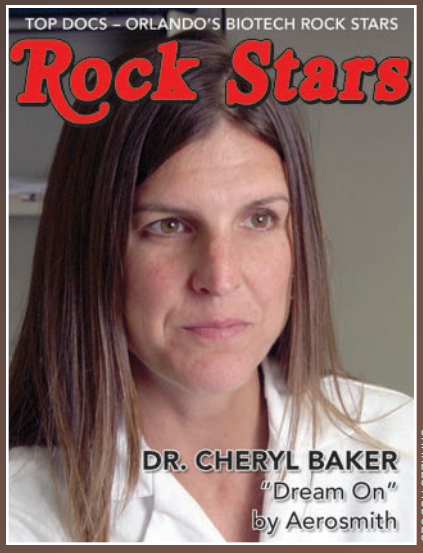
TOP DOCS

ORLANDO'S BIOTECH ROCK STARS TAKE CENTER STAGE

by Jackie Kelvington

Orlando's rock star status is rising, especially on the biotech charts. And behind the community's growing collection of industry breakthroughs are several emerging and legendary artists. Meet the nation's rising biotech rock stars and learn about the blockbuster work they're producing that is taking Metro Orlando all the way to the top.



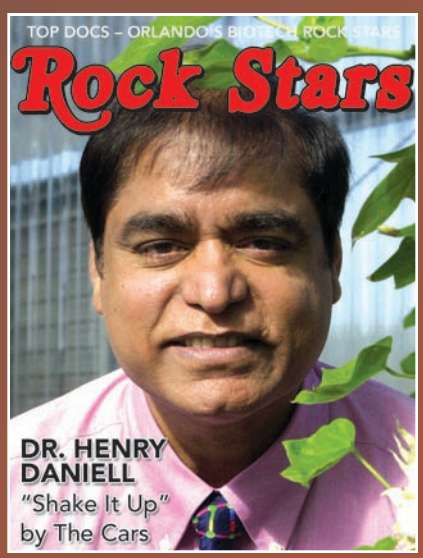
CHARLES HODGES

An Orlando native, **Dr. Cheryl Baker** left Central Florida after receiving her undergraduate degree from Rollins College to earn her Ph.D. at Texas Tech. From there, she established an impressive reputation as an instructor in the surgery department at Harvard Medical School and Children's Hospital in Boston, as well as an Assistant Professor in the Cancer Biology department at M. D. Anderson Cancer Center in Houston. But it was like a dream come true when she was approached about the opportunity to return to her hometown to establish and take the helm at M.D. Anderson Cancer Center Orlando's Cancer Research Institute, a division of the Orlando Health hospital system.

What gets Dr. Baker and her team out of bed every morning is their passion for understanding a disease that affects millions of people every year, and their determination to develop new and better treatments. Under her leadership, the Orlando facility specializes in treating more than 11 types of cancer, including leukemia, lymphoma, pancreatic, breast, gastrointestinal, neurological, head and neck, lung and pediatric; and brings together expertise in areas that include: harvesting and processing human cancer tissue; evaluating the therapeutic efficacy of targeted agents, chemotherapy and radiation; nanotechnology; and multi-wavelength fluorescence and X-ray imaging.

Dr. Henry Daniell knows that two of the most challenging problems in human healthcare today are the skyrocketing costs of prescription medicine in developed countries, and their lack of availability in developing countries. High costs related to fermentation-based production systems, expensive purification methods, low-temperature storage, transportation, and delivery through sterile injections are at the root of those problems. Enter Dr. Daniell, professor and microbiologist at the University of Central Florida College of Medicine, who is determined to shake things up.

Dr. Daniell has discovered that most of these expensive production and



delivery systems can be minimized or eliminated with biopharmaceutical proteins expressed and orally delivered via plant cells. He and his team are leading work to produce human therapeutic proteins in plants for large-scale, low-cost production and oral delivery. For example, he has successfully used tobacco or lettuce plants to combat the top infectious diseases listed by World Health Organization (cholera, malaria, rotavirus, amebiasis) and the top biothreat agents listed by the CDC (anthrax and plague). Published research from his lab has shown that animals orally immunized with the plague vaccine survived an aerosol challenge of 50 billion spores, whereas only one fourth of animals immunized with injections survived.

Daniell's lab recently announced success in genetically modifying lettuce heads that produce insulin in the quest to develop a cure for diabetes. After injecting the human gene for insulin into leaves of lettuce that are grown in the lab, the leaves can be ground into powder and put into a capsule. The lettuce helps the powdered capsule reach the intestine. There, plant cells meet with bacteria and release the insulin. This stimulates an immune response and helps the body to produce its own insulin.

"It is the same insulin that is injected, but we are presenting it to the immune cells in the intestine and educating them to recognize that this is your own protein," Dr. Daniell said. "What we have done is to teach the body how to cure this immune disorder. This is a totally new concept, a new platform to use this oral delivery system to fix this immune disorder."

Recently named "Central Floridian of the Year" and a Harvard Medical School graduate, **Dr. Deborah German** is the force behind one of the nation's newest, most prominent medical schools. Set to open this fall, the University of Central Florida's College of Medicine is projected to help create more than 30,000 local jobs and to have an estimated economic impact of $7.6 billion in the year 2017.

As the founding dean, the energetic and inspirational Dr. German seems to be everywhere at once. She is leading a team that is building a medical program from scratch and attracting the country's best and brightest faculty and students to UCF.

Dr. German has generated widespread community support for a first-of-its-kind full scholarship campaign for the inaugural class. With more than 4,300 applications received for the 40 openings in the charter class, UCF's College of Medicine may be the country's most selective medical school.

Turning a dream of Dr. German's into reality, each member of that class will receive a $160,000 scholarship for tuition, living expenses, and fees for the four-year medical degree program. The scholarships were completely funded by nearly $7 million in community donations from across the Central Florida region.

UCF's medical school will be one of the anchors in a new "medical city" taking shape in Central Florida. The College of Medicine already has a strong research component thanks to the Burnett School of Biomedical Sciences, which boasts active research in cardiac and neurosciences, infectious diseases and cancer. Partners in the Lake Nona development include the Burnham Institute for Medical Research, a new Nemours Children's Hospital, a new VA Hospital, M.D. Anderson Cancer Center Orlando's Cancer Research Institute and a University of Florida medical research lab.

PHELAN EBENHACK

After a parasailing accident that broke 15 bones and left him temporarily unable to walk, talk or move his arms,

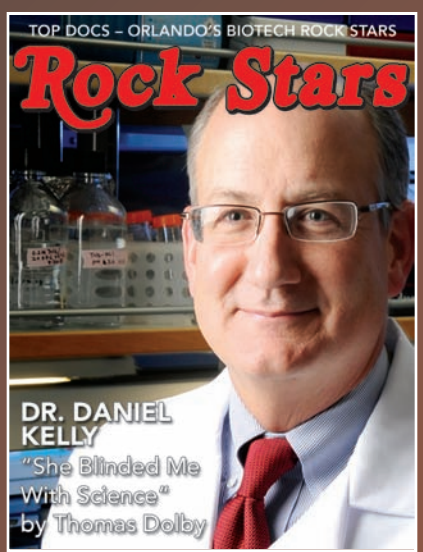
successful obstetrician **Dr. Ed Guindi** found that his injuries made it impossible to return to his former life of delivering babies. His life-altering experience has since altered the life of thousands, as the doctor turned his attention to becoming a champion in a new field: non-embryonic cord blood stem cell collection.

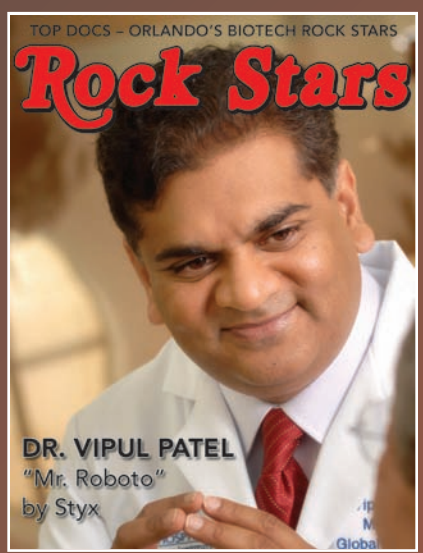
With a business partner, he founded CORD:USE in 2004, drawing on his medical experience to develop the least-intrusive, most-effective way of obtaining cord blood cells. Since then, CORD:USE has entered into agreements with hospitals across the country to provide mothers the option to donate their babies' cord blood, which is a critical component of therapies for more than 70 diseases, including blood cancers (leukemias, lymphomas and myelomas) and other blood diseases such as sickle cell anemia and thalassemia. After collection, Guindi's company processes cord blood units at Duke University Medical Center and then adds them to the National Marrow Donor Program registry. Orlando's CORD:USE is now on target to become the leader in the collection, processing, storage and delivery of hematopoietic (blood-forming) cells found in cord blood and provided to transplant centers worldwide.

As professor and scientific director of Burnham Institute for Medical Research at Lake Nona, **Dr. Daniel Kelly** guides the scientific direction of Burnham's new East Coast campus. He has established the Diabetes and Obesity Research Center and has attracted a faculty of scientists with varied specialties to conduct research that is focused on diabetes, obesity, metabolism and heart disease. And, he is helping lead an effort to form a Florida Hospital-Burnham Clinical Research Institute to study diabetes. Both of these initiatives focus on Dr. Kelly's long-term scientific goals: fundamental and translational research in cellular energy metabolism relevant to common diseases such as heart failure and diabetes, especially diabetic heart disease.

And the science is only beginning at Burnham Orlando. The Institute will receive $35 million in research funding from a National Institute of Health grant to equip and manage small-molecule screening and discovery centers. Research partnerships have also been established, including collaborations with M.D. Anderson Cancer Center Orlando and with the Harbor Branch Oceanographic Institution at Florida Atlantic University, with whom Burnham scientists are creating synthetic versions of a substance found in ocean sponges that has the potential to fight pancreatic cancer.

"We want to make Burnham at Lake Nona a catalyst to grow Orlando's biomedical cluster," said Dr. Kelly. "The pioneering spirit of Orlando makes Lake Nona the perfect site for this new research initiative."



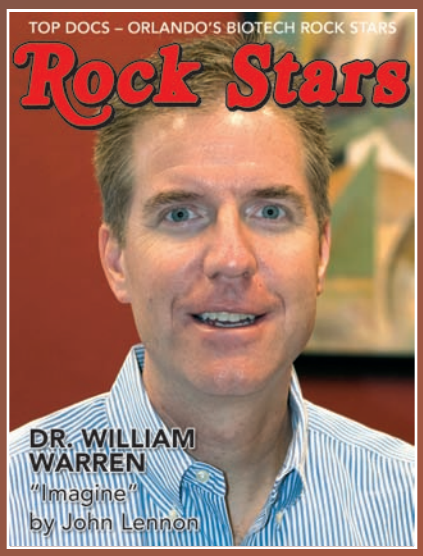


An internationally recognized expert in the field of minimally invasive robotic prostatectomy, **Dr. Vipul Patel**, medical director of the Florida Hospital Global Robotic Institute, has personally performed more robotic prostatectomies than anyone else in the world. Under his leadership, the Celebration,

Florida-based Global Robotics Institute has become a sought-after destination program, serving international, domestic, and local patients. Dr. Patel is also part of the team of talented surgeons and healthcare professionals helping to train nearly 7,000 physicians each year on the latest minimally invasive and non-invasive surgical techniques through unique interactive teleconferencing technology and on-site at Florida Hospital's Nicholson Center for Surgical Advancement. And, he hosts a world symposium for robotic surgery, which brings together surgeons from around the globe to share knowledge and skills, improve robotic surgery practice, and learn about technical innovations. His global connections are far-ranging. Not only is he an associate professor here at home at the University of Central Florida, he also serves as a faculty advisor for the Korean University in Seoul and for the European Oncology Institute in Milan. Our own Dr. Roboto's goal is unyielding: to find and eliminate prostate cancer, which strikes one-in-six men in their lifetime.

Can you imagine the cost and time savings if it were possible to substitute often misleading preclinical human and animal drug trials for a "clinical trial in a test tube"? **Dr. William Warren** and his company, VaxDesign, not only imagined it, they pioneered it!

VaxDesign's MIMIC™ (Modular Immune In vitro Construct) System uses human blood cells under conditions



similar to that in the human body, replicating the human immune system and allowing testing in a more "natural" environment. Its technologies enable researchers to test drugs, vaccines and chemical formulations more reliably and predictably, while potentially saving companies years of development time and millions of dollars in development costs.

It is no wonder that Warren and his Orlando-based company are recipients of the R&D 100 Award, and recognized by *BioWorld* as one of the most innovative companies in biotech .

Developing and producing specialized devices and advanced medical simulation systems designed to save lives on the battlefield and the emergency room is what Virtual Reality Medical Center (VRMC) and its president, **Dr. Mark Wiederhold**, are all about. Partnering with Central Florida-based IT company TeKONTROL to do this important work from a new research, development and manufacturing facility headquartered in a disadvantaged area near Downtown Orlando brings help even closer to home.

VRMC develops and uses computer-generated simulations and other special effects to treat mental health disorders, aid physical and mental rehabilitation, and train health care providers and military personnel. For example, they have pioneered Virtual Reality-enhanced Cognitive Behavioral Therapy (VR-CBT), used to treat clients with panic disorder, agoraphobia, social phobia and other phobias. Here in Central Florida, in addition to their partnership with TeKONTROL, VRMC is partnering with the University of Central Florida to create a virtual game to aid stroke survivors in expanding their range of movement.