Performance on many perceptual tasks improves with practice, indicating that our sensory systems are not rigid but rather can be changed through experience. My coworkers and I have been investigating the factors that induce and those that prevent perceptual learning on auditory skills, including how those factors change with age and are affected by sensory and cognitive disorders. Conclusions drawn from learning on fine-grained auditory discrimination tasks have held for visual and speech learning, suggesting that common principles are at play across multiple domains. Knowledge of these issues will lead to more effective perceptual training strategies to aid rehabilitation and promote skill enhancement.