

Photo: Argonne National Laboratory

Argonne National Laboratory, located just outside of Chicago near Lemont, Ill., is one of the U.S. Department of Energy's largest national laboratories for scientific and engineering research.

Engaging America's experts: Argonne's program to support the IAEA

By Allison M. Holiski

With the United States being the largest financial contributor to the International Atomic Energy Agency, providing 25 percent of the agency's regular budget in 2012, it would only be reasonable to assume that an active U.S. support program is in place—and one is.

Sprawling across multiple agencies and national laboratories is a network of professionals whose knowledge and expertise help fuel the IAEA. Not only are these experts supporting the agency through their cur-

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The lab's International Programs helps researchers from abroad and makes U.S. expertise available to the International Atomic Energy Agency.

rent employers here in the United States, but many also travel overseas to cooperate on technical projects or even accept professional staff assignments working directly for the agency.

The peaceful applications of nuclear technology promoted through the IAEA offer the potential to solve global problems ranging from energy shortages to food insecurity and ocean acidification, and even to help combat cancer. Argonne National Laboratory's International Programs, housed in the lab's Nuclear Engineering Division under Division Director Hussein Khalil and Associate Director Tom Ewing, administers a work-for-others contract for the U.S. Department of

State's Office of Multilateral Nuclear and Security Affairs. Through this contract, International Programs has taken up the call of the Non-Proliferation Treaty's (NPT) Article IV, promoting peaceful uses of nuclear energy and technology through education, training, meeting participation, and recruitment.

Training courses

Since 1976, Argonne—located near Lemont, Ill.—has co-organized and hosted more than 145 joint U.S.-IAEA training courses, and by the end of 2012, more than 4000 people from 125 countries will have participated.

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Photo: Argonne National Laboratory

Participants in the IAEA-Argonne training course on Developing National Long-Range Nuclear Energy Strategies (International Project on Innovative Nuclear Reactors and Fuel Cycles), held August 20–31, 2012, at Argonne, represented eight countries across three regions—Asia and the Pacific, Europe, and Latin America. Also, two IAEA fellows from Nigeria who were currently training at Argonne observed the course.

According to Joe Braun, a nuclear engineer at Argonne who has been involved in over 40 IAEA training courses since 1998, the participants, who come from many nations, cultures, and different life experiences, are all “so full of energy and excitement about being at Argonne. In our last course we had 29 people from 21 different countries, with at least one person from almost every continent. It was like a UN meeting.”

Charles Roche, who lectures in the IAEA-Argonne courses on security of nuclear and radioactive materials, said, “The participants are eager to be involved in the training course. They have a wealth of experience, gathered throughout their careers, and are generally willing to share with their colleagues and the instructors.”

This makes for engaging discussions during the courses, which typically last one or two weeks and center on different fields of peaceful uses and applications of nuclear energy and technology—ranging from quality assurance in radiotherapy to developing long-range nuclear energy strategies and safety assessments of nuclear power plants. During the courses, participants are exposed to as much content as possible.

Some courses also incorporate simulation exercises in which participants may, for example, play the role of engineers and operators at a hypothetical nuclear power plant that is starting to experience fuel-related problems. Their job would be to diagnose the problems and agree on a course of ac-

tion, after which the group fast-forwards to a new scenario, several weeks or months later, in which the fuel problems have increased. This continues until they eventually shut down the plant and look for the failed fuel. “This sequence of brief scenarios, which continued over several classroom days, was very popular with the course participants because it showed them how things tend to happen in the real world,” Braun said.

“The thing that Argonne does very well is making efficient use of the time available for the course and doing our best to make the participants’ experience pleasant and productive,” said Lawrence (Walt) Deitrich, a resident research reactor expert at Argonne who regularly contributes to the

courses. “The logistics are well organized; the availability of nearby accommodations minimizes travel time. We are also fortunate to get excellent support from domestic and international experts to lecture at our courses, providing excellent technical content. Argonne’s reputation for conducting state-of-the-art courses makes people want to participate.”

With so much to cover in so little time, in order to be effective, “it is important that the course contain a mix of lectures and participatory exercises,” Roche said.

Participants also tend to enjoy the academic environment surrounding the IAEA-Argonne courses, which can feel more like a home school than a big business. At least partially responsible for this could be the

More information about International Programs

For more information about Argonne National Laboratory’s International Programs, visit <http://international.anl.gov>. U.S. experts interested in lecturing at IAEA-Argonne training courses, hosting IAEA fellowships, participating in IAEA meetings, or considering IAEA employment should contact International Programs for guidance via the following e-mail addresses:

Training Courses
<IAEA-ANLCourse@anl.gov>

Meetings
<US-IAEANom@anl.gov>

Fellowships
<IAEAFellow@anl.gov>

Careers
<IAEAStaffing@anl.gov>

laboratory's layout, which in many ways resembles a college campus, but the demeanor of Argonne's staff, who are prepared to go above and beyond to ensure a successful course and good experiences, certainly contributes.

Fellowship program

These international training activities don't end at the boundaries of Argonne's site. International Programs also administers the IAEA's Technical Cooperation Fellowship Program across the United States, bringing scientists and engineers from various IAEA member states and placing them at labs, government agencies, universities, and private corporations for training. While some fellows do train at Argonne, the vast majority are spread out across the United States with different host institutions for durations ranging from one week to 10 months.

Having to coordinate from 40 to 70 fellowships at any given time necessitates a highly systematized process. Once Argonne receives an application for a fellowship from the IAEA, it goes through an approval process with the State Department and other agencies, including the Department of Energy and the Nuclear Regulatory Commission. After the application is approved, Argonne contacts the recommended host institution and works to develop a training program, which is sent to the IAEA for review. At that time, Argonne arranges security clearances, travel plans, and visa assistance. Upon the fellow's arrival, Argonne helps with any problems or situations that may arise.

While some small-group fellowships are awarded, the majority of fellows receive one-on-one personalized training. "With



Luz Gomez-Pando, of Peru, received training in the area of molecular markers in crop breeding during her IAEA fellowship at Brigham Young University.

groups you get to really crank up the dynamics and have fun in seeing people gel and solve problems and learn," said Larry Boing, an Argonne expert in facility and site decommissioning who has both lectured at the training courses and hosted fellows. Training fellows, however, is more detailed and intensive.

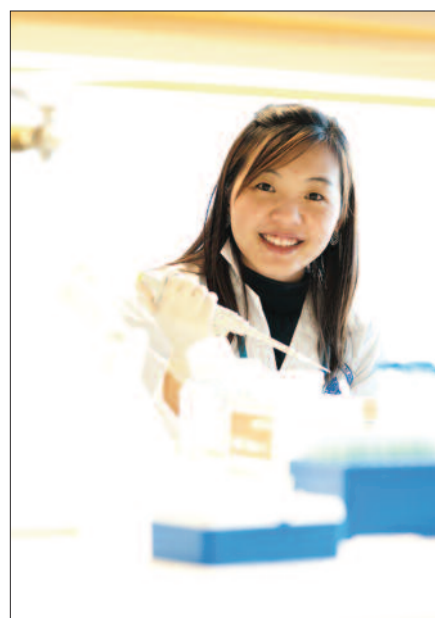
Luz Gomez-Pando, a principal professor and head of the Cereals and Native Grains Research Program at Peru's Universidad Nacional Agraria La Molina, applied to the IAEA's Fellowship Program and trained at Brigham Young University in 2012. The "yellow rust" fungus had been reported in her home country of Peru in 1976, and all the cultivars used as food by small farmers became susceptible to it, but scientists had hardly any access to funds for research into mutation induction to create resistant grain crops. "This new knowledge in molecular markers and its use in plant genetic improvement is very valuable for my research work and my teaching activities," Gomez-Pando said. "We are trying to improve our work in conventional breeding with these new technologies of molecular biology, especially for improvement of native crops."

Another fellow, Anchisa Kunawudhi, is a nuclear medicine physician at the National Cyclotron and Positron Emission Tomography Center in Thailand, where she is responsible for cancer diagnostics and treatments. Her institution is one of only two facilities equipped with on-site cyclotrons in Thailand, and their greatest challenge is a lack of human resources and knowledge base in atomic energy, especially in terms of healthcare applications. "I always wanted to make a difference to the development of nuclear medicine in Thailand," Kunawudhi said. "While this could come in different shapes or forms, I personally believe in collaborating with practitioners in other leading institutions around the world and bringing back cutting-edge knowledge to Thailand. With this objective in mind, I jumped on the opportunity of applying for an IAEA fellowship once I became aware of it."

Kunawudhi trained for 10 months at Massachusetts General Hospital in Boston, conducting research in cell tracking and reporter gene imaging with PET. Not only did the fellowship broaden her expertise, it also served as an opportunity to develop and strengthen relationships between Thai research institutions and the world's leading research centers. "I hope that this will allow greater international collaboration in Thailand in the near future," she said.

Meeting nominations

While training courses and fellowships bring scientists and engineers from around the world to the United States for training, many Americans take their expertise overseas. In fact, numerous U.S. experts participate in IAEA meetings, and each of these



Anchisa Kunawudhi, a nuclear medicine physician from Thailand, undertook an IAEA fellowship in nuclear medicine imaging at Massachusetts General Hospital in Boston.

experts—around 600 of them per year—passes through the nominations program administered at Argonne.

"The nominations program is responsible for processing the clearances for U.S. experts, private citizens, and federal employees to attend IAEA nonsafeguards-related meetings. We work with the Department of State and various agencies to facilitate these clearances as quickly and efficiently as possible," said Natalie Wren, an administrative secretary in International Programs. In addition, International Programs recommends resources for traveling safely, such as the State Department's Smart Traveler Enrollment Program and safety and security tips from the Federal Bureau of Investigation.

"It is really fascinating what our entire group does on a daily basis with administering these U.S. support programs for the IAEA. I feel as though our work is very important in transferring this high-level knowledge to developing countries around the world," Wren said.

Careers

The most recent program added to International Programs' repertoire is Staffing. Not only do Americans have a wide variety of skills and experience that can benefit the IAEA, but employment with the agency adds to their qualifications for future work endeavors upon their repatriation.

While the State Department's Bureau of International Organization Affairs is responsible for efforts to increase American representation in numerous United Nations and international organizations, International Programs at Argonne assists by specifically recruiting U.S. citizens for professional staff vacancies in the IAEA's non-

safeguards departments, which include Management, Nuclear Sciences and Applications, Nuclear Energy, Nuclear Safety and Security, and Technical Cooperation. Argonne also collaborates with the International Safeguards Project Office at Brookhaven National Laboratory, which recruits Americans for the IAEA's Department of Safeguards.

Argonne's recruitment strategy involves interagency collaboration and various outreach and marketing methods to reach the vast audience of well-qualified experts it wants to attract. Its eclectic combination of activities merges traditional networking, such as referrals and conference exhibitions, with the opportunities that exist through online and social media avenues. It also strives to complement the IAEA's own hiring policies and initiatives, such as increasing the representation of women in the agency's professional staff.

For those Americans who are interested in IAEA employment, Argonne provides personalized IAEA job alerts, shares tips for applying and interviewing, tracks applications through the selection process, facilitates networking opportunities with Americans currently working at the IAEA, and provides resources for Americans transitioning to Vienna.

Brian Bales, a systems analyst in the IAEA's Department of Nuclear Energy, said

that he went to work for the IAEA because he wanted to work for an organization that was making a difference in the world. "The work here has been challenging and satisfying," he said. "I have had training and development opportunities I wouldn't have had at my previous employer. I've been able to work on interesting systems with some of the brightest people I've ever met, people from all around the world."

Warren Stern, who was director of the IAEA's Incident and Emergency Center before returning to the United States—where he has worked for the State Department, served by presidential appointment as head of the Department of Homeland Security's Domestic Nuclear Detection Office, and now independently consults—also valued the international experience. "Managing at the IAEA was one of the most rewarding experiences in my life," he said. "Where else can one work with highly skilled experts from Belarus, Japan, Austria, Pakistan, Germany, Slovenia, Hungary, and France and create safety and security standards and training programs that are truly global? Sure, there are challenges as there would be anywhere, but they are well worth the experience. It is a wonderful opportunity to serve both your country and the international community. I highly recommend pursuing a career at the IAEA. In fact," he added, "I can't imagine a career in the nuclear field

that doesn't include work at the IAEA."

A long-term vision

For Sunaree Hamilton, who has managed International Programs since returning in 2000 from the IAEA, where she worked in the IAEA-Technical Cooperation Evaluation Section, the vision for International Programs is "to expand the training program to cover more subject areas under the peaceful uses of nuclear energy and to expand the outreach efforts to reach more well-qualified candidates who would be the best to represent our nation at international organizations such as the IAEA."

Secretary of State Hilary Clinton's 2010 announcement at the NPT review conference of \$50 million in U.S. support for peaceful uses initiatives over the next four years reflects the United States' commitment not only to advancing broader humanitarian goals but also to the peaceful application of nuclear energy for states in compliance with their nonproliferation obligations, as well as support for the IAEA and the NPT. The U.S. funds have already been committed toward projects relating to cancer therapy, water resource management, food security, and nuclear power infrastructure development. For International Programs, the future holds exciting possibilities for increased engagement of Americans and support to the IAEA. **■**