



PARTNERSHIPS

Green Talents

Three Brazilians are among the top awardees in Germany for sustainable development

Sustainable development and academic internationalization are two current themes that have been merged into one global environment award. They can have a very positive effect on the careers of the awardees. This is what happened when three Brazilians won the Green Talents Award, administered by the German Federal Education and Research Ministry for their research projects in the fields of hydrology and soil science, renewable energy and agriculture. Among the 27 winners selected out of a total of 574 applicants from 91 countries, the three Brazilians were: Paulo Tarso Sanches de Oliveira, who was a post-doctorate intern at the São Carlos School of Engineering at USP (EESC-USP); Larissa Marchiori Pacheco, who is working on her master's degree at the USP School of Economics, Business Administration and Accounting in Ribeirão Preto (FEA-RP); and Paula de Carvalho Machado Araujo, a master's degree student at the Federal Rural University of Rio de Janeiro (UFRRJ).

Green Talents awardees receive two weeks of visits and interaction with researchers at German universities and institutions such as Fraunhofer Fokus, the Berlin Center of Competence for Water, the Ecologic Institute and companies such as Henkel and ThyssenKrupp Steel, to name a few.

Paulo Tarso is a FAPESP post-doctorate grant recipient for a project that is studying hydrological and soil erosion systems in the Brazilian Cerrado. "In addition to bringing international prestige, the Green Talents Award has contributed to expanding my network of contacts in Germany for potential research partnerships," Tarso says. "Over a two-week period, I met with researchers in the area of hydrology at the universities of Stuttgart and Potsdam and the Max Planck Institute for Meteorology. These meetings were productive and resulted in collaboration on two new scientific articles." Now Tarso plans to be a professor, but first he will take advantage of another benefit to being a Green Talent: a three-month stay in Germany in

2016 to study. "I think this partnership will likely continue and generate benefits for the research I am now conducting in Brazil."

For Larissa Marchiori Pacheco, who plans to work as a researcher and professor, "the award was important in that it enhances the prestige of the work being done by researchers who are still in the early stages of their professional life." The award also offers partnership opportunities with German institutions for sharing knowledge. "The contact with researchers and professionals showed me the possibilities for working as a researcher and helped me identify my goals for the coming years," she says. Pacheco is studying attitudes businesses have about natural resources and sustainable development from the perspective of green innovation.

Paula Araujo, the third Brazilian awardee, is pursuing her master's degree in organic agriculture at UFRRJ and is working as a specialist at the Mamirauá Institute for Sustainable Development in the Brazilian Amazon. She is a veterinarian and her study is in the field of cattle ranching with projects related to agro-ecological pasture management. "The one-on-one meetings with three experts in my field were the most important part of the award because I was able to share my initiatives and experiences and obtain positive feedback from them," Araujo says. "In addition, the contact opens up new partnership opportunities between the Mamirauá Institute, UFRRJ and other institutions in Germany." ■

Marcos de Oliveira

Universities with the largest number of alumni that have become entrepreneurs

Narrowing the gap between the business world and the academic world by giving researchers incentives for turning works of science into commercial products may be a strong factor in university internationalization efforts. This is illustrated in the newly published *PitchBook Universities Report*, which ranks the 10 universities in the world that produce the largest number of entrepreneur candidates. They receive what is known as venture capital, grants that usually come from investors and help with the transition from ideas to profitable realities. All in all, the undergraduate programs of these institutions — led by Stanford University, the University of California, Berkeley and the Massachusetts Institute of Technology (MIT), all in the United States — produced a group of entrepreneurs who, from 2010 to 2015, created over 3,000 companies that received US\$33.5 million.

The report also shows the institutions with the best graduate and MBA programs and highlights the program offered by Fundação Getulio Vargas (FGV) in São Paulo. The foundation is among the five institutions of higher learning with the best MBA programs outside Europe and the United States.

The document suggests that the path for turning research into a highly successful business venture requires more than good management of business models. There must be an investment in establishing networks that include professors, investors and partners as a way to form a human nexus to generate a flow of resources for innovation. ■

Rodrigo de Oliveira Andrade

PROFILE

Expertise in fiber optics

Brazilian physicist spent 30 years in the United States, worked at NASA, and returned to Brazil, where he is developing a company in São José dos Campos



Physicist Claudio Egalon, 52, has extensive expertise in fiber optics. He returned to Brazil in 2015 after obtaining approval for a project in the FAPESP Program to Support Research in Small Business

(PAPPE/PIPE). He had been living in Los Angeles, and owned Science & Sensors, a company that since 2008 has been working to develop a fiber optic sensor for the U.S. Department of Agriculture (USDA) to measure the concentration of nutrients in liquid solutions for hydroponically grown plants. “During this project, I also successfully developed a colorimeter in the form of an educational kit. The device measures nutrients in plants grown in hydroponic environments,” he explains. Now, in the PAPPE/PIPE project, he is working on a sensor to measure the level of liquid in this type of plant down to nanometers. “I want to know how much water the plant consumes. This information helps evaluate how healthy a plant is.” In all of these sensors, Egalon uses side illumination optical fiber sensor technology, in which the light illuminates the cylindrical surface of the device. By using a number of LEDs along the fiber, this technique creates sensing points with just one detector.

Egalon graduated with a degree in physics from the Federal University of Rio de Janeiro (UFRJ) and earned a master’s degree and PhD from the College

of William & Mary, and a second PhD from Old Dominion University, both in the United States. Afterwards he went to work as a researcher at the NASA Langley Research Center, where he spent 10 years working with sensors and fiber optics. From 1993 to 1994, he was the first Brazilian to conduct microgravity experiments on the NASA KC-135 aircraft, used for training astronauts. In flight, weightlessness is created with parabolic maneuvers and passengers float inside the airplane. “I was on that flight six times,” he says.

After leaving NASA, he taught at the University of Puerto Rico and also worked at the US Air Force Laboratory, Philips Research Site, in New Mexico. In 1998 Egalon moved to Intelligent Optical Systems (IOS), a small sensor company near Los Angeles. He returned to Brazil in 2002 after his first PIPE project was accepted to develop a fiber sensor to identify chlorine ions in reinforced concrete, but he was unable to move on to phase two. “I went back to the United States and taught in schools while I sought funding for my projects,” he says. In 2006, he obtained financing from the National Science Foundation (NSF) to develop a fiber optic sensor for relative humidity with applications in intelligent structures such as bridges and spaceships. Then he worked on two projects from USDA that lasted until 2011.

Over the years Egalon has accumulated 26 patents. “Now I am in São José dos Campos developing a research and consulting firm.” ■

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