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Advancements Made In Tinnitus Research

Buffalo, NY — The realization that tinnitus is caused by biological changes in the brain rather than being psychologically conditioned, as previously believed, was a breakthrough in the research into this common and, at times, disabling hearing affliction.

"When you get away from the idea that people are imagining tinnitus versus there is some locus in the brain generating some activity that the person perceives as a real sound – that is a big difference," said Ed Lobarinas, a scientist at the Stae University of New York, Buffalo.

The researchers there have developed two methods to detect the presence of tinnitus in animals. Both rely on rats reacting to noise and quiet. By showing which animals have tinnitus and comparing them to those without tinnitus, the two methods enable the scientists to look at the neurophysiologic differences in the brains of the animals.

The scientists aim to identify the neurophysiologic changes when tinnitus is present and to test drugs that suppress the behavioral evidence of tinnitus.

"We want to induce it and we want to find out how to suppress it," said Richard Salvi, the principal investigator.

One experiment involves the training of rats to lick for water when quiet and not to lick for water whenever they hear a sound. Thus, rats without tinnitus have a high lick rate when no noise is present, whereas the rats with tinnitus exhibit a lower lick rate, as their tinnitus cause them to perceive noise even though the environment is silent.

"This is how we determine they no longer can hear quiet," said Ed Lobarinas.

The other method involves playing a background noise with regular intermittent periods of quiet signaling a subsequent sudden loud noise. The rats with tinnitus are unable to distinguish between the background noise and the quiet periods because of the perceived noise in their ears, thus missing the warning of the burst of loud noise. As a result, they are more startled by the burst of loud noise than the rats without tinnitus who perceive the quiet warning signal.

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