



## State Government

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# \$1.4 million awarded to 8 research teams by R.I.'s Economic Development Corporation

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Journal Staff Writer



FranckChristian Franck in his office at Brown University's engineering department.

When a defensive lineman launches a head-to-head tackle with a quarterback who blacks out, the football team's trainer asks the injured player questions to ascertain how much injury the impact may have caused. And the trainer or coach decides whether to send him back into the game.

But "what's today's date," "who's the president" and "how do your pupils look" is really not a scientific way to determine traumatic brain injury, whose symptoms may manifest themselves months or years down the road, says Christian Franck, an assistant engineering professor at Brown University. He's among eight teams that were showcased Thursday for winning collaborative research grants totaling \$1.4 million from the state Economic Development Corporation.

Franck and a team of researchers hope to learn more about the subtle ways head trauma damages individual cells, and use what they learn to build a better tool to diagnose concussions and other traumatic brain injuries, he said. Their goal is for football trainers to have laptops on the sidelines that re-create the tackle with computer simulation and quickly develop a diagnosis, telling coaches whether the player should be benched, treated immediately or sent back on the field.

And then, they hope to use what they learn to build better headgear — not only football helmets but combat helmets for soldiers.

"So, if we can have this diagnostic tool for people on the [football] field, we can also give it to our servicemen and women in the field and help them as well," he said.

This is the fifth year the EDC's Science and Technology Advisory Council awarded the grants.

It's the first time Franck's team has worked together and applied for the grant, which particularly rewards collaboration between those in education, medicine and business. The grant is not enough for them to reach their ultimate goals, he said, but it's not designed to be.

"It's going to take a lot more capital because it's going to be several years and [will require] multiple students and professionals in the field," he said. "But this is, I think, an excellent, excellent start."

The state began funding the grants in 2007 after winning a much larger federal grant that required the state to invest its money to help make researchers more competitive for future federal grants, said Christine Smith, innovation program manager at the EDC.

The National Science Foundation awarded the University of Rhode Island that grant — \$20 million over five years — from its Office of Experimental Program to Stimulate Competitive Research. The state was eligible because it was receiving less than 1 percent of all federal grants for scientific research, Smith said.

"It's all about becoming more competitive," she said.

In all, the state has awarded collaborative grants to 38 teams, investing nearly \$6.5 million in 97 researchers from 35 public and private institutions, according to the EDC. Past winners have gone on to raise \$10 million in "follow-on funding" from the federal government, private foundations, venture capitalists and others, Smith said.

The state also funds work in the life sciences, high-tech and green-energy fields via the Slater Technology Fund, a venture-capital fund that received \$2 million this year from the [General Assembly](#).

In a state with about 1 million people, Smith said, the two funds equate to the state spending about \$3.50 per person for innovation.

As President Obama is sharing his vision with the nation that innovation is the way to "win the future," Rhode Island is not alone in trying to increase cutting-edge research.

Massachusetts Governor Patrick has pledged \$1 billion over 10 years to stimulate efforts to become a global leader in the life sciences. With about 6.5 million residents, that's \$15.30 per person each year.

It's difficult to make those exact comparisons between the two states, Smith said, because much of the Massachusetts money will pay for infrastructure improvements. However, she said, a more comparable comparison can be made with Ohio, which spends between \$6 and \$8 per person on such research.

As Governor Chafee was leaving the meeting, he said funding such research here in Rhode Island is "absolutely important," but he's just learning of the state's efforts and doesn't know if the state can commit more in such tight times. Grant recipients

Traumatic brain injuries

\$194,809 to use mathematical models to better understand traumatic brain injuries, help produce better diagnostic and assessment tools and help companies design safer protective headgear for athletes and soldiers.

Brown University: Christian Franck, Providence; Janet Blume, Providence.

Brown Medical School and Rhode Island Hospital: Joseph J. "Trey" Crisco, Barrington.

Simulia, a software company: Cheryl Liu, Providence; Subham Sett, Lincoln.

#### Marine biofouling

\$94,644 to study how surfaces submerged in the ocean become covered with biofilm, a process called biofouling, which has substantial economic consequences. A recent international ban on a leading biocide has created the need to develop new environmentally friendly protective coatings to halt biofouling. This academic-industry collaboration will examine how biofilms develop to help a Rhode Island company create the next generation of anti-fouling coatings.

University of Rhode Island: Lucie Maranda, Richmond; Keunhan Park, Providence.

Ametek HCC Inc.: William Mildon, Westerly.

#### Mercury emissions

\$200,000 to develop new technologies for reducing human health risks from ambient mercury emissions from coal-fired power plants and cement kilns.

Brown University: Robert Hurt, Barrington.

Banyan: Love Sarin, Providence.

#### Wound healing for diabetic ulcers

\$199,997 to expand and strengthen preclinical research studies on topical wound repair and develop a topical, regenerative product to heal wounds, particularly for the growing diabetic population, which suffers from chronic ulcers.

Brown University: Kim Boekelheide, Warwick.

CytoSolv, Inc.: Moses Goddard, Tiverton; Christopher Thanos, Cumberland.

#### Preventing infection

\$200,000 to identify the molecular structure of the fungus *Candida albicans* in order to treat and prevent infections that are especially virulent in patients with compromised immune systems, such as premature infants.

Women and Infants Hospital: Joseph Bliss, Cumberland.

Bryant University: Christopher Reid, Cumberland.

#### Marine science education

\$199,000 to develop software to provide access to marine science data and information through URI's

Inner Space Center and provide increased marine science educational opportunities for scientists and students.

University of Rhode Island: Dwight Coleman, North Kingstown; Sara Hicox, South Kingstown.

Rite Solutions: Jay Ferguson, Warwick.

Tick vaccine

\$199,479 to accelerate work on a vaccine that could be delivered with a trans-dermal patch and protect against the multiple diseases that ticks carry.

URI Center for Vector-Borne Disease: Thomas Mather, South Kingston.

EpiVax Inc.: Annie DeGroot, Providence; William Martin, Cumberland.

Isis Biopolymers Inc.: Michael Jordan, Providence.

URI Institute for Immunology and Informatics: Leonard Moise, Providence.

URI Department of Biomedical Sciences: Keykavous Parang, North Kingstown.

Rich web applications

\$147,893 to develop techniques to measure the performance of modern web applications. Using real client data, the team will develop and bring to market better tools to trace and clear data bottlenecks that impede cyber functionality and efficiency.

Brown University: Rodrigo Fonesca, Providence.

Tracelytics Inc.: Chris Erway, Providence.

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