

Seeing More Means Hearing More

University of Illinois



As the father of a child with recurring ear infections, Ryan Shelton felt the frustration that many parents experience because inner ear problems are so difficult to diagnose and treat. But unlike most parents, Shelton had a doctorate in biomedical optics and imaging and was doing postdoctoral research at the Biophotonics Imaging Laboratory at the University of Illinois at Urbana-Champaign.

“ Together, he and Stephen Boppart, MD, PhD, went to work developing an imaging tool that would allow physicians to directly visualize the middle ear.

The team employed an imaging technology called optical coherence tomography (OCT), which uses near-infrared light waves to create three-dimensional views of the inner ear. The technology is similar to ultrasound but instead of sound waves, OCT shines light through the eardrum and collects the light reflections that bounce off the structures within the middle ear.

Although a desktop-sized OCT machine is the gold standard for examining the retina, Shelton and Boppart built a hand-held OCT device for the ear called the ClearView otoscope. Utilizing the full range of technology transfer resources offered by the University of Illinois — from patent filing and licensing agreements to startup support — the researchers established a start-up company, PhotoniCare Inc., to market their new device.

“Starting a company in the University of Illinois ecosystem, and particularly in Urbana-Champaign, continues to be a really terrific experience,” says Ryan Shelton, CEO and Co-Founder of PhotoniCare. “Support through affordable resources, access to expertise and mentorship and top-notch facilities is exactly what early-stage companies need.”

PhotoniCare has quickly moved the technology from bench to bedside, equipping physicians with its ClearView otoscope and conducting a National Institutes of Health-supported clinical trial with the device at Children’s National Health System in Washington, DC.

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