

*Eric Fischer refers to himself as an "ordinary teenager," but his sense of humor and optimism in dealing with the daily challenges and frustrations of a serious illness set him apart from other 17 year olds. These challenges are nothing new for Eric.*

In 1995, Eric noticed a small lump just under the surface of the skin on his torso. Parents Barb and Steve Fischer took Eric, then 10 years old, to see a doctor in their Michigan town. The doctor who removed the lump, found it to be benign, and told them not to worry about it.

When more lumps appeared four years later, the Fischers went back to their doctor. This time, extensive tests revealed that Eric had Neurofibromatosis Type II (NF2), a rare genetic disease of the nervous system affecting one in 40,000 people. NF2 causes the development of multiple benign tumors (schwannomas) on both vestibular nerves, and sometimes in other parts of the body. Surgical removal of NF2 tumors is necessary because as they grow along the vestibular nerve, they put pressure on adjacent nerve systems such as the acoustic and facial nerves, leading to hearing loss, balance problems and facial paralysis. During surgery, removal of NF2 schwannomas frequently

requires severing both auditory nerves, leaving the patient totally deaf.

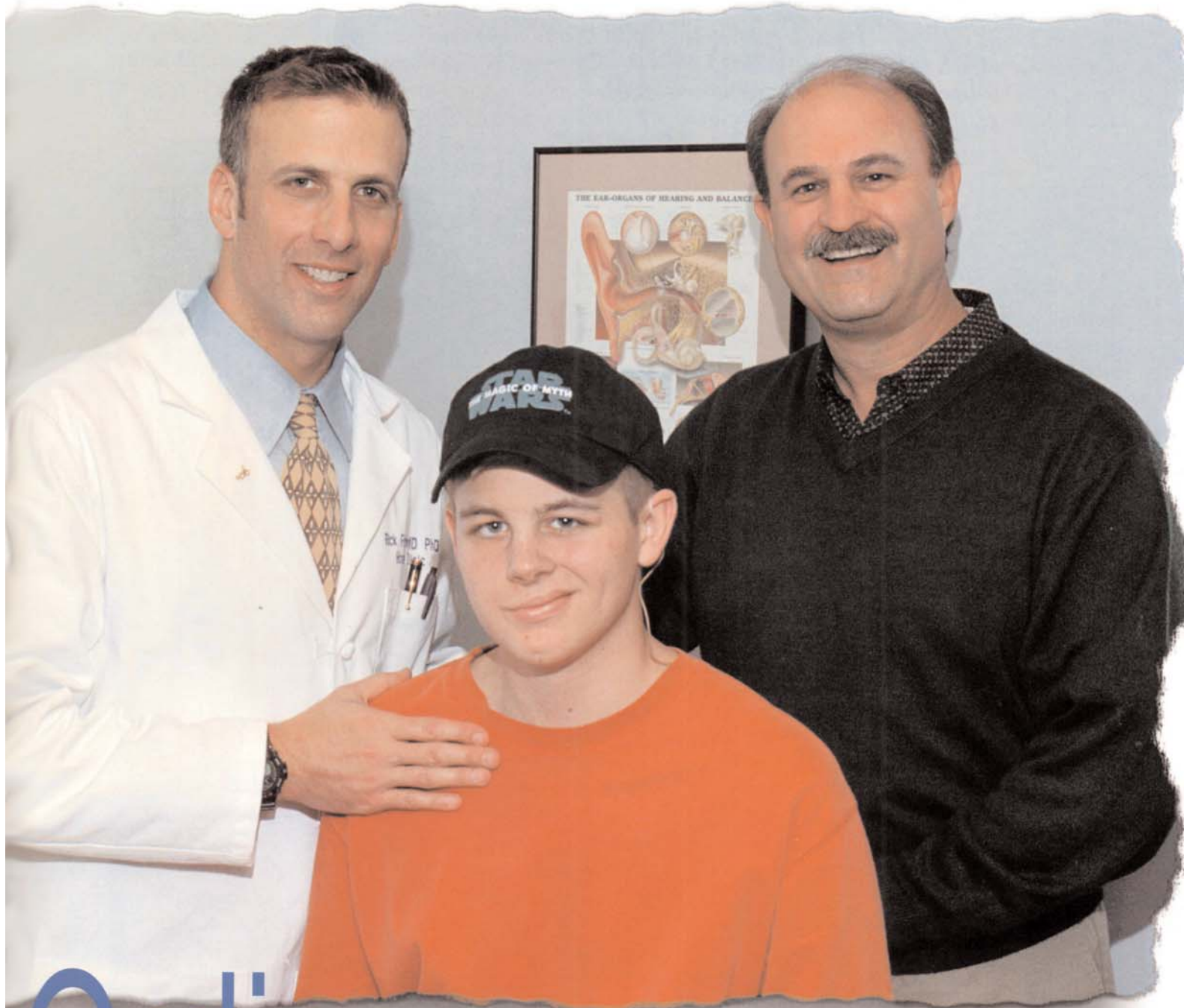
"When I was first diagnosed with NF2, I asked 'Why me?' but later I learned to ask 'Why not?'" Eric told us. "Why not me rather than someone else? Over time I've tried hard not to let it get to me, and to live just as I did before, even though it meant giving up some of my old activities."

The most immediate concern in Eric's case was that he had a large schwannoma growing along his vestibular nerve that would most likely lead to deafness in his left ear. By the time Eric was a high school sophomore, he was having difficulty in hearing people on the telephone, and missing much of what his teachers said in class. As Eric's hearing diminished, the Fischers researched possible treatments for NF2 patients. Nurses whom they contacted at Cincinnati Children's Hospital (CCH) referred them to Rick A. Friedman, M.D., Ph.D., at the

# Eric Fischer:

# No

*Rick Friedman, M.D., Eric Fischer, Audiologist Steve Otto*



# Ordinary Teenager

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House Ear Institute and Clinic. The Fischer's first meeting with Dr. Friedman, an otologist specializing in genetic hearing diseases and acoustic tumors, proved to be a turning point in Eric's treatment.

"Dr. Friedman was very honest in telling us what needed to be done," said Barb Fischer. "It was hard, because he explained that Eric would immediately lose his hearing when the tumor was removed. I told Dr. Friedman that I had been hoping something could be done to save Eric's hearing, and that's when he told me about the ABI."

Dr. Friedman explained that he couldn't save Eric's natural hearing, but he could offer him an alternative mode for receiving sound. Thanks to 20 years of scientific research at the House Ear Institute, he could now implant an FDA-approved electronic device called an auditory brainstem implant (ABI) at the base of Eric's skull during the same surgery that would remove his tumor. HEI scientists created this device specifically for NF2 patients, designing it to bypass the auditory nerve and transmit sound directly to the brainstem via a tiny electrode.

Steve Otto, a research audiologist in HEI's Department of Auditory Implants and Perception who works closely with all ABI patients receiving treatment at the House Ear Clinic, called the Fischers and outlined the benefits and realities of using the ABI. He explained that the ABI would allow Eric to hear, but in a new way. He warned them that environmental



sounds and voices processed through an ABI sound very different than sounds processed through the natural ear. Eric would have to relearn everything he knew about the way things sound, relying on lip-reading and his brain's ability to fill in the blanks to follow conversations.

In May 2001, the Fischers flew to Los Angeles to prepare for Eric's surgery. Dr. Friedman welcomed the Fischers to the House Ear Clinic and briefed them on the surgical procedure. Next, Steve Otto showed them a model of the electrode implant, as well as the external components – a microphone and a speech processor – that Eric would receive a few months after his surgery. After reviewing the rehabilitation process, Eric went to the operating room at St. Vincent Medical

Center where Dr. Friedman performed the surgery. The operation was a success, and Eric returned home to heal and rest for several weeks before receiving his first "hook-up to sound."

Upon his return visit to the House Ear Clinic, Eric received his microphone and speech processor and worked with Steve Otto on mapping his ability to hear different levels of sound with his new device. Eric had surprisingly good results; in fact, Eric did better than many ABI users do after years of practice, recognizing more than 50% of the words spoken to him, and utilizing his lip-reading skills to fill in the gaps.

"I worked very closely with Steve during those first mapping sessions, and he was great," says Eric. "I had

been trying to keep my expectations low so I wouldn't get upset if it didn't turn out well. When the results were above my expectations, I got really excited, and so did Steve. I was so happy I'd be able to hear a car coming or a phone ringing."

Eric explains that using an ABI is like learning a new language. "Voices sound like a Speak & Spell™ toy, but I'm getting used to that," says Eric. "Since I got the ABI, there has definitely been an improvement in my one-on-one conversations, especially with people whose voices are already very familiar to me." ❖

## Battle Robots vs. Band Practice

*When Eric returned to the House Ear Institute and Clinic recently for his follow-up appointments, he brought along a Battlebot prototype he'd built out of legos. He wasn't able to travel on the plane with one of his "real" robots, but wanted to share with us a sample of his new hobby. Eric sat down with us and discussed the journey he's been on, and how his new hobby is keeping him busy and helping him make the transition from some of his former activities.*

"I was really active in the school band, but I had to give it up, and my music is something I miss quite a bit. Some of my best times have been spent in band class, where I met a lot of my best friends. But as time went on, I found it more and more difficult to play my trumpet. In my junior year, I finally had to give it up. Even with extra practice, I was disappointed to find that I was not improving. It was just too tough. Because of my facial paralysis, I was unable to buzz my lips or control my face to play my instrument."

"My new Battlebots hobby has gone a long way to replacing band. I may not get to see a lot of my band friends, but building Battlebots eats up a lot more of my time than band did, and I'm learning lots of interesting new things. There are lots of great people involved in Battlebots activities, so I'm making new friends."

"My Battlebots team is building a lightweight robot that weighs 60 lbs. We've already spent about \$1,000 collectively, and we still need to get the parts machined, so we could definitely use sponsors for that project. I'm also a member of the North East Robotics Club, [www.robotconflict.com](http://www.robotconflict.com), where we built 1-lb. and 12-lb. robots for the local competition in March 2002. I'm definitely glad I got involved in building Battlebots."

