When Sudip and Nandita Das joined the College of Pharmacy and Health Sciences in July of 2004 they were given two tasks: build a first-rate research program and revitalize the master’s program in pharmaceutical sciences. One short year later, the husband and wife team has done just that.

Prior to coming to Butler, the Das’ spent six years at Idaho State University (ISU) where they built a successful graduate program in pharmaceutics from scratch. They also received two research grants from the National Institute of Health (NIH) to conduct research on drug delivery. The grants brought national recognition to ISU. The couple is continuing this research at Butler. One research project is focused on a novel delivery method for tamoxifen, which is one of the oldest, most widely prescribed and successful therapies for the treatment of estrogen receptor positive breast cancer. The professors are examining how to administer the drug more effectively by targeting the human body’s lymphatic system. This research is currently in the animal testing phase at Methodist Research Institute. Nandita explains, “Targeting the drug to the lymphatic system, which is a medium of metastasis (spreading of cancer), could improve the drug’s cancer fighting abilities and reduce the chance of metastasis all together. It won’t alter therapy, but it can alter a person’s chances for survival.”

They are also studying a sublingual tablet form of an addiction therapy drug called buprenorphine, which is primarily used to treat people who are addicted to opiates such as heroin, morphine and oxycodone. “Sublingual means placing the dosage form under the tongue,” says Sudip. “If it can be given sublingually it increases the availability of the drug. Our tablet will gently stick to the mucus tissue and prevent swallowing that could destroy the drug and reduce its efficacy.”

More recently, the couple has collaborated with Saint Louis University School of Medicine faculty to conduct research on the delivery of siRNA (small interfering RNA) for Alzheimer’s disease. The Das’ will use siRNA to hopefully silence the Presenilin-1 gene which is believed to be responsible for memory loss. “Silencing this gene could halt the progression of the disease,” says Sudip.

A fourth research project focuses on the delivery of therapeutic proteins using biodegradable polymer and lipid nanostructures. Second-year pharmacy student Samreen Khatri received a Pfizer Summer Undergraduate Research Fellowship that allowed her to work on this project with Sudip this past summer. Khatri was one of only 46 students from nearly 250 applicants throughout the United States and Canada to receive the Pfizer Fellowship for 2005. Others selected included students from such notable institutions as Harvard, Brown, Rice, MIT and Stanford.

In addition to running a successful drug delivery research laboratory, the Das’ helped launch the return of the master’s program in pharmaceutical sciences. The program was put on hold in 2000. “Since we arrived, we received substantial resources to restart the program, including faculty and lab equipment,” says Nandita. They recruited Jennifer Ludlow, whose research as a master’s student at Purdue University was featured as a cover article in *Nature* and a front-page story in the *New York Times*. In October 2005 the Das’ hired a postdoctoral fellow from India to assist with the animal testing phase of their research.

The master’s program offers five areas of emphasis: pharmaceutics, pharmacology, medicinal chemistry, pharmacy administration and clinical services. The program involves an intensive curriculum constituting 30 hours of didactic research courses and thesis research. Currently, there is one student enrolled in the program. The Das’ say another two students will join them in the spring.

In looking to the future, the Das’ are pleased with what they have accomplished in just one year. “I think we’re ahead of schedule,” says Sudip. “We have excellent facilities here at Butler for drug delivery and cell biology research; it’s comparable to any notable research institution.”

Actually, to many in the research field Butler’s lab may cause envy. “We have recently acquired a Shimadzu Prominence HPLC, the world’s first HPLC that can be remote-controlled via the Internet. According to Shimadzu officials, ours is the first lab in Indiana to own this equipment,” says Sudip. “It’s state-of-the-art technology in chemical analysis.”

What the Das’ say they need now are more people. “That’s our biggest challenge,” admits Sudip. They currently have two open faculty positions. With more faculty members involved in research, they hope to be able to integrate more undergraduate students in their work. “We want to develop something unique here at Butler — a place not only known for strong teaching, but for strong scholarship. To get there we really need participation on all levels.”

Our new mass spectrometer, an API 2000 from Applied Biosystems, along with the new Shimadzu Prominence HPLC (visible on the left). Standing (L to R): Prabhakar Reddy (post-doctoral fellow), Jennifer Ludlow (research associate/instructor), Sudip Das and Nandita Das. Sitting (L to R): Sharmeen Rafique and Kanako Somatsu (graduate students)