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**Contact:**

**Milena Perez Schmidt**  
Dentsu Communications  
212-660-6787  
[mperez@dcinyc.com](mailto:mperez@dcinyc.com)

**Lisa Quirindongo**  
Dentsu Communications  
203-430-3550  
[lquirindongo@dcinyc.com](mailto:lquirindongo@dcinyc.com)

## KSTF TEACHING FELLOW JOINS ANTARCTIC EXPEDITION TO COMPLETE CONSTRUCTION OF WORLD'S LARGEST NEUTRINO TELESCOPE

### High School Physics Teacher Katherine Shirey Travels to South Pole to Engage Students in the Thrill of Scientific Discovery

Moorestown, NJ, November 2, 2010 — Katherine Shirey, Knowles Science Teaching Foundation (KSTF) Teaching Fellow and physics teacher in Arlington, Virginia's Washington-Lee High School, will make history as she travels to the South Pole on November 13 to take part in the final construction phase of IceCube ([www.icecube.wisc.edu](http://www.icecube.wisc.edu)). Built in deep Antarctic ice, IceCube is the world's largest neutrino detector and the biggest research project ever attempted in Antarctica. The only teacher taking part in the IceCube project during the 2010-2011 winter (astral summer), Ms. Shirey will conduct virtual lessons with students nationwide, bringing polar science into the classroom through blogs, photo sharing, Facebook and webcasts.

"The IceCube project combines the best parts of theory, technology and human curiosity," said Katherine Shirey. "Not only do I have a front row seat during this last year of IceCube's construction, but I will be able to share my experiences in real-time with my students."

Ms. Shirey students' at Washington-Lee High school will be joined by KSTF's nationwide network of teachers and their classrooms. As the country's "teaching" ambassador at the South Pole, Ms. Shirey plans to pose and respond to a number of questions aimed at fueling students' scientific curiosity. Can the solar ovens that her students designed bake cupcakes in the South Pole? How will her blood be affected by the Pole's austere climate, extreme temperatures, and 24 hour sunlight? Ms. Shirey will be blogging about her life at the Pole at <http://polartrec.com/expeditions/icecube-in-ice-antarctic-telescope-2010>

"KSTF Teaching Fellows are amazing professional teachers with a deep commitment to their students," said Dr. Nicole Gillespie, KSTF's Associate Director for Teaching Fellowships. "Connecting fellows like Katherine and Casey with the opportunity to engage in cutting-edge scientific research means their students, and the students of other KSTF Fellows they work with, are going to have a unique perspective on authentic, current scientific discoveries."

Ms. Shirey is the second KSTF Teaching Fellow to take part in the IceCube project. High school physics teacher Casey O'Hara of Belmont, California, traveled to Antarctica during the 2009-2010 winter. The KSTF team used their IceCube experience to create [downloadable curriculum](#) for teachers with hands-on activities like 'Seeing the Invisible: Capture Infrared Light Using a Digital Camera,' and "Lost Popcorn Mass: A Loss of Mass Requires New Explanation."

Encompassing a cubic kilometer of ice, IceCube uses a novel astronomical messenger called a neutrino to probe the universe. It deploys thousands of spherical optical sensors on "strings" of sixty modules each, into holes in the ice melted using a hot water drill. Seventy-nine IceCube strings have been integrated thus far, with the last seven being deployed this winter. Significant scientific investigations are already under way with the data collected during the seven-year construction phase. Such data collection is expected to continue for the next 20 years.

During her time at the South Pole, Ms. Shirey will be working on IceTop, a related project that studies particles from outer space known as cosmic rays. Ms. Shirey will be part of the team constructing IceTop detectors on the surface at the South Pole. Light sensors will be placed in 500 gallons of water that freezes in plastic tubs to make an "eye" to see the cosmic rays.

IceCube involves collaboration between thirty leading institutions in the US, Sweden, Germany, Belgium, the Netherlands, Japan, Switzerland, New Zealand, and Britain. The \$272 million project is sponsored in large part by the National Science Foundation. Education and outreach are a key part of the project. "Just as IceCube has enormous potential to improve our understanding of the universe, it is an equally powerful tool to inspire and engage students in science and scientific exploration," said Dr. James Madsen, physics professor at the University of Wisconsin at River Falls.

To commemorate the completion of IceCube, Katherine Shirey and the team of IceCube researchers have been invited to create artwork inspired by their polar experience. The April 2011 exhibit will be held at IceCube's lead university, the University of Wisconsin in Madison. Ms. Shirey is an accomplished sculptor, having earned degrees in physics and studio art from the University of Virginia.

The team of KSTF Teaching Fellows working with Ms. Shirey on the Ice Cube project consists of:

- Casey O'Hara, physics teacher, Carlmont High School, Belmont, CA
- Kristen Fancher, chemistry/mathematics teacher, Romulus High School, Romulus, MI
- James Lane, biology teacher, AFSA High School, Vadnais Heights, MN
- Scott Murphy, physics teacher, Mastery Charter School Thomas Campus, Philadelphia, PA

### **About KSTF**

The Knowles Science Teaching Foundation (KSTF) was established by Janet H. and C. Harry Knowles in 1999 to increase the number of high quality high school science and mathematics teachers and ultimately improve math and science education in the United States. The KSTF Teaching Fellowship, the Foundation's signature program, awards exceptional young men and women with a five-year early-career fellowship, empowering them to become master teachers and leaders in education. For more information, visit [www.kstf.org](http://www.kstf.org)