

He succeeds by thinking small

Scientific finds Lukacs' goal

By **Amelia A. Hart**

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Stephen J. Lukacs Jr. thinks small. Really small.

Lukacs is thinking about the internal dynamics of proteins. About how 500 to 2,000 femtoamps of electrical current might affect a protein molecule.

That's thinking small. It takes maybe 10 amps to run a toaster. Move that decimal point to the left 16 times until you get to 0.0000000000000001. That's a femtoamp.

But within the infinitesimal world of the molecule, that amount of energy has an impact. How much energy has what effect on proteins, "the big ugly" molecules that shape life, are the questions Lukacs is inspired to answer.

Those answers in turn could have their own impacts. Because all living things include proteins, his findings could in turn impact research in numerous other fields, including viral research, endocrinology and hormone therapies, he said.

"All of them can benefit from this research because it's so fundamental," Lukacs said.

To step into Lukacs' Fernandina Beach home office, you wouldn't know that you'd stepped into a non-profit research organization, or that the electronic devices and computers on the desks are windows into the fundamentals of life.

A boyish 36, Lukacs is clearly energized by the prospects of scientific discovery that lie before him.

"Science to me is like breathing," Lukacs said.

He was 17 when he entered the University of Central Florida in August 1985 as a pre-med student. An indifferent student in high school, Lukacs fell in love with learning when he went to college. But medicine wasn't for him. He found his passion instead in scientific research.

Connecting the dots

Studying for a degree in one discipline led him to want to want to connect the dots to another, and then another. By the time Lukacs emerged from UCF in December 1991, he had degrees in microbiology/molecular biology, chemistry and physics, as well as a mathematics minor.



After years focusing on his software company, Stephen Lukacs has returned to scientific research. He's founded a non-profit organization, Infinite Quanta, to examine the dynamics of proteins. "I've been inspired to do this," Lukacs said.

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During those years he worked as a research assistant for professors examining gene control, predictive computer programs of carbon products, cold temperature physics, lasers and measuring light speed. He also worked for a year at the Free Electron Laser group at the Center for Electro-Optics and Lasers in Orlando, working on the Strategic Defensive Initiative, the theoretical defense system better known as Stars Wars.

And if all that wasn't enough, he also founded his own company, Infinite Quanta, in June 1991, to market a computer program he created, Fleet Dynamics. The program is designed to help organizations easily manage data needed to maintain equipment fleets.

In 1993, he entered Rutgers University in New Jersey to earn a doctoral degree in physical chemistry. While he hoped working on his advanced degree would be the same fulfilling experience his studies at UCF had been, he soon found himself disappointed. Research seemed secondary to politics, he said. He left school, but returned later and eventually received his degree from Rutgers in 1999.

Despite his doctorate, Lukacs turned his attention to his programming business. That work is how he still makes a living for himself, his wife and their two young sons. But the work does satisfy his yen for learning, he said.

Teaching for a while

After moving to Nassau County in 2000, Lukacs began teaching chemistry and physical science on a part-time basis at Florida Community College at Jacksonville. While in New Jersey he taught at both the high school and college levels.

Don Hughes, director of FCCJ's Nassau Center in Yulee, described Lukacs as an excellent instructor.

"He's able to bring complex subjects down to layman's terms so people can understand it," Hughes said.

But Lukacs knew he needed to get back to his research roots.

"I kept having this gnawing feeling that I have to get back into science," he said.

Last year, he got back on the research track and founded a non-profit version of Infinite Quanta as the umbrella for his work. Going the non-profit route frees him to focus on his research without being burdened by academic politics or corporate taskmasters, he said. Operating on such a small scale, he has no overhead, so a small amount of money pays for a lot of research.

Lukacs knows he's got his work cut out for him. The first task at hand is constructing the instruments that can accurately measure reactions on such a minute scale. He's already formed partnerships with two electronic instrument companies to develop spectrometers for the project.

But Lukacs is looking for others to join him on his journey of discovery. He needs help, he says. He particularly is in need of a grant writer, but anybody who wants to contribute in other ways is welcome, he said.

Lukacs doesn't know what he may discover as he moves forward in his research. Not having preconceived ideas leaves him open to inspiration.

And that's the whole point.

"If you're not open, continually open, to inspiration, how can you do anything good?" Lukacs said. "I want to remain open to true inspiration and follow that to whatever end that takes me -- and that will be a good place."

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