From a smart exoskeleton to safer data transfer, promising technology is moving toward market, thanks to the first two years of the NC State Chancellor’s Innovation Fund. Startups are moving forward, as are commercial licenses with existing companies. The initial 11 CIF projects have leveraged $2.8 million in new funding. NC State’s Office of Technology Transfer, known as OTT, offers a quick update:

- Elizabeth Loboa’s discoveries not only may improve wound care but also may advance tissue engineering and regenerative medicine. Her hollow, porous nanofibers can be filled with varied compounds. A “smart-release system” sends out the compounds continuously, in a single burst or a through combination of timings. Other potential markets include air filtration, lab diagnostics and blood filtration. Two companies are working with NC State to develop commercial uses for Loboa’s technology. The N.C. Biotechnology Center is interested in the product development.

- Victims of stroke, spinal cord injuries, and other traumatic brain injuries often struggle with muscle strength/control. To help them, Greg Sawicki’s team created a smart exoskeleton walking aid. Unlike heavy units encompassing the entire body, Sawicki’s lightweight boot aids those with walking trouble, or even enhances the performance of soldiers or athletes. With CIF funding, Sawicki improved the device, adding a battery-powered clutch and posture-correcting ankle orthotic for stroke patients. NC State is talking with a company interested in developing new products incorporating the technology. Sawicki expects additional funding from the National Institutes of Health.

- Annually, about 40,000 cases of acute salmonella infections are reported in the United States — and 400 people die. The Centers for Disease Control notes the numbers do not include milder cases that go unreported. Hosni Hassan and Matt Koci offer a promising technology that could be the foundation for a poultry vaccination to greatly reduce salmonella transmission. They also are working toward a vaccine for humans to prevent the disease. The researchers, who collaborated with NC State’s Hi-TEC program to develop a business plan, received a $2.5 million grant from the U.S. Department of Agriculture.

- TIMA/HyperSentry — a system of hardware and firmware components developed by Peng Ning and Ahmed Azab — greatly improves security of computer clouds and mobile systems. Customers can verify the integrity of software systems that manage cloud and mobile hardware platforms. GollSentry was launched to commercialize the TIMA/HyperSentry technology. The team is working with a major player in the mobile phone market to improve the security of mobile devices.

- As smart phones and tablets become more popular, the performance of transmission control protocol, or TCP, over cellular networks is critical. Injihong Rhee and Kyunghan Lee have developed a new, dynamic mobile TCP standard to replace the current static standard. By reducing network congestion up to 50 percent, it provides rapid uploads and downloads that consumers demand. The mobile TCP standard has been quantified, with two carriers testing the new method.

- Demand continues to grow for low-cost textiles with extended UV protection — part of the $2 billion market for outdoor fabrics. Just ask Greg Parsons, whose laboratory deposits UV-absorbent finishes to materials without adding noticeable stiffness or weight. The coatings may be applied to raw textiles or to finished products, allowing them to retain texture and color.

- Adam Meade’s rapid response personality test ensures employers obtain accurate personality data by not allowing applicants time to manipulate the system by entering what they predict the employer wants, or by being dishonest. Meade is creating a web version of his software named PerSight™. This would allow him to correlate results of his testing and performance of newly hired employees. Scientific Organizational Solutions is a startup formed to commercialize the technology.

- Michael Dickey’s research group has a new invention that manipulates the shape of liquid metals using electrical stimuli. The ability to define the shape of materials is what usually gives materials function. The team provides a unique way to create shape-reconfigurable structures with interesting electrical, optical, and thermal properties. The team has an agreement with an industry partner to further develop the technology.

- Afsaneh Rabiei expects her composite metal foam to be applied across many platforms in aerospace, military, naval, automotive, and biomedical industries. The novel material is simultaneously lighter and stronger than those now used in body and vehicle armors. It also absorbs impact energy from projectiles or blasts, thus decreasing risk of injury or vehicular damage from high-velocity bullets or explosions. In testing under federal ballistics standards, sheets based on the metal foam earned high marks.

- Noroviruses annually cause about 5.5 million cases of gastroenteritis, according to the CDC. Lee Ann Jaykus is developing new methods to test for noroviruses in water, food, and individual patients — with a goal of more efficient disease identification, treatment, and prevention. Noroviruses spread quickly through families and even cruise ships, accounting for more than half of all cases of food-borne illnesses.

- Coby Schal’s laboratory designed an ‘artificial human’ liquid bait system to attract and kill bed bugs. The bait system is designed to mimic certain human aspects that attract bed bugs. A prototype allows multiple bed bugs to feed on the bait.

Learn more about the NC State Chancellor’s Innovation Fund. Go online to research.ncsu.edu/ott and select For Entrepreneurs.