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Turning Discovery Into Health

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NIDDK Recovery Grant Funds Innovative Kidney Research Project for Students

Rural high school and college students from Arkansas, Kentucky and Tennessee conducted medical research this summer with a team of leading scientists at Vanderbilt University under an innovative program supported with Recovery Act funds. The two-year $320,720 grant, awarded by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), supplements an existing research project led by Billy G. Hudson, Ph.D., professor of medicine, pathology and biochemistry and director of the Center for Matrix Biology at Vanderbilt University Medical Center in Nashville.

More than 20 students participated in the initiative, with most of the $2,300 to $4,000 stipends the students receive being spent in the rural communities where they live during the school year. Two additional students in this year's program were supported by the Short-Term Education Program for Underrepresented Persons (STEP-UP), developed by NIDDK's Office of Minority Health Research Coordination to introduce minority and disadvantaged students to medical research.

"The students who participate in this summer research program get hands-on experience in doing research in an academic setting, share in the excitement of scientific discovery and gain the satisfaction of contributing to the advancement of biomedical knowledge," said NIDDK Director Griffin P. Rodgers, M.D.

The goal of Hudson's project is to unravel the mysteries of the glomerulus — the kidneys' filtration system — in healthy kidneys and those scarred by diabetes. This project complements Vanderbilt University's ongoing Medical Student Research Program in Diabetes, also supported by NIDDK. More than half a million people in the United States have kidney failure, the final stage of kidney disease. Diabetes accounts for nearly 45 percent of kidney failure.

The summer program enhances Vanderbilt University's Aspirnaut Initiative — a model program begun by Hudson and his wife, Julie Hudson, M.D., in Arkansas in 2007 to promote the entry of rural high school students into science, technology, engineering and mathematics (STEM) careers. The summer trainees research how collagen functions in glomerular disease and investigate the assembly of collagen networks by studying primitive organisms such as Hydra, sea anemone, sea urchins, sea stars, soft coral and sponge. The students can continue to conduct experiments in their schools and stay in touch with their university mentors.

"The students' experience in this summer research program gives them a sense of pride and rising expectations for academic achievement in their communities and illustrates the virtually untapped STEM talent pool in rural America," said Hudson. "In addition, this investment of Recovery Act funds helps us establish summer research internships as a key component of the Aspirnaut Initiative, which we hope will serve as a model for rural communities across the country."

An innovative feature of the Aspirnaut Initiative is the "School-begins-on-the-bus" concept for students who have 60 to 90-minute bus rides to and from school every day. The students are given Internet-connected laptops that they use to take courses in algebra, geometry, chemistry and biology while the bus is in motion.