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A LIVING LAB

A DIVERSE POPULATION MAKES CENTRAL FLORIDA THE PERFECT PETRI DISH FOR MEDICAL RESEARCH

By Rafaela Ellis

When the U.S. Food and Drug Administration decided to ban a form of heparin — a blood-thinning drug commonly used to prevent clotting during open-heart surgery — researchers in Central Florida had reason to celebrate.

The government's ruling was based largely on studies conducted by Florida Hospital's Institute of Translational Research in Orlando, which found that a particular formulation of heparin was more likely than others to actually increase clotting, causing catastrophic complications.

Initiating a drug recall was not what the Institute's scientists had in mind when they began researching heparin. The discovery was a by-product of studies aimed at understanding how cancerous tumors use the blood system to grow and spread. And that, experts agree, is the true beauty of scientific research: the biggest benefits often are the unexpected ones.

Unforeseen returns of medical research activities include not only life-saving therapies, but also financial growth for the communities that foster them.

"The economics are pretty obvious," says Dr. Clarence H. Brown III, president and CEO of M. D. Anderson Cancer Center Orlando, a major research facility associated with Orlando Regional Healthcare. "When you have research going on in a community, you generate an interest in the biomedical sciences, and companies that want to support that move into the community."

Such companies attract a highly educated, upwardly mobile workforce that improves the quality of the area, Brown says.

"Research scientists are reasonably well paid, equipment is very expensive, and supplies are costly," Brown says.

As a result, a biomedical micro-economy takes hold.

That's good news for Central Florida, where the last 10 years have seen an exponential growth in medical research activities. Since opening in 1991, M. D. Anderson-Orlando has conducted

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hundreds of clinical drug trials and recently began testing radiological equipment as well. Florida Hospital opened its Institute of Translational Research (originally named The Clinical and Research Laboratories) in 1994 with three researchers; today, a staff of 30 works on multiple projects relating to heart disease, cancer and blood disorders.

AS ORLANDO GOES, SO GOES THE COUNTRY

How has Central Florida come so far and so quickly as a major research center? Experts say our growing population is key. The Metro Orlando area leads the United States in cultural diversity; one study predicts that by 2050, the entire nation will mirror the demographic mix that Orlando will have achieved by 2015. That makes the area a sort of living laboratory where the gamut of genetic and cultural factors that affect human health can be explored in detail.

Already, the scope and variety of biomedical research in Orlando is staggering. In addition to the cancer treatment studies at M.D. Anderson-Orlando, Orlando Regional Healthcare performs medical investigations through its Health Research Institute, where scientists are seeking to understand hydrocephalus (commonly known as "water on the brain"), atherosclerosis (hardening of the arteries), and angiogenesis (the branching of blood vessels around blockages).

Florida Hospital's many research activities — conducted not only by its Institute of Translational Research but also by its cancer and neuroscience institutes — include studies on thrombosis (artery blockage), hemostatis (blood clotting), and HIV and other infectious diseases.

Then, of course, there are the drug and medical device studies, funded by corporations and often involving patient participation. In an area of this size, "finding subjects is not really a major issue," says John Francis, Ph.D., director of the Institute of Translational Research. Clinical trials offer patients "access to the latest treatments, so a lot of patients jump at the chance" to participate, Francis says.

Also eager are scientists around the country and the world, who pore over the results of research conducted here. Papers on Orlando-area research have been presented in medical journals and at dozens of international medical conferences, fomenting partnerships between Central Florida researchers and those in far-flung corners. Francis and fellow researchers at the Institute of Translational Research traveled to Birmingham, England, in 2003 to present findings of one of several heparin studies and most recently hosted a German scientist who spent 18 months conducting research alongside Institute staff.

"There's been tremendous cooperation at the international level," Francis says.

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"The economic [impact] from a research-based environment is extremely significant," Brown continues. "The types of people who come in to do [research] work have higher educations and higher aspirations for their families, so the impact on education and the cultural infrastructure can't be overstated."

What's more, he says, "We expect it to grow. We want it to grow. We've been planning infrastructure to support the growth of research for some years."

GAINING SUPPORT

An integral part of that "infrastructure planning" is securing the funds to make research happen. Although pharmaceutical and medical manufacturing firms underwrite studies that test their products, research into disease processes — the fabled "hunt for the cure" — relies on a variety of private and public funding sources. The American Cancer Society, American Heart Association and the Susan G. Komen Foundation all have donated money to local research efforts; governmental sources like the National Institutes of Health also have granted funds to Central Florida medical investigators.

Nevertheless, local researchers still have had to get creative in finding dollars.

"Most grant funding agencies are cutting back and government sources are being pulled back," says Brown of M. D. Anderson-Orlando.

So even though his center continues to seek grants from health-related foundations and federal grantors, Brown also has raised millions by soliciting private funds for individual projects, such as a study on helical tomotherapy, a technique for using radiation on a tumor without damaging surrounding tissue.

"This helical tomotherapy was developed at the University of Wisconsin over the past ten years, and we wanted to be the first to have the chance to use it," Brown says. "So we went out and raised $2.3 million from donors who believed in the project."

The nation's first helical tomotherapy unit was installed at M. D. Anderson-Orlando in January 2003. Researchers there now lead a consortium of research projects on the treatment.

"We've begun to publish a lot of our results, and we're presenting a paper at an upcoming radiation oncology conference," he says.

At Florida Hospital, Francis found another way to raise funds: he set up a diagnostic laboratory that other healthcare entities now pay to use. Specializing in bleeding and clotting disorders, the lab "has become one of the biggest and busiest clinical laboratories in the Southeast," Francis says, providing extra revenue for the Institute's life-saving research into how blood clotting affects cancer and heart disease.

"We're doing it in a way that's going to benefit care," says Francis of his lab's fundraising endeavors. "We're doing research because we want to benefit

A Bid for Growth

The University of Central Florida's bid for a research medical school is being watched closely. If given the green light, such an addition will further improve quality of life for residents, who will have access to new research and additional physicians. It will also enhance the climate for related business, making the area attractive to research medical firms and doctors.

Terry Hickey, the university's provost, is among those working to convince Florida's Board of Governors (the panel that sets policy for state-run universities) that UCF's east Orlando campus — or some donated land nearby — would be the perfect site for a medical school. He says the benefits to local citizens easily outweigh the millions it would cost to bring a medical school to town.

"Medical graduates are attracted to academic health center environments," Hickey says.

That means a medical school would bring not only students to the Orlando area, but an array of specialists and medical researchers as well, giving locals more and better healthcare choices.

And then, of course, there are the economic benefits.

"The property around medical schools becomes very valuable, and the prices go up rapidly," he says.

That's because medical schools attract doctors, and doctors make — and spend — a lot of money in their communities.

"I think you would see an increase in the number of physicians produced here, staying here and [moving] to the Central Florida area," he says.

Hickey, a former associate vice president at the busy University of Alabama-Birmingham Medical Center, knows whereof he speaks. And he's not alone in wanting to bring the benefits of a medical training center to his community; when the Board of Governors meets to review UCF's medical school proposal, it already will have in hand proposals from two other state universities — Florida Atlantic and Florida International — with the same dream.

"I suspect the Board of Governors' review will come within the next six to twelve months," Hickey says.

"We're [fundraising] in a way that's going to benefit care. We're doing research **because we want to benefit our patients**. We think it is part of our mission to do that."

— John Francis, Ph.D., director
Institute of Translational Research, Florida Hospital

High-Tech TLC for Healthcare Providers

While Central Florida's medical researchers are hunting for cures, a group of computer geeks in Eustis has embarked on a less-glamorous but equally important mission: to make it easier for healthcare providers — and their patients — to process the mountains of paperwork that accompany every medical claim.

"We provide software and services to both providers and insurance payers," explains Scott Sallyards, marketing director for edisolve.com, founded in 1999 by Sallyards and two partners. "We provide the ability to process healthcare claims electronically, regardless of whether it's a hospital that has to send claims, or an insurance company that needs to pay them."

Due to regulations mandated by the 1996 Health Insurance Portability and Accountability Act (HIPAA), providers and payers have more paperwork for every claim. By creating software systems that ease electronic data exchange between entities, edisolve.com saves its clients time and money while ensuring accuracy of information.

"All our systems are HIPAA compliant," Sallyards says.

To ensure that customer service needs are covered — "Job One" for any tech-services company — edisolve.com has partnered with Dataforce International and computer giant HP to provide support.

"When you're doing something of this magnitude, you really want to have a trusted partner," Sallyards says, noting that such systems represent a huge investment for any hospital or insurance company. "HP has our client's back. HP will pay attention."

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NO END IN SIGHT

Although most local research is currently being done by hospital-affiliated scientists, the University of Central Florida — long known for conducting research into defense technologies — is also getting into the medical research act. Dr. D. Howard Miles, a UCF chemistry professor, is working with M. D. Anderson-Orlando on a study of tumor suppression in plant products, and Florida Hospital is also investigating collaborative projects with the school.

Those who support biomedical research activities in Orlando say UCF's bid for a medical school is a vital component of plans to grow local medical investigation. Florida State University Medical School has opened an Orlando branch campus, which supports about 15 third- and fourth-year med students per year at the time of this writing, but it is not a research-focused facility.

"This is one of the largest metropolitan areas in the U.S. that doesn't have a [four-year] medical school," says Florida Hospital's Francis. "Central Florida is crying out for a major effort in this area."

M. D. Anderson-Orlando's Brown couldn't agree more.

"If we end up with a medical school here in the next five to ten years, you're going to see an explosion in the amount of biomedical research conducted in Central Florida," he says. "And it's only going to improve the quality of life in this area." (See "A Bid for Growth," page 19, for more information.)

In preparation for what many see as inevitable, both hospital systems are working with UCF to recruit and train researchers.

"We are actively recruiting young investigators to join us, and we have had discussions with the administration of UCF to allow these investigators to have joint appointments with UCF and M.D. Anderson-Orlando," Brown says. "When you can offer that kind of opportunity to a young investigator, it's very attractive. They see it as a chance for collaboration, new thoughts and support from their colleagues. And the more institutional support you have, the better your chances of getting grants."

And, he says, the better the chance that everyone in the community will have access to the highest level of medical care.

"Research is a very important part of our healthcare environment," he says. "When you bring a significant amount of research in to support medical care, the quality of care is enhanced."