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Sustainability Champion Series: Shiladitya DasSarma

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The School of Medicine professor has been focusing on the environment in his research and his personal life for years.

The **University of Maryland, Baltimore (UMB) Office of Sustainability** would like to recognize Shiladitya DasSarma, PhD, as a **Sustainability Champion!** DasSarma, a professor in the Department of Microbiology and Immunology at the School of Medicine, has been at UMB since 2010 and a professor since 1986.

Before coming to UMB, DasSarma's tenure was at the University of Maryland Biotechnology Institute, and before that, at the University of Massachusetts Amherst. He began as a National Science Foundation graduate fellow at Massachusetts Institute of Technology with professor Har Gobind Khorana, who won the Nobel Prize for cracking the genetic code. DasSarma's early days also included time as a postdoctoral fellow at Massachusetts General Hospital, a teaching hospital of Harvard Medical School, with professor Howard M. Goodman of Genentech fame. DasSarma also spent a short stint as a visiting scientist at the Pasteur Institute between his postdoc and beginning his faculty position at UMass-Amherst.

During his time at UMB, DasSarma has set up the Genomics PhD in the Graduate Program in Life Sciences Molecular Medicine program, served as the UMB institutional program representative to the **Marine, Estuarine, and Environmental Science (MEES) graduate program**, and helped move the MEES program at UMB to the School of Graduate Studies. The MEES graduate program has become a passion of DasSarma, as evidenced by his acceptance of the role as chair of the program's Environment, Health, and Society Foundation.

With the climate crisis becoming a concern across UMB programs, DasSarma started a regular discussion group of faculty from many of UMB's professional schools as well as the MEES program, which is based at the University of Maryland, College Park (UMCP). With support from UMB's School of Graduate Studies, including Dean Kenneth H. Wong, PhD, and associate dean Erin Golembewski, PhD, and a grant from UMB's Interprofessional Education Collaborative (IPEC), the group developed an interprofessional course called "Climate Change, Health, and Society" (CIPP650), which is currently being taught for the second year and includes guest faculty from UMB, UMCP, and the University of Maryland, Baltimore County. This course has allowed students and faculty to get out of disciplinary silos and work together to address an important problem in society — the climate crisis.

In addition, DasSarma was able to, with the support of Provost Roger J. Ward, EdD, JD, MSL, MPA, launch the UMB Provost's Climate Health & Resiliency Summer Internship program, and the first cohort has already made an impact by publishing papers, making statements, and developing innovative solutions to climate change. The idea behind both the course and internship program is to allow students to work together in teams toward real-world solutions to climate and environmental challenges while partnering with faculty, stakeholders, and leaders in the surrounding Baltimore community and state of Maryland.

In addition to serving as director of the CIPP650 course, DasSarma's research has focused on topics surrounding life in extreme environments and the mechanisms of cell survival after environmental stress. He has studied how some microorganisms, called extremophiles, can survive in environments that are too harsh for most other life forms, like conditions on Mars. But DasSarma posits that "the real value of this research to society and for sustainability is that it informs us about how life on Earth can adapt and survive when faced with challenging conditions, as well as understanding the genomic mechanisms operating during the evolution of life on our planet over the eons."

DasSarma also notes that this kind of research is leading to the development of exciting new technologies. "Our lab has developed stable bioengineerable nanoparticles, which can be used for vaccines against tropical diseases, and most recently as therapeutic agents against cancer," he says. DasSarma's lab has also been involved in developing applications to alleviate the impacts of climate change, including reducing the high global warming potential of fertilizer components through the process of bioremediation.

When reflecting on how he integrates sustainability outside of work, DasSarma states that he has been aware of the limits to resources in his life. He recalls coming of age during the Organization of the Petroleum Exporting Countries (OPEC) oil embargo, which led to lines at gas pumps, a 55-mph speed limit on interstate highways, and the first solar panels on President Jimmy Carter's White House roof. Through these experiences, DasSarma and his family have led a conservationist lifestyle. DasSarma is pescatarian, and the rest of his family members keep a vegetarian diet. They drive electric vehicles and limit their air travel. Finally, they maintain a small forest on their property and try to plant trees whenever they do fly.

At the Institute of Marine and Environmental Technology (IMET) where DasSarma's research lab is located, he advocated for the installation of the first electric vehicle charger in 2015. The IMET garage now has six chargers, with many faculty driving electric vehicles, aligning with the role of IMET as a joint environmental institute of the University System of Maryland. Many of the faculty also telework whenever possible and use video calling to reduce their carbon footprint.

DasSarma also co-founded **MACA** (MIT Alumni for Climate Action, aka "Make America Cool Again") with fellow alumni at MIT. This group wrote a letter signed by over 100 MIT alumni and published in *The Baltimore Sun* as an op-ed in October 2018 supporting passage of the Maryland Clean Energy Jobs Act, which mandated 50 percent renewable energy by 2030. Since then, MACA has been active nationally and internationally, focusing on science-based policies that support the rapid transition to renewable energy.

Lastly, when asked about what students, staff, and faculty at UMB can do to contribute to campus sustainability efforts, DasSarma emphasized the current work that is occurring.

"I think that everyone on campus can get involved in the amazing work being done here. We have one of the best sustainability offices I know about, and UMB has made a commitment to building the first net-zero building in downtown Baltimore," he said.



He also invites everyone to **join the faculty-led Climate Change, Health, and Society initiative on campus**, to get involved with the interprofessional CIPP650 course (as many have!), and for students to look into the summer internships. With support from IPEC, there is also a fall Climate Speaker Series and Symposium, which complements the **spring Climate Symposium** sponsored by the Center for Vaccine Development and Global Health and Office of Sustainability to celebrate Earth Day.

DasSarma concluded, “Our state and campus are such an exciting place to live and work and to be able to do something constructive to make our future better and more sustainable. Our leaders need our help to make the world sustainable for everyone, so we all need to vote in our elections and with our pocketbooks. There’s no time to waste!”

*Do you have a UMB Sustainability Champion you would like to nominate to be featured? **Please fill out this form.** Self-nominations are welcome.*