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## Startup targets hearing loss

### Software helps to improve cochlear implants

BY WAYNE T. PRICE

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Millions of people suffer hearing problems, and Melbourne entrepreneur Lee Krause plans to make a loud-and-clear statement that the Melbourne company he co-founded could provide help.

Audigence Inc. is developing software that could significantly reduce the time it takes to fine-tune cochlear implants. It also could be used for digital hearing aids.

If Krause and his team are able to forge agreements with the right companies, it also could establish a major high-technology company in Melbourne.

Audigence Inc., with four employees in Melbourne and some vital collaboration with University of Florida researchers, has developed software technology allowing audiologists to help patients with cochlear implants and general hearing problems to better understand speech. During testing following cochlear implants, Audigence's computer technology claims to better analyze patients' hearing ability and offer a much quicker method of adjusting the devices.

"This technology is a novel approach," Krause said of Audigence's technology. "We believe it can make a huge impact."

Audigence is emerging as the first success story from the Technological Research and Development Authority's Business Innovation Center based near Melbourne International Airport.



**Improving hearing.** Audigence president Lee Krause, right, and Mel Ayala, left, software engineer, demonstrate how the company's product, Clarujust, a software diagnostic tool, works for optimizing digital hearing devices at TRDA Business Innovation Center in Melbourne. Vice president of engineering Tony Stirtzinger looks on. Christina Stuart, FLORIDA TODAY



The center, which offers low-cost rent, free meeting space and consultations from business experts and other entrepreneurs, opened its doors last June. Seventy percent of the TRDA space is occupied.

A cochlear implant is a surgically implanted electronic device that provides a sense of sound to a person who is profoundly deaf or severely hard of hearing. Unlike hearing aids, which amplify sounds, cochlear implants directly stimulate any functioning auditory nerves inside the cochlea using electrical impulses.

Normally, the testing is a repeated series of beeps and tones used to find the ideal state for hearing words. That is laborious and inconsistent and can take several months of adjustment, Krause said. His testing would involve actual words. Krause is a former computer engineer for the Harris Corp. who began losing his hearing in his early 30s because of a genetic defect. By 33, he no longer could carry on a phone conversation and managed to get by through lip reading and other measures. Now 46, he received a cochlear implant in 2002 and it restored about 80 percent of his hearing.

Some people thought 80 percent was great, Krause said, but telephone conversations were still unnerving.

"That additional 20 percent makes a huge difference," said Krause, who used himself as a guinea pig during his research.

He can now hear and talk flawlessly on the telephone.

During the past six years, Krause honed in on cochlear implants and testing and eventually assembled engineers and specialists to look at the device's tuning process. The result was a joint U.S. patent with the University of Florida. His co-inventors are Alice Holmes, Rahul Shrivastav and Pervis Bedenbaugh, all researchers at the University of Florida.

Krause is working with a cochlear manufacturer -- he won't divulge the name right now -- on a licensing agreement for Audigence's technology. That has the potential to turn Audigence into a "multi-million dollar company."



Forging agreements with digital hearing aid manufacturers and other companies would boost those numbers tenfold, he predicted.

"Yeah, we'll make some money for this," Krause said. "But this a benefit to people. It will actually change the quality of life for millions of people. And that's priceless."

Krause said Audigence so far has raised about \$750,000, enough to get the company through the year and the product licensing process. The company will seek more investment money next year.

Whether Audigence's success is astronomical or simply very good, Chester J. Straub Jr., the TRDA's executive director, said companies such as Audigence are why centers promoting entrepreneurial business development exist.

"Audigence is a very good example that this facility has been set up for," Straub said "That is companies that are potentially industry-creating, or industry-changing, and ones that have the potential to grow rapidly over a short period of time."

Paul Suchoski, the lead investor and chairman of Audigence, became interested in the company after seeing a briefing about the technology.

Suchoski said he saw potential for Audigence but also realized the obstacles facing a start-up company with a new technology. Suchoski secured an exclusive license for the technology from the University of Florida and has helped bring on other investors.

"The potential market for Audigence's technology is huge," Suchoski said.

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## Hearing statistics

- About 28 million Americans have a hearing impairment.
- The number of Americans with hearing loss has doubled during the past 30 years.
- Ten million Americans have suffered irreversible noise-induced hearing loss, and 30 million more are exposed to dangerous noise levels each day.
- Hearing loss affects about 17 in 1,000 children younger than 18. Incidence increases with age: About 314 in 1,000 people older than 65 have hearing loss and 40 percent to 50 percent of people 75 and older have hearing loss.
- At least 12 million Americans have tinnitus (ringing in the ear). Of these, at least 1 million experience it so severely it interferes with their daily activities.

**Sources:** The National Institute on Deafness and Other Communication Disorders and also the American Speech-Language-Hearing Association.

## About Audigence Inc.

- **Founded:** 2007
- **Location:** 1050 W. NASA Blvd., Suite 154, Melbourne
- **Contact:** 952-2455, [www.audigenceinc.com](http://www.audigenceinc.com)
- **Product:** Developed software called Clarujust that assesses and optimizes the performance of an individual's digital hearing device, such as a cochlear implant or a digital hearing aid, without modifying the existing hardware. The service can be delivered remotely over the Web so patients can be tested in any environment that is equipped with Internet access, a personal computer and a microphone.
- **Why it's unique:** According to Audigence, digital hearing devices currently are tuned using a series of tones. Clarujust uses speech to permit user-specific tuning and adjustments based on speech, not tones. The software will allow digital hearing devices to more accurately meet the needs of users.