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Ormia's Ear

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July 12, 1999 -- The July 12, 1999, National Geographic Radio Expedition -- on *Morning Edition* -- takes us to no foreign or exotic locations.

Instead we join NPR's Alex Chadwick in a research lab at Cornell University in Ithaca, New York. He's investigating the work of Cornell's Dr. Ron Hoy, and Dr. Ron Miles, chair of the Department of Mechanical Engineering at SUNY-Binghamton -- two men who have collaborated to solve this puzzle:

How and why can a particular small fly, Ormia ochracea, hear a cricket -- a feat that's way beyond the capabilities of most flies.

The answer to this riddle takes us from encounters with the movie *Alien* to Bourbon Street in New Orleans and back to the research lab. Along the way, we learn that basic research into something as esoteric as how a fly hears can have some very unexpected dividends.

Ormia's ear turns out to be something unique to science -- a new way of hearing. And what Drs. Hoy and Miles have learned is the basis for an effort to design and build a new kind of hearing aid -- one based entirely on the ear of an insect.

Here is how researcher Ron Hoy describes the phenomenon:

"The acoustic parasitoid fly, *Ormia ochracea*, possesses a tiny hearing organ for directional hearing. This fly uniquely utilizes a form of mechanical coupling between its eardrums to detect the direction of a sound source."

"In the photo, the fly is posed between two kinds of commonly used hearing aids: a small insertable type and an external aid that is looped around the ear itself. Neither of these hearing aids gives the wearer the ability to localize sounds, which is a deficiency.

Researchers Ron Miles, Norm Tien, and Ron Hoy hope that a small, inconspicuous directional hearing aid can be manufactured based on the unique design principles of the fly's ear."

Find out more about *Ormia* and what researchers are doing to help the hearing impaired as NPR's Alex Chadwick takes *Morning Edition* listeners on another of National Geographic Society/National Public Radio's



Ormia ochracea
between two hearing
aids
Photo: Ron Hoy

Radio Expeditions.

Check out [Ron Miles' Website](#) to find out more about the *Ormia* and how its study is aiding our understanding of hearing and hearing problems.
