ENGINEERING BIONIC LIMBS

With NIH funding support, a team of engineers at Vanderbilt’s Center for Intelligent Mechatronics has developed revolutionary “bionic” prosthetics, including a robotic leg that reproduces the natural movement of a human leg, a robotic hand with dexterity that approaches that of the human hand, and an advanced exoskeleton that allows paraplegics to stand up and walk.

The Vanderbilt Exoskeleton has been developed to provide gait assistance to the spinal-cord-injured population. Clinical evaluations have validated its ability to restore legged mobility to individuals with complete paraplegia. The exoskeleton weighs 27 pounds, significantly less than earlier such systems, and has been tested on users up to 200 pounds in weight. Vanderbilt has signed an exclusive licensing agreement to develop a commercial version of the device with Parker Hannifin Corporation, a global leader in motion and control technologies.

PROVIDING NATIONAL LEADERSHIP AS THE NIH’S CTSA NATIONAL COORDINATING CENTER

Since 2007, Vanderbilt University has received NIH support through the Clinical and Translational Science Award (CTSA) program which seeks to reduce the time it takes for laboratory discoveries to become treatments for patients, to engage communities in clinical research efforts, and to train a new generation of clinical and translational researchers. The Vanderbilt Institute for Clinical and Translational Research (VICTR) is one of more than 60 CTSA located across the country and, in June 2011, was named the Coordinating Center for the entire network of CTSA, making Vanderbilt a core resource for clinical research for the nation.

VICTR’s mission is to transform the way ideas and research discoveries make their way from origin to patient care using a multifaceted approach: through collaboration with a wide variety of research partners; by training, nurturing, and rewarding participating researchers; by funding research; by developing new and innovative ways to involve the community in research; by developing new informatics and biostatistical systems; and by making available the latest technologies and sound research results affecting patient care. VICTR and the CTSA Coordinating Center are the largest federal grants Vanderbilt has received, totaling nearly $80 million.
DEVELOPING NOVEL THERAPEUTICS FOR NEUROLOGICAL DISORDERS

Vanderbilt University has been a leader in drug discovery for over 85 years. Funding from the NIH has contributed to cross-disciplinary programs at Vanderbilt such as the Center for Neuroscience Drug Discovery, which was established in 2011 to accelerate research focused on the development of novel therapeutics for a number of neurological disorders and brain diseases such as Alzheimer’s disease and schizophrenia.

VANDERBILT SELECTED TO PARTICIPATE IN UNDIAGNOSED DISEASES NETWORK (UDN)

Armed with a $7.2 million grant from the NIH, Vanderbilt University Medical Center is one of six medical centers around the country selected to participate in a network to develop effective approaches for diagnosing hard-to-solve medical cases (undiagnosed diseases). The Vanderbilt UDN clinical site will have emphases on heritable lung diseases in adults and children, heritable and other heart problems including arrhythmias and autonomic disorders in adults, and metabolic and other genetic problems in children. The program aims to offer patients a long-awaited diagnosis—and sometimes treatment—while building up data for scientists studying the genetic basis of rare diseases.

ENGAGING IN CUTTING-EDGE CANCER RESEARCH AND TREATMENT

The NCI supports a multitude of research programs at the Vanderbilt-Ingram Cancer Center (VICC), the only NCI-designated Comprehensive Cancer Center in Tennessee to treat both adults and children. The VICC conducts basic, translational, and clinical research that offers exceptional adult and pediatric oncology treatment. To highlight merely one VICC program supported by NIH, the Center’s Breast Specialized Program of Research Excellence (SPORE) grant was renewed for a third time in 2013, providing more than $11.3 million over five years for breast cancer research at Vanderbilt. VICC investigators have received more than $32 million through this federal grant initiative to date.

DEVELOPING AND TESTING NEW LIFE-SAVING VACCINES

The Vanderbilt Vaccine Research Program is one of nine NIH-supported Vaccine and Treatment Evaluation Units (VTEUs) across the country that conduct clinical trials of promising candidate vaccines and therapies for infectious diseases. Together, VTEUs are estimated to receive funding of up to $135 million per year from the National Institute of Allergy and Infectious Diseases (NIAID) over a seven-year period. Vanderbilt AIDS Clinical Trials Unit has also recently received a seven-year grant renewal from the NIAID to continue studies aimed at improving treatment and ultimately developing a vaccine to prevent HIV infection.

TRAINING FUTURE GENERATIONS OF RESEARCHERS

In addition to research projects, NIH funding supports critical training programs at Vanderbilt for graduate students and postdoctoral fellows to foster the next generation of lead investigators. As of August 2013, 144 graduate students and 125 research and clinical postdocs were being supported through 40 NIH T32 basic science training grants at Vanderbilt University Medical Center.

IMPROVING THE LIVES OF CHILDREN WITH DISABILITIES

Recent NIH-supported research at Vanderbilt’s Peabody College of education and human development has included preventing and understanding math disability, studying changes in plasticity for speech perception and second-language learning in children and adolescents, and early interventions to promote normalization of speech in children with cleft lip or palate.

One topic of especially active research at Vanderbilt is autism spectrum disorders (ASD). For example, in early 2014 Peabody professors received (with a colleague from University of Washington) a five-year $2.1 million grant from the National Institute for Deafness and Other Communication Disorders to study communication interventions for younger siblings of children with ASD.

For more information, please contact Vanderbilt’s Office of Federal Relations:
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