Sámara, Guanacaste, Costa Rica
- Administradora de Acueductos (ASADA) de Sámara, Costa Rica
- Michigan Saves, Lansing, MI
- Develop Detroit, Detroit, MI
- Elevate Energy, Chicago, IL
- U.S. Department of Energy, Washington, DC
- Wayne State University, Detroit, MI
- National Association of Student Financial Aid Administrators, Washington, DC
- TerraMar Project, Inc., New York, NY
- Groundwork Center, Traverse City, MI

PASSIONATE COMMITMENT
For program purposes, projects are officially complete once teams have presented the results of their work. Often, however, those presentations represent a new beginning rather than the end of a project. In many cases, students secure additional support, either through a Dow Distinguished Award or other funding sources. To assure the continuance of their project, they may also connect clients to additional resources, including other students who are prepared to work on the venture. It is also common for alumni fellows to support sustained efforts by serving as volunteer-mentors to incoming fellows. In this way, short-term projects may transform into start-ups and social enterprises.

PROJECTS WITH FAR-REACHING IMPACT
Through their projects, Dow Sustainability Fellows have become change agents in ways large and small, across the state and beyond. For example, our students:

- Assessed the potential for using biodigester technology to help universities meet their waste and greenhouse gas reduction goals.
- Developed interdisciplinary, community-informed methods for improving the sustainability of informal communities in Brazil and other fast-developing countries.

“Person ally, working across disciplines was so great...all these different domains helped us create a really holistic project...just me, I wouldn’t have had the skill set to do a project like this, learning so much from my teammates and then also instilling this mindset of growing and contributing what I have.”

— Stephanie Dooper, 2017 Dow Sustainability Master’s Fellow, School of Education alumna

“You can’t think of a sustainable community if there are people in your community who don’t have their basic needs met. It’s a huge challenge that needs to be overcome.”

— Cailin Buchanan, 2017 Dow Sustainability Master’s Fellow (Engineering)


Dow Sustainability Fellows Program at the University of Michigan
THE COHORT
In the fall of 2017, nine new Dow Sustainability Doctoral Fellows joined nine returning fellows. Reflecting the program’s broad appeal, new members hail from disciplines as diverse as communications, public health, design science, anthropology, civil engineering, sociology, and resource management. Some Doctoral Fellows are continuing their participation voluntarily after their fellowship period to remain engaged with the other students and programs.

THE PROGRAM
The fellowship experience comprises multiple components, including interactive seminars, managing a sustainability journal publication, dinner dialogues, skills training sessions and mentoring sessions with U-M faculty and professionals and with experts from external organizations.

RESEARCH LUNCH SEMINARS & DINNER EXCHANGE
During these lively sessions, Doctoral Fellows and Faculty Fellows present their research and facilitate discussion about cross-cutting issues on sustainability challenges. Discussions often touch on similarities and differences of approaches used across disciplines. Fellows share best practices and encourage each other to communicate research in terms accessible to practitioners, the media, and other interested audiences. Fellows also interact regularly with U-M faculty over dinners that promote dialogue, mentorship, and reflection about current events and research programs focused on sustainability.

DIVING DEEPER
In addition to cross-cohort collaborations, fellows participate in skills training sessions in the fall and winter terms. Among the chief topics is learning how to communicate research efforts to broad audiences effectively. During the past year, professionals advised fellows on how to pitch their research to the public and a multi-disciplinary audience of peers. This short pitch session provided the practice and preparation for future presentations to practitioners, colleagues, and others.
Dow Sustainability Fellows continue to engage across cohorts and interact with a diverse group of undergraduate scholars. To cite just one example, in 2017 Sandra Steingraber, an activist, and scientist discussed her life story and her role as a professional evaluating the impact of fracking in New York. This event was initiated by undergraduate scholars, with participation among multiple cohorts, including students at all grade levels.

Conversation and Skill Building

During 2017, Dr. Yanna Lambrinidou, founder of the non-profit children’s environmental health organization Parents for Nontoxic Alternatives and national expert on the U.S. Lead and Copper Rule, led workshops of Dow Masters and Doctoral Fellows on the meaningful engagement of vulnerable communities and on roles for advocacy and science in policy.

Throughout the year, all fellows participated in skill-building sessions devoted to topics such as leadership and decision-making, and science communication. These were presented by U-M professionals, along with Dr. Neil Hawkins of The Dow Chemical Company, who discussed sustainability career pathways.

“Along with the support of my dissertation committee and funders like Dow Chemical, I have built a research network that engages four NGOs, operates in 12 languages, and has employed 42 people throughout the year. The Dow Fellowship not only gave me the initial capital to execute this project, it also signaled to other funders that this project was worth their investment.”

— Jennifer Zavaleta, Dow Doctoral Fellow 2017-2018

CURRENT DOCTORAL RESEARCH TOPICS

- ENERGY EQUITY
- WATER POLICY
- ELECTRONIC WASTE
- SUSTAINABLE AND HEALTHY FOOD CONSUMPTION
- GREEN INFRASTRUCTURE
- RENEWABLE ENERGY
- COMMUNITY BENEFITS ORDINANCE
In spring 2018, 14 student-led sustainability project teams were each awarded $5,000 seed grants to execute innovative sustainable solutions around the world. Each interdisciplinary team has representation from at least three distinct disciplines, and in total, 15 schools and colleges are represented on these collaborative, real-world sustainability projects.

**Dow Distinguished Award — Large Grant Winners**

Based on their progress and potential, a select few seed grant project teams are invited to participate in a fall semester competition for large project grants of up to $50,000. After pitching their large grant concepts to a panel of sustainability scholars and practitioners, the teams are evaluated on various criteria, including: innovation, the potential for social benefits and sustainability impact, inclusivity of multiple disciplines, supporting data and analysis, scalability, replicability, and the likelihood of success.

In late 2017, three student-led teams were awarded funding to continue their work on identifying the needs of and empowering communities. These projects include Sustainable Solutions in Brazil (Ocupação Anchieta Avança! $35,000), Solar-Powered Mini Electric Vehicle ($30,000), and Greening the Dental Clinic ($10,000).

**Sustainable Solutions in Brazil**

Ocupação Anchieta Avança!, a student team working to create sustainable solutions is collaborating with the community group Ocupação Anchieta. Ocupação Anchieta represents people occupying land owned by Instituto Anchieta Grajaú (IAG) on the outskirts of São Paulo, Brazil. Together, the Dow team, the community, and IAG are implementing sustainable design solutions to waste-disposal challenges, environmental degradation, and safe housing.

- Creating a community plan balancing resident needs with environmental health and stewardship;
- Building housing prototypes with sewage biodigesters, and community cultural and recreational spaces; and
- Promoting conversations around the negotiation of the right to adequate housing and the right to a safe environment.

**Solar-Powered Mini Electric Vehicle**

This project started with an internship with the independent start-up, Afreecar. The team is creating a low-carbon, low-cost vehicle for use in developing markets. With a Dow Distinguished Award seed grant, the team developed a vehicle prototype in collaboration with Pratt & Miller Engineering and collected market research in Ghana, where a team liaison worked with professors at the Kwame Nkrumah University of Science and Technology in Kumasi. They analyzed the Ghanaians’ responses to the prototype vehicle features and how and where they might use a solar-powered cart.

The team won $30,000 in the second round of the Dow Distinguished Awards competition. They will use the additional funding to explore markets in other countries, focusing on Southeast Asia, and to continue to test and modify the vehicle prototype. To expand the functionality of the cart, the team is also planning to create a smartphone app to allow the vehicle to connect to networks.

**Greening the Dental Clinic**

This team is building from groundwork laid in a 2016 Dow Master’s Fellowship project which developed recommendations to improve patient care and sustainability in dental clinics. Using the Distinguished Awards funding, team activities include:

- Operating a website where dental professionals can access the recommendations and gain sustainability guidance, see greeningthedentalclinic.org; and
- Working on multiple case studies of sustainable dental clinic practices at the U-M School of Dentistry.
MAKING CHANGE IN PLACE, A SNAPSHOT OF THE 2017 SYMPOSIUM

On Saturday, November 18, the teams of Dow Sustainability Fellows presented the culmination of their year-long projects at the Dow Symposium. Over 100 faculty, students, practitioners, clients, and representatives from The Dow Chemical Company attended the event.

Two poster sessions featured the work of the Dow Sustainability Master’s Fellows from 2017 and the Dow Sustainability Doctoral and Post-doctoral Fellows. Symposium attendees mingled with students and learned more about the process and outcomes of the projects.

In her keynote address, Dr. Yanna Lambrinidou — affiliate faculty at Virginia Tech, founder of Parents for Nontoxic Alternatives, and a national expert on the U.S. Lead and Copper Rule — gave an inspirational presentation on the community voices of the Flint water crisis. She encouraged the audience to advocate for and, importantly, listen to the people we are trying to serve in our sustainability projects. Lambrinidou received a standing ovation for her thoughtful insights on how to engage and thoughtfully listen to vulnerable communities.

The Symposium also featured presentations from five student teams selected to pitch their ideas for the Dow Distinguished Awards Competition before a distinguished panel of four judges. The judges were Yanna Lambrinidou, Amanda Edmonds, U-M alumna and Mayor of Ypsilanti, MI; Michael Shriberg, Director of the Great Lakes Region for the National Wildlife Federation; and Lauren Bigelow, CEO of the Growth Capital Network. The awardees were selected by the panel and announced at the Symposium luncheon (see page 10 for more information about the Dow Distinguished Awards Competition).

LOOKING AHEAD

“One of the [business] leaders said, ‘this community has a lot of challenges, but I don’t see them as challenges, I see them as small fences I have to hop over. The energy really made it amazing.’

— Anna Lenhart, 2017 Dow Master’s Fellow, Ford School of Public Policy

Support for the Dow Sustainability Fellows Program is secured through 2020, with the current gift funding Master’s and Professional Fellows, the Distinguished Awards competition and various co-curricular experiences. We’re indebted to The Dow Chemical Company Foundation and The Dow Chemical Company for their continued support of U-M student leaders who are committed to working with organizations, stakeholders, and communities on collaborative sustainability solutions.

“There is no other program quite like this in the world. It’s unique because of the strong partnership between U-M and Dow focused on progressing an interdisciplinary model of education to prepare the next generation of sustainability leaders.”

— Neil C. Hawkins, Dow Corporate Vice President and Chief Sustainability Officer
ABOUT THE DOW SUSTAINABILITY FELLOWS PROGRAM

Made possible by The Dow Chemical Company Foundation, the Dow Sustainability Fellows Program at the University of Michigan supports full-time graduate students and postdoctoral scholars at the university who are committed to finding interdisciplinary, actionable, and meaningful sustainability solutions on local-to-global scales. The program prepares future sustainability leaders to make a positive difference in organizations worldwide. We believe that diversity, equity, and inclusion are key to empowerment and to the advancement of sustainability knowledge, learning, and leadership. See: sustainability.umich.edu/dow

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