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[How You Can Pick Up at a Noisy Party](#)

The auditory inhibition

In the middle of a crowded party, you approach and manage to talk with your preferred "target", with all the thundering background noise. This has been a mystery: how can we ignore background noise to focus just on the voice of our interlocutor.

It has been believed that the brain differentiates sound sources by assessing where they come from. But we can still do this even when the position of the speaker in relation to other speakers is not known. A new research shows that in fact our auditory system probably follows sound sources using their unique pitch, filtering out less important sources.

The team led by Holger Schulze at Leibniz-Institute for Neurobiology, in Magdeburg, Germany, investigated gerbils that possess an auditory system very similar to humans, thus the findings could apply to humans as well.

"It has been known for 20 or 30 years that it is possible without directional information to do the job. But we didn't know how it works, where in the brain this happens. Now we know it's in one small area within the auditory cortex," said Schulze.

The auditory cortex, located in the temporal lobe, appears to sort various voices into areas arranged in a circle.

"Within a circular map you can connect each region with all other regions equally well. This is important if you want one region to be able to inhibit all other regions equally well. If it was linear, you could only inhibit your neighbors," Schulze told LiveScience.

The team assessed brain activity in Mongolian gerbils using implants of microelectrodes. When the rodents were exposed to one sound, a small area in their brains was activated. Another sound of a different pitch was added to the previous one, but even if the new area was activated initially, then its activity lowered as it was inhibited by the first.

"One area sends neurotransmitters to other areas to say, 'Stop listening'. But there must be some residual activity left so that if you hear something that catches your attention you can selectively switch focus. Though we can distinguish individual voices without knowing where they are coming from, if we have directional information this process is even easier. Both the pitch-sorting mechanism and directional sorting are usually going on simultaneously," said Schulze.

Current auditory devices for deaf people are inefficient in sorting sounds.

"We will try to implement this mechanism from the brain into hearing aids, so that the hearing aids can segregate the sounds from different speakers," said Schulze.