FROM THE EDITOR

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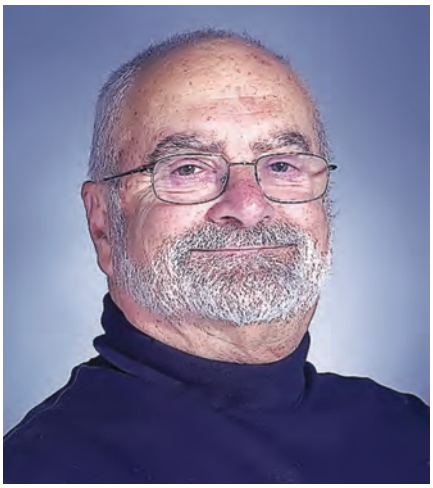

This issue of *Acoustics Today* will be one of our largest. It contains six articles organized and submitted by our Guest Editor, Brenda Lonsbury-Martin, and one contributed by Hsuan-hsiu Annie Chen and Peter Narins. Thank you Brenda for doing a fine job and thank you to all the authors.

See you in Kansas City.

FROM THE GUEST EDITOR

Brenda Lonsbury-Martin

The Acoustical Society of America's Technical Committee on Psychological and Physiological Acoustics interconnects researchers from the fields of psychophysics and physiology of the auditory system, along with modelers using a systems approach that is based on neural structures in the auditory system and hearing behavior. Bringing together the scientists from these fields allows for better insight into the processing mechanisms in the auditory system and their perceptual consequences. Physiological studies provide evidence whether a certain encoding mechanism in the auditory system offers a sufficient explanation for a perceptual phenomenon. Understanding the physiological mechanisms underlying auditory perception will not only have its own merits, but may advance developments in the diagnosis and technological treatment of hearing problems through hearing aids and cochlear implants.

In this issue of *Acoustics Today*, several authors from the fields of psychological and physiological acoustics present a capsule of the research in their specialized areas of interest.

Douglas H. Keefe from Boys Town National Research Hospital begins with a discussion of how the hearing process originates at the level of the ear canal and middle ear. He and his colleagues have used wideband acoustical measurements in the ear canal to contribute towards the identification of hearing loss in both infants and adults. Ruth Y. Litovsky from the University of Wisconsin Waisman Center goes on to address how the auditory system functions in a 'cocktail party' environment filled with a disarray of noises. She explains that the auditory system's ability to permit a spatial release from masking allows listeners to adequately separate speech from noise. Fan-Gang Zeng, from the University of California–Irvine, continues by dis-

cussing the processing of tonal languages, which are spoken by the majority of the world's people. He goes on to describe how the programming of cochlear implants takes into account the knowledge that tones are not only for tonal languages.

Marjorie R. Leek and Michelle R. Molis of the National Center for Rehabilitative Auditory Research address how hearing impairment leading to a sensorineural hearing loss interferes with the spectral analysis of sounds. The resulting loss of frequency resolution makes it extremely difficult to understand speech in noisy surroundings. Michael G. Heinz from Purdue University discusses the prediction of the psychoacoustic attributes of complex hearing from physiological measures. He and his colleagues have linked neural coding predicted from computational models of certain auditory structures with the perception of speech measured from normal-hearing listeners to better inform the design of cochlear implants. Finally, Christoph E. Schreiner from the University of California, San Francisco, and his colleagues present a series of findings about the role of neural excitability in analyzing the sounds we hear. Using a variety of innovative approaches, their investigations of neuronal organization and processing are critical in understanding the contributions of the auditory cortex to the perception of the sounds of our environment.

Leek and Molis emphasize the necessity of cooperation between the peripheral auditory system and the auditory brain to ensure that the combined information from the two ears across time and frequency leads to the successful perception of an acoustic signal. For certain, as they conclude, auditory structure and physiological function must be essentially intact to support hearing behavior.