



Education, Research & Politics

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Basic and Applied Research for Everyone

NPR *Morning Edition* Segment Attempts to "Explain All"

National Public Radio has come to the aid of legislators and educators finding it difficult to distinguish clearly between basic and applied research. A recent "Morning Edition" segment about a curiosity in the natural sciences provides a wonderfully straightforward example. A Cornell biologist, Ron Hoy, has been studying the life cycle of a fly (*ormia ochraacea*) that depends on finding crickets in order to place its eggs (actually live maggots, but that is another story) inside the host to provide a food source during their development. An interesting question arose with regard to how the tiny fly could hear sufficiently well to locate the potential host, given that its ears were necessarily very close together. In humans, it is possible to locate the source of sounds because the ears are separated and sounds are heard slightly differently in each ear.

A professor from the Department of Mechanical Engineering, Ron Miles, was brought to the investigation to help solve this intellectual puzzle of basic research. Miles discovered that the ears were mechanically coupled--that when one microscopic ear was pressed, the other popped up. The conclusion from the basic research was that the fly had evolved a new kind of ear, one in which the coupling mechanism acts to shut off the side farthest from the sound.

Of what use might this bizarre knowledge be? Miles thought immediately of applying this discovery to developing an improved directional microphone for hearing aids, ones that could be worn inside the ear and would provide more realistic directional sound. The National Institutes of Health has awarded him a grant to design and build a new hearing aid based on the ear of *ormia*.

The trials and tribulations of a basic researcher were expressed by Hoy with reference to his mother's questions about his work:

She'd usually say, "That's nice," but I know what was going on in her mind was, "Bug ears? Why didn't you become a real doctor?" But when we came upon the fly's ear and I heard that this could actually turn out to be worth something out there in the real world, this has been one of the highlights of my life.

A transcript of the NPR Morning Edition for July 12, 1999 is available from Burrelle's Transcripts; P.O. Box 7, Livingston, NJ 07039. Call toll free at 1-800-NPR-TEXT.

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