In a world seeking returns on investments, the NC State Chancellor’s Innovation Fund is a proven winner.

Established in 2010 with the support of Chancellor Randy Woodson, the program provides grants of up to $75,000 for a year or less. Six new projects chosen in 2014 are featured on page 17.

“CIF projects enhance the commercial value of NC State’s intellectual property assets,” explains Kelly Sexton, director of NC State’s Office of Technology Transfer. “While other universities offer similar seed grant programs, the CIF provides additional benefit to awardees through our mentoring program and connections with the Springboard Innovation Hub partners.”

Each year, roughly 75 faculty members file CIF proposals. After initial screening, finalists pitch their technology development projects to a selection committee comprising representatives of university innovation partners: Eastman Chemical, Rex Healthcare, the Blackstone Entrepreneurs Network, First Flight Venture Center, HQ Raleigh, the Kenan Institute, NC Idea Fund Partners, Hatteras Venture Partners, the Center for Entrepreneurial Development and the North Carolina Small Business Technology Development Center, or SBTDC.

Kim Mayer, statewide director of technology development and commercialization for the SBTDC, says the CIF blend of grant funding and strong support from the Triangle’s entrepreneurial community makes the projects and principal investigators more attractive to other granting agencies, including federal funding for small businesses.

“When utilized correctly, the CIF can lend the necessary credibility to an SBIR or STTR proposal. As the SBTDC has clearly seen through our work with technology-based...
companies, this combination can catapult the technology into commercial development,” Mayer says. “The long-term benefits of this fund have been, and continue to be, inspiring.”

GREATEST SUCCESS SO FAR

If you’re using one of the latest Samsung smartphones, software developed in NC State’s computer science department is probably securing it.

TrustZone-based Integrity Measurement Architecture, a system of embedded software/firmware components developed by Peng Ning and Ahmed Azab to improve security of computer clouds and mobile systems, is now part of Samsung’s Knox security and data-management system.

Ning and Azab received CIF funding in 2012 to develop their software. They later launched a startup company, CellSentry Inc., to commercialize the technology. The team is developing further applications of the technology that may include products for cloud computing and the smart-energy grid.

“This technology is by far the Chancellor’s Innovation Fund’s greatest success to date,” Sexton notes.

KEEPING THE PACE

The CIF allows awardees to develop new perspectives and push boundaries. Check in with a few more past recipients:

Elizabeth Loboa credits her CIF experience for successful funding across multiple projects, going well beyond her original proposal. “The CIF program really opened my eyes as to how to efficiently incorporate translational research at earlier stages than I would have considered before,” she explains.

Featured in The New York Times in May, Loboa’s Cell Mechanics Laboratory is investigating the use of hollow, porous nanofiber mats as scaffolding in wound healing and tissue engineering. The mats can be utilized as controlled-release delivery devices for antimicrobials or other medications.

Her CIF project led to a collaborative research grant with the North Carolina Biotechnology Center and Dow, as well as other follow-on funding.

Have you ever been given a personality test as part of an employment screening process? Did you try to influence the outcome by entering what you thought the employer wanted to see?

Adam Meade’s innovative assessment system, PerSight™, allows employers to quickly screen the personality of job applicants for positive hiring traits, while minimizing the opportunity to reverse-engineer results or game the system.

Meade’s startup, Scientific Organizational Solutions LLC, is beta testing the efficacy of the assessment system in predicting the best prospective employees. The company has utilized support through OTT’s Venture Development for business model development, company and product logo designs, trademark, and software and website development assistance.

By using OTT’s shared space at HQ Raleigh, Meade says he has been able to “network with other startup companies and learn more about the process of getting a business off the ground.” This exposure is helping him to identify his own best practices as he builds his new venture.

continued
Michael Dickey’s CIF project on shape-reconfigurable electronics resulted in the fabrication of sufficient liquid metal antenna prototypes to attract the attention of industrial partners. The prototypes, in turn, led to collaborations with Samsung’s Antenna Research and Development group.

Dickey’s research team studies interdisciplinary problems that involve thin films, interfaces, soft materials, and micro- and nanofabrication, including liquid metals that are stretchable and flexible. The team is currently optimizing antenna fabrication processes and furthering their understanding of impacts of voltage on the position and velocity of liquid metal movement.

Greg Sawicki’s Human PoWeR — or Physiology of Wearable Robotics — Lab is developing an exoskeleton walking aid for rehabilitative, military and recreational use. Through the CIF project, the boot was tested on healthy and post-stroke subjects.

Data collected from the testing allowed the team to refine the configuration and mechanics of the boot, reducing it from more than 1.5 kilograms to only about 300 grams. The researchers also developed an electromechanical clutch.

Since the CIF award, Sawicki has received a five-year grant from the National Institutes of Health to continue to develop the exoskeleton.

As university student enrollments rise, academic advisors struggle to keep track of how well students are progressing toward completion of prerequisite classes and extracurricular activities required for solid applications to professional health graduate programs.

Anita Flick’s comprehensive software platform, Livitae™, developed via her CIF project, documents a student’s achievements, across academic, community service, clinical experience and social factors. A gap analysis identifies needs to be addressed prior to application to professional programs.

Currently in beta development, Livitae allows academic advisors to generate recommendation letters aligning students’ strengths with professional program objectives. The institution also can track overall acceptance rates into professional programs.

Mentoring within the CIF ecosystem resulted in a more comprehensive product solution and brought several investor groups to the table for further development and commercialization. “The support of CIF allowed me to navigate failures and setbacks safely, and challenged me positively in many ways. The final result of the project and business planning includes capabilities that I never would have thought of incorporating — and far exceeds my original expectations,” Flick explains. Intelligent Campus Solutions Inc., a recently launched startup company, is working to commercialize Livitae.

“The CIF program does a good job getting researchers to look at their scientific production outside of the usual academic metrics of degrees awarded and journal articles published — and to combine these academic endeavors with more of an entrepreneurial spirit,” notes Steve Shannon.

Just 12 months ago, the VHF atmospheric plasma source at NC State was a solution looking for a problem. Detlef Knappe and Shannon had developed a device capable of operating under a wide range of conditions at atmospheric pressure. They had demonstrated the source’s ability to modify water chemistry through both addition and additive removal.

Since receiving the CIF grant, the team has targeted specific water treatment applications, demonstrated scalability for industrial use, and obtained vital data to demonstrate the basic mechanisms that enable water-chemistry modification. The team has met with several companies, not only in water treatment, but also others working with surfaces, textiles and resins.

“We are really excited about what the future holds for this technology and our new company, Air Glow Inc.,” Shannon says.

Led by Walter Brown and recent NC State doctoral graduate Brandon Byrns, the startup received early mentoring from the HiTEC Program in the Poole College of Management. The team is currently pursuing several federal SBIR opportunities with support from OTT’s Venture Development and the SBTDC. Air Glow hopes to obtain capital to construct a prototype commercial system.

“The mentoring that we received has been instrumental in moving this technology closer to commercialization,” Shannon says.

Learn more about NC State’s Chancellor’s Innovation Fund at go.ncsu.edu/cif.
NC State University Communications contributed to this report.