

# GOLD MEDAL of the Acoustical Society of America



## Patricia K. Kuhl

### 2008

The Gold Medal is presented in the spring to a member of the Society, without age limitation, for contributions to acoustics. The first Gold Medal was presented in 1954 on the occasion of the Society's Twenty-Fifth Anniversary Celebration and biennially until 1981. It is now an annual award.

#### PREVIOUS RECIPIENTS

Wallace Waterfall	1954	Richard K. Cook	1988
Floyd A. Firestone	1955	Lothar W. Cremer	1989
Harvey Fletcher	1957	Eugen J. Skudrzyk	1990
Edward C. Wente	1959	Manfred R. Schroeder	1991
Georg von Békésy	1961	Ira J. Hirsh	1992
R. Bruce Lindsay	1963	David T. Blackstock	1993
Hallowell Davis	1965	David M. Green	1994
Vern O. Knudsen	1967	Kenneth N. Stevens	1995
Frederick V. Hunt	1969	Ira Dyer	1996
Warren P. Mason	1971	K. Uno Ingard	1997
Philip M. Morse	1973	Floyd Dunn	1998
Leo L. Beranek	1975	Henning E. von Gierke	1999
Raymond W. B. Stephens	1977	Murray Strasberg	2000
Richard H. Bolt	1979	Herman Medwin	2001
Harry F. Olson	1981	Robert E. Apfel	2002
Isadore Rudnick	1982	Tony F. W. Embleton	2002
Martin Greenspan	1983	Richard H. Lyon	2003
Robert T. Beyer	1984	Chester M. McKinney	2004
Laurence Batchelder	1985	Allan D. Pierce	2005
James L. Flanagan	1986	James E. West	2006
Cyril M. Harris	1987	Katherine S. Harris	2007
Arthur H. Benade	1988		



## CITATION FOR PATRICIA K. KUHL

*. . . for contributions to understanding how children acquire spoken language and for leadership in the Society.*

### PARIS, FRANCE • 2 JULY 2008

Patricia Katherine Kuhl was born and raised in St. Cloud, Minnesota, the second of five children of Joseph and Susan Kuhl. In high school, Pat was involved in many school activities, including the debate club, the honor society, and the basketball team. She was especially interested in music, showing great enthusiasm and talent for voice and piano. Luckily for the field of speech communication, Pat's parents stressed talking in addition to music. Every night before dinner in the Kuhl household, Pat's father unplugged the telephone so that the family could discuss the day's activities, the national political scene, and world affairs. Pat's father always read the newspaper before dinner, and expected the children to do as well, so Pat read the papers before her father arrived home. Pat was always ready to debate her dad about anything and everything. For those of you who know Pat, she loves a lively discussion and is always prepared with facts as well as opinions.

Pat is married to Andrew Meltzoff, who along with Pat, is co-Director of one of the more visible research groups at the University of Washington—The Institute for Learning and Brain Sciences. Pat is also the Co-Director of another high-profile interdisciplinary research group on campus, an NSF Science of Learning Center—LIFE—which links neuroscience to education. Pat and Andy have enjoyed a long and productive collaboration in developmental cognitive science. According to Andy, the “best collaboration of all” was one that resulted in their daughter Katherine, who combines Andy's love of swimming and Pat's love of music. Katherine is one of the stars on the swim team at Trinity College in Connecticut and also had the singular distinction of participating in the first test of the acoustics in Seattle's Benaroya Hall by singing while former ASA President Cyril Harris, acoustical engineer for the Hall, dashed around taking measurements.

Pat completed her BA, MA, and Ph.D. degrees in Minnesota at St. Cloud State University and the University of Minnesota. Pat's interest in the development of speech perception in children began with her postdoctoral years at the Central Institute for the Deaf with James D. Miller. Those years led to a series of papers that examined the responses of mammals and children to speech. She established commonalities between mammals and human infants in their response to speech sounds, and, importantly, where their patterns of responses to speech stimuli diverged.

In the early 1980's, Pat's interest expanded beyond the auditory perception of speech to include studies of how infants integrate auditory and visual information about speech, and to the imitation of speech. Especially impressive has been Pat's insights into the future of speech research: She has consistently published important papers that inspire new lines of research, from her animal studies in the 70's and 80's, to her auditory-visual and imitation work in the 80s, to her work on language experience and its effects on learning in the early 90's, and her most recent work which is forging new territory using the tools of modern neuroscience. She has most recently worked to develop baby Magnetoencephalography (MEG). The technique is completely safe, non-invasive, and noiseless, and Pat and her team worked with engineers in Helsinki to develop ways to track an infant's head movements so the baby's brain activities can be precisely located in the infant brain as the child listens to language or music, and processes complex social information. Pat has a unique talent for spotting where the next interesting finding may lie, and an ability to put together the resources and interdisciplinary research teams needed to conduct work that few others would be able to accomplish. She has forged collaborations with speech scientists from Japan, Taiwan, Sweden, Russia, Finland, Spain, China, France, and Mexico to study how language experience affects speech processing in adults and young children. Pat's students also come from many different countries, and a tour through her Institute introduces a visitor to students from Taiwan, Japan, China, Mexico, and Finland. Once trained, many of these students return to their native countries to set up speech research laboratories of their own.

Pat's research has had theoretical as well as practical impact. If you have ever tried to learn a new language as an adult, you soon recognize that it is difficult to pronounce certain sounds, or even to hear the relevant differences, while your children seem to pick

up foreign languages easily and speak without an accent. Pat has performed pioneering research in this field and learned from her studies with babies as young as 6 months that infants are born “citizens of the world” with regard to language. They can distinguish sounds from languages around the world, even if they have never heard them before. By the end of the first year of life, however, they become “language-specialists”—the ability to attend to native-language sounds increases substantially while the ability with foreign languages diminishes. Pat proposed the Native Language Neural Commitment Theory to account for this dramatic developmental change. The model shows that infants use computational abilities to “crack” the speech code and, interestingly, that infants’ social skills may “gate” learning. She and her students showed that infants learn phonemes and words rapidly from a live foreign-language tutor at 9 months of age but that the same foreign-language material presented from a TV or audio-tape produces no learning. The finding has theoretical implications as well as implications for education and society.

Pat’s research in acoustics has led to a number of singular honors: for example, she is a member of the American Academy of Arts and Sciences, the Rodin Academy, and the Norwegian Academy of Science and Letters. She was awarded the Silver Medal of the Acoustical Society of America in 1997, and the Kenneth Craik Research Award from Cambridge University in 2005. She received the University of Washington’s Faculty Lectureship Award in 1998, and in 2007, she was awarded the University of Minnesota’s Outstanding Achievement Award. Pat is a Fellow of the American Association for the Advancement of Science, the Acoustical Society of America, and the American Psychological Society.

Pat has also been an eloquent spokesperson for childhood learning and was one of six scientists invited to the White House in 1997 to make a presentation at President and Mrs. Clinton’s Conference on “Early Learning and the Brain.” In 2001 she was invited to make a presentation at President and Mrs. Bush’s White House Summit on “Early Cognitive Development: Ready to Read, Ready to Learn.” In 1999, she co-authored *The Scientist in the Crib: Minds, Brains, and How Children Learn*.

Pat has played an active role in the affairs of the Society for a number of years. She has served as an Associate Editor of the *Journal*, as a member of the Executive Council, and as a member or chair of several committees. Pat was cochair of the joint 135th meeting of the Acoustical Society of America and the 16th International Congress on Acoustics in 1998 as well as coeditor of its proceedings. She was cochair of the ASA’s 75th Anniversary Celebration Committee with Leo Beranek in 2004. As part of the celebration, Pat organized a series of presentations by nine young investigators entitled “A Celebratory Look into the Future.” She was elected the Society’s Vice President in 1996, and in 1999 was the first woman elected President of the ASA. While President, Pat created the Student Council, one of the most successful presidential initiatives, and one that has generated great enthusiasm among our younger members.

The Gold Medal winners of the ASA are indeed a select group; they have been outstanding innovators and leaders in science and engineering and they have brought great recognition to our Society. Patricia Kuhl now joins this elite group and elevates its stature even more.

FREDERICKA BELL-BERTI  
YANG ZHANG  
PAUL IVERSON