

# Keerthi Krishnan, PhD of Cold Spring Harbor Laboratory

By Jim Keller

*Note: The IRSF Spotlight's intent is to give our lay and scientific communities an idea of who IRSF funded investigators are both as a person and a scientist working to make Research a Reality.*



Part of what makes my work at IRSF so enjoyable and worthwhile is the opportunity to interact with young investigators. Whether through meeting them at our annual Rett syndrome Symposium or assisting them with application submission, there's something special about working with the scientists of tomorrow. At any point in their careers these investigators can contribute significantly to developing therapeutics and possibly a cure for this devastating disease. It is for this reason that IRSF's Basic Science Research program includes the Post-doctoral Fellowship Award mechanism—to introduce young investigators to the field of Rett syndrome Research and to facilitate the growth of these investigators into top notch scientists. Through IRSF seed funding, young scientists can begin to publish their research findings and go on to obtain much larger government grants from agencies such as the National Institute of Health (NIH) that help them build their careers, which foster the therapeutics of the future.

Dr. Keerthi Krishnan is one of four young investigators from across the globe that has been chosen for this competitive Award. This year IRSF announced that it would fund Dr. Krishnan's grant titled "Role of MeCP2 in the maturation of neocortical GABA interneurons and critical period of plasticity" as part of its 2010 Basic Science Research grant funding.

Brain function involves networks of neurons communicating with each other, using chemicals called neurotransmitters to send signals. These can be excitatory "on" signals or inhibitory "off" signals and GABA is one of the major neurotransmitters used to send an "off" signal. Dr. Z. Josh Huang is a world leader in the study of GABA neurotransmission in the brain neocortex. His lab at Cold Spring Harbor, New York, examines how the neuronal connections using GABA are formed and how they are changed during brain development into the mature pattern. It is believed that many brain connections do not reach the correct mature pattern in Rett syndrome. Dr. Krishnan will work under Dr. Huang's direction, to study the role of MeCP2 in the maturation of GABA connections in the neocortex and how the maturation changes as a consequence of the MeCP2 mutation in Rett syndrome. This could provide targets for interventions to correct the maturation.

Dr. Krishnan graduated from the University of Illinois, Urbana-Champaign in 1998 and later went on to work as a research technician for three years at the University of California, San Francisco. In 2002, she became a graduate student at the department of Pharmaceutical Sciences and Pharmacogenomics. Dr. Krishnan's thesis work involved determining the molecular mechanisms of early brain formation in zebra fish. For her post-doctoral work, she wanted to work in a lab where basic research knowledge could be easily translated to a neurodevelopmental disease model that could eventually lead to therapeutic benefits. To follow this path, Dr. Krishnan uprooted herself and moved across the country to the northern part of Long Island where she started her post-doctoral training at Cold Spring Harbor Laboratory under the direction of Dr. Huang. Once there, she studied the molecular changes in the GABAergic system in the Rett Syndrome mice model, which led her to apply for IRSF funding.

## **What prompted you to begin a career in research?**

As a pre-med major in college, I volunteered to work in a research lab for two years to gain a better understanding of the scientific process that eventually leads to medicinal cures. Once I started along this route, I realized that this career path was much more satisfying and better suited for my personality.

**What is the single most rewarding aspect of conducting Rett syndrome research?**

The possibility of therapeutic intervention for this disease.

**What is a potential positive outcome of the research you're conducting that is specific to your IRSF Post-doctoral Fellowship Award?**

The expected results from my research will provide us with a new model and/or framework, which might lead us to more and/or better drug targets earlier on.

**If you could pick any one symptom of Rett syndrome to prevent or to provide relief for, what would it be?**

Cognitive deficits

**What other diseases does your research focus on?**

My research is focused specifically and entirely on Rett syndrome.

**What else would you like the RTT community to know about you?**

I trained for several years in a classical, South Indian dance form called Bharathanatyam and enjoy dancing when I have the opportunity.