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# Characterizing auditory cortical receptive fields

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## Characterizing auditory cortical receptive fields

### Background

The organization of the visual cortex, the part of the brain that receives visual input from the eyes, is more fully understood than the auditory cortex in humans, which processes all auditory information. For example, even today, the basic orientation of the primary auditory cortex is not conclusively known.

Similarities with other species have been helpful in understanding the organization of the visual cortex but such parallels break down for auditory cortices, which, uniquely in humans, are adapted to process speech and music.

### The Problem

Through this research we have a unique opportunity to explore how auditory cortices respond to naturalistic stimuli and how that response changes with different tasks. This foundational work is critical if we are to understand abnormality in auditory cortices in disorders such as autism, specific language impairment, auditory processing disorders and prolonged auditory deprivation (due to hearing loss).

### The Project

We have four aims for this project.

The first is to be able to estimate and characterize the responses of the auditory cortices to music and speech, and then test those characterizations with neural data.

The second is to test the neural response to auditory stimuli in different auditory cortices at different times to understand how information is represented in the different cortices.

The third is to use the first two aims to characterize the different auditory cortices, their specializations and how they can respond to different tasks.

The final aim is to use the expertise we develop in gathering neural data to benefit others at Western, such as The Epilepsy Program at University Hospital.

### Western Researchers

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