# Walk-thru Clinic

## Diagnosis of the future


**>> Dr. Luis Garcia-Rubio** – President & CFO
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**IMAGINE A FUTURE WHERE** a walk-in clinic is really a walk-*through* clinic – a tunnel illuminated with colorful optical lights that non-invasively analyze patients' blood and provide diagnoses on the spot.

The concept isn't so far out when you consider that it comes from a man who helped introduce the world's first miniaturized spectrometer, ultimately creating an entire optical market where none existed before.

Luis Garcia-Rubio is a professor in USF's College of Marine Science. Over a decade ago, he co-founded Ocean Optics, a pioneering developer of optical products that use light to measure and transmit information. The miniaturized spectrometer he and his partners invented changed the face of their industry, spawning dozens of imitators and enabling thousands of applications across a variety of industries and disciplines. (British conglomerate Halma p.l.c. bought Ocean Optics in 2004.)

Now, Garcio-Rubio has partnered with USF colleague and professor Dr. German Leparc to market a new way to test human blood for diseases. Leparc is chief medical officer at Florida Blood Services, a Center of Excellence for the state of Florida and the nation's fourth largest blood bank. Their company, Claro Scientific, has the potential to both dramatically improve diagnostics and decrease the cost. "We shine a beam of light into blood and see how it interacts with the sample," says Garcia-Rubio. "Then we interpret that signature in the context of markers.

"If you want to control any process, you need to have the right measurements that reflect the state of that process," says Garcia-Rubio. "If you think of the human body in that context, with bodily fluids as a process, the measurements we've developed enable us to look at the human body from an engineering perspective.

"Medical diagnostics in our health system are overburdened with cost," he says. He cites as an example the steps involved in diagnosing sepsis, or blood infection. "It takes 24 to 72 hours before you get an answer. You have to grow the cultures, find out what they are and identify what they're resistant to in order to prescribe the right antibiotic. That means two to three days in the hospital. We can reduce turnaround time on the diagnostics and reduce time spent in the hospital."

As an educator, Garcia-Rubio's influence ripples far beyond his considerable entrepreneurial achievements. In his 20 years teaching at the University of South Florida, he has graduated roughly 20 Ph.D. and 50 master's degree students. And in May 2007 he celebrated the arrival of his first "intellectual grandchild" – the first Ph.D. graduated by one of *his* first Ph.D. students, now a professor of engineering at the University of Newcastle in England.

"Diagnostic technologies commonly used today have been around for 50 years. They're overdue for innovation. If we succeed, it will revolutionize diagnostics, and that's a moral responsibility. We can do this blood analysis for less than a penny. We need to make this technology available." •