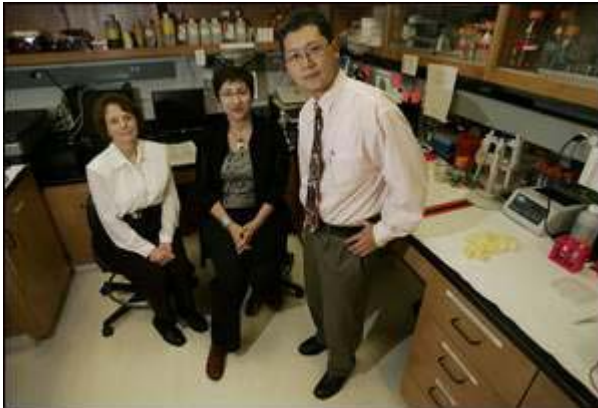


Area company's brain work could help millions

By **MARINA BLOMBERG**

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DAVID MASSEY/The Gainesville Sun

Nancy Denslow, from left, Dr. Caroline Popper and Kevin Wang appear in their laboratory at the Sid Martin center. Denslow, Wang and Ron Hayes, not shown, are co-founders of Banyan Biomarkers. Popper is chief executive officer of Banyan.

A small company licensed by and spun off from the University of Florida may save millions of Americans from suffering with traumatic brain injury.

Banyan Biomarkers, based in the Sid Martin Biotechnology Technology Development Incubator in Alachua's Progress Corporate Park, is poised to help physicians and medical technicians quickly diagnose what has become what one founder terms "a silent epidemic."

Ron Hayes, director of the Center for Traumatic Brain Injury Studies (TBI) at the McKnight Brain Institute and Banyan's chief clinical programs officer, said diagnosing and treating TBI "is a huge, unmet medical need. For civilians, it affects 2 million people a

year, of all ages. It is one of the biggest killers of young people. There are more people actively, not subtly, disabled by TBI - 5.4 million - than Alzheimer's disease, which claims 4 million."

He said the need is even more acute now, since TBI is emerging as a major issue in the Iraq war.

Hayes, a former fighter pilot, said "historically, combat TBI ranks just below bleeding to death." But that has changed. He said neurotrauma is the leading cause of death of battle wounded (53 percent) who have reached medical care. Hemorrhagic shock is second (38 percent).

"With the new military rules of engagement and terrorism, you get a lot of (bomb) blasts." He cites figures showing up to 20 percent of combat injuries in Vietnam, Desert Storm and Iraq are severe TBI, with up to 66 percent of injuries in Iraq classified as concussions.

"Body armor and helmets can protect against some of that, but what you end up with is concussive forces. Kevlar may stop the bullet, but there's still a jolt. And you don't want to send someone back in battle who has lost some of the ability to function."

"There is no treatment for TBI. You're better off having a heart attack," Hayes said.

Patients suffering from TBI receive a variety of medical management therapies, Hayes said, but since symptoms often result not from "the original whack on the head" but from secondary biochemical responses, quickly and accurately diagnosing the damage is critical.

Banyan Biomarkers, which was originally founded as Daimonion Diagnostics LLC in 2002, aims to pioneer those diagnostic methods. Hayes is co-founder with Kevin Wang and Nancy Denslow; all have PhDs.

Using noninvasive techniques - withdrawing blood samples or cerebral spinal fluid - medical personnel will be able to use Banyan's research to test for the presence of certain proteins. Ultimately, these tests will be accomplished with a field-ready device about the size of a PDA.

Hayes explained that "the brain contains enzymes called proteases. These are normal and important. Their job is to 'chop up' proteins to either make them into something else, or get rid of them. After a brain injury, there is a disturbance in the regulation of these proteases, and they become like little Pac-Men, they start chomping away. Their action is very similar to the papain ingredient in tenderizers, which 'digests' the meat to make it tender."

By testing for the presence of these proteases, "we can detect the consequences and get a lot of information, such as how serious the injury is, how long the pathological process has gone, what kind of brain cells are being injured and eventually where the damage is done."

As with any start-up company, Banyan needed funding to continue its work. But Hayes

said he and his co-founders "didn't follow the textbook pattern. We were able to develop without outside investors involved.

"The typical evolution of capitalization is a lot of agony, angels and 'friends, family and fools.' What we've been able to capitalize on is our work's relevance to national defense. I believe we are a template for growth opportunities of others."

Banyan has been the recipient of a number of grants, including from the National Institute for Health and Small Business Initiative Research, and most auspiciously by the Department of Defense. With assistance by consultant David Flagg (a former Gainesville city commissioner and mayor and state representative), Banyan Biomarkers has attracted the support of the Florida congressional delegation, notably Cliff Stearns, R-Ocala, and C.W. Bill Young, R-Indian Shores.

Stearns is vice-chairman of the House Veterans' Affairs Health Subcommittee; he had served two years as chairman. Young serves as chairman of the House Appropriations Subcommittee on Defense, a post he previously held from 1995-1998, and is a member of the Appropriations Subcommittee on Military Quality of Life and Veterans Affairs. According to his Web site, Young has been a leading advocate for increased biomedical research.

Flagg said Banyan was able to snag a \$5.2 million (\$4.8 million net) Department of Defense grant aimed at finding blood-based brain injury diagnostics. It will be submitting a request for \$2.8 million for the federal fiscal year 2006 to continue its work.

Wang, director of the Center for Neuroproteomics and Biomarkers at MBI, said the Department of Defense "really loves this (Banyan's work) because it applies not only to the military but also to the general public."

Denslow, scientific director of UF's Protein Chemistry and Biomarkers Research Facilities, concurred. "You see so many young people with head injuries, from sports or car accidents."

Banyan hopes to develop biochemical markers for other injured organs, such as the heart, liver and lungs.

Dr. Caroline Popper, chief executive officer of Banyan, has been with the company for 18 months. She was previously chief business officer for MDS Proteomics. "What we are trying to do is build a profitable business by addressing these unmet needs. By understanding the intimate relationship of diagnostics and how you treat a condition, we are able to play a role in the drug development process. We straddle the business opportunity between diagnostics and therapeutics.

"We are on schedule. We have finished discovery, and are now in the validation stage. The final step is commercialization. We are very mindful of how quickly the field is opening. We started out ahead, and we want to end up ahead," Popper said.

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