Dr. Nitin Karandikar: Pushing the boundaries of immunology

by Sara Bernstein

mmunology is big in MS research—so big that more than one-third of National MS Society grantees focus on the immune attack on the brain and spinal cord. Nitin Karandikar, MBBS, MD, PhD—a Harry Weaver Neuroscience Scholar of the Society—believes that MS immunology researchers need to push themselves farther. Pursuing a career as a physician-scientist from his hometown of Pune, India-to the laboratory of noted EAE/MS researcher Stephen Miller, PhD, in Chicago—and then to the University of Texas Southwestern Medical Center in Dallas, Dr. Karandikar exhibits the perseverance of which he speaks.

"We call MS an immune-related disease, we give patients immune system-based therapies, but we are not routinely looking at people's immune systems," he said. "Clinical testing of the immune response in MS patients has not kept up with our research knowledge of the immune attack in MS. I'd like to see such assays developed and used to help MS patients."

Dr. Karandikar likes to think outside the box to solve research problems—bringing knowledge and technologies from other fields to the fore. "We have applied 'flow cytometry' technol-

ogy to traditional assays used in studying the immune response of people with MS," he says. In flow cytometry, cells are passed through an instrument contain-

"We need to train the next generation of physicians and scientists, to expose young scientific minds to the issues faced by people with MS."



Dr. Nitin Karandikar applies cutting-edge flow cytometry to MS research.

ing laser beams. Data about thousands of cells are acquired by a computer in seconds.

The results already have broken new ground. "The majority of researchers believe that CD4+ T cells are the main immune cells involved in the MS attack," Karandikar said. "We showed that CD8+ T cells have tremendous involvement." (**Blood** 2004; 103:4222–4231) His team has also used flow cytometry to show that treatment with Copaxone (glatiramer acetate, Teva Pharmaceuti-

cal Industries, Ltd.) increased CD8+ responses in people with MS and that these responses served to **suppress** the immune attack. (**JCI** 2002;109:641–9; **Journal of Immunology**

Journal of Immunology 2006;176:7119–29)

Dr. Karandikar believes that studying approved MS treatments is crucial to moving us

closer to a world free of the disease. "If we don't dissect the mechanism of therapies that are already approved to treat MS, we will never know what is working and why," he said.

Dr. Karandikar speaks humbly of how the Weaver award has helped to establish him in MS research. "This award has been critical to my career," he said. "It is a prestigious honor that makes other funding agencies and peer reviewers take notice. The salary support relieves you of other worries, so you can do what you came into the field to do."

Dr. Karandikar loves to train young researchers, and the feeling is mutual, judging from several "Outstanding Teacher" awards that he has won. In particular, he is excited to bring these young scientists into the MS fold, and is currently mentoring Vinodh Pillai, MBBS, PhD, a postdoctoral fellow of the Society, along with seven other trainees. "We need to train the next generation of physicians and scientists, to expose young scientific minds to the issues faced by people with MS," he said.