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**Combining hearing aids and cochlear implants to solve the cocktail party problem**

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The cocktail party problem refers to the difficulty in speech recognition in noise that a hearing-impaired listener must face in daily life. Combining a hearing aid with a cochlear implant can provide complementary information that may have a great potential to solve this problem. On one hand, a hearing aid may provide low-frequency temporal fine structure cues that are not conveyed by a cochlear implant. On the other hand, a cochlear implant can provide high-frequency temporal envelope cues that are not effectively delivered by a hearing aid. This talk will provide psychophysical and speech recognition evidence for combining hearing aids and cochlear implants to solve the cocktail party problem. One interesting finding along this line of research is that in many important functional tasks, the hearing aid and cochlear implant combination provides a more effective solution than bilateral cochlear implants. Another interesting finding is that the fundamental frequency cue alone can significantly improve speech perception in noise, especially when the noise is a competing voice. The latter finding suggests that combining a tactile aid and a cochlear implant can potentially achieve the same benefit as combining a hearing aid and a cochlear implant in patients with no residual acoustic hearing.