art equipment, such as 3D printers and laser cutters for rapid prototyping. The new lab is being funded by a $10 million private gift and $2 million from the MnDRIVE initiative.

Examples of success stories:

- The U.S. Army Research Laboratory has teamed up with mechanical engineering researchers at the University of Minnesota to explore the wonders of soft robots. Using cutting-edge 3D-printing technology, the researchers are working on building invertebrate-inspired robotics able to squeeze into and maneuver around obstacles.

- Funded by the Army Research Office, the University of Minnesota is leading a team of researchers from five universities on a new $6.4 million Multidisciplinary University Research Initiative (MURI) grant to develop new materials from "dusty plasmas."

- Funded in part by the U.S. Army Medical Research and Materiel Command, a research team, led by the University of Minnesota, has discovered a groundbreaking process to successfully rewarm large-scale animal heart valves and blood vessels preserved at very low temperatures. The discovery is a major step forward in saving millions of human lives by increasing the availability of organs and tissues for transplantation through the establishment of tissue and organ banks.

- Computer science researchers at the University of Minnesota developed the Scout Robot the first-ever throwable, mobile reconnaissance robot capable of surveying its environment in complete darkness. In all its various iterations, the small robot can collect and broadcast audio/video surveillance in real time, traverse rough terrain, withstand impact, dust and water, and even jump up stairs or over obstacles. Its operator can control up to three robots at once, to evaluate a subject from all angles. Thousands of Scout robots have been used in the military over the past 10 years.

- Funded in part by the Defense Advanced Research Projects Agency, the Army Research Office, mechanical engineering researchers developed a first-of-its-kind, 3D-printed guide that helps regrow both the sensory and motor functions of complex nerves after injury. The groundbreaking research has the potential to help more than 200,000 people annually who experience nerve injuries or disease.

- Funded in part ARMY's Congressionally Directed Medical Research Program (CDMRP), electrical and computer engineering researchers developed technology that could treat blocked arteries, in a noninvasive manner that is faster, more precise and safer for the patient.

- Commissioned by the Army Research Laboratory, researchers in the Medical Devices Center teamed up with others across the University to develop a Simulation PeriOperative Resources for Training and Learning, or SimPORTAL. The tool combines resources from 3D modeling, interactive visualization and a one-of-a-kind human tissue

properties database to develop medical simulation tools that look and act like parts of the human body.

Additional Innovative Centers across the University

Food Protection and Defense Institute (FPDI)

FPDI was founded in 2004 as the National Center for Food Protection and Defense to provide research, education, and technology development to protect the food supply from intentional attack. Developed as a multidisciplinary and action-oriented research consortium, FPDI addresses the vulnerability of the nation's food system. FPDI takes a comprehensive, farm-to-table view of the food system, encompassing all aspects from primary production through transportation and food processing to retail and food service. FPDI's research and education program is aimed at reducing the potential for contamination at any point along the food supply chain and mitigating potentially catastrophic public health and economic effects of such attacks.

To meet the complex challenge of protecting the global food system, FPDI established a consortium of experts and partners—145 partners in 36 US States and Territories and 6 countries. Further, FPDI partnered with 47 companies, 44 US universities, and numerous foreign universities and government agencies and intergovernmental agencies. The program incorporates cutting-edge research across a wide range of disciplines, including supply chain management, logistics, epidemiology, risk assessment, economics, molecular biology, food microbiology, biomedical engineering, toxicology, information sharing, supply chain security, cyber security, and risk analysis.

The knowledge and tools generated from FPDI's work have been used many US agencies (DHS, DOD, USDA, FDA, FBI, and CDC), foreign governments, and the United Nations to fulfill their missions. Also, many food industry companies have benefited from FPDI's expertise and tools to better understand their food protection- related risks, threats, and mitigation needs. FPDI currently has funding from the Defense Threat Reduction Agency funding to build a platform for predicative analytics utilizing Artificial Intelligence to predict food system disruption and supply chain vulnerability.

FPDI is committed to transition where feasible and has made it visible in every step of our work, from proposal phase through transition. The Institute developed and implemented the Transition Pathway Process to engage stakeholders and end users in research design through final deployment of project outputs. Projects have varied in type and scale from basic checklist to novel enterprise software. Over time, the transition pathway used by FPDI has evolved to meet the needs of the end user and utilize the technology and commercialization assets of the University of Minnesota.

Over the past five years, FPDI has included disaster response and public health in its portfolio leveraging existing research and software development efforts. Funding and projects have included operational Ebola risk assessments, disaster supply chain operations and analysis, and biological surveillance.