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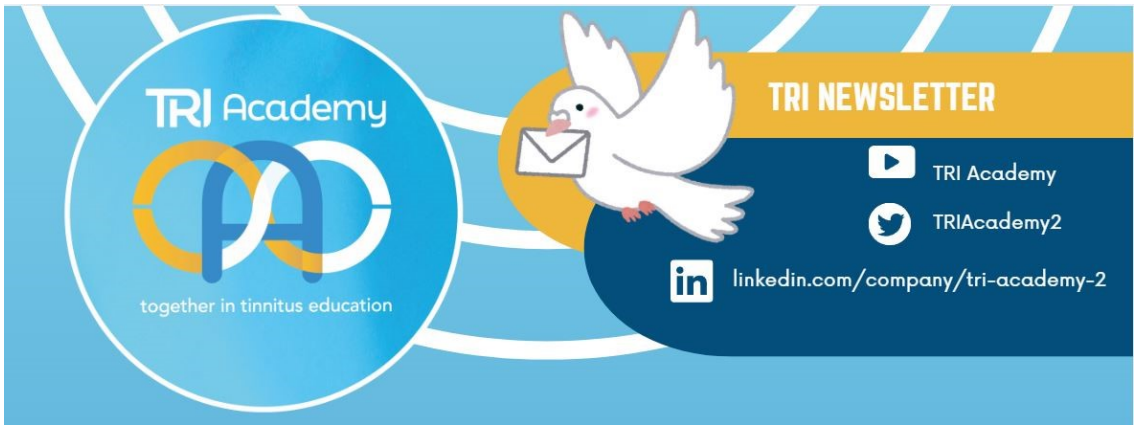

Greetings, dear readers,

As we progress through 2025, tinnitus research continues to evolve, offering fresh insights into the condition's mechanisms and potential treatments. But beyond the lab, tinnitus awareness has been making headlines in a way that resonates with millions.

Recently, two of the world's most prominent DJs—Alesso and Martin Garrix—have spoken openly about their struggles with tinnitus, bringing much-needed attention to the risks of prolonged exposure to loud music. Alesso shared how a severe tinnitus flare-up forced him to cancel shows for the first time in his 14-year career, prompting him to slow down and prioritize his health. Martin Garrix, in turn, revealed that he experiences a "nonstop beep" and now relies on background music and studio decibel meters to manage his symptoms. Both artists emphasized the importance of hearing protection, not just for musicians but for festival goers and music lovers as well.

Moments like these offer a unique opportunity to bridge public awareness with research. How can we use this growing mainstream discussion to advance tinnitus education and prevention? What role should researchers play in shaping the narrative around hearing health?

In this edition, we'll explore these questions alongside a small selection of the

latest tinnitus research. From subconscious processing in sleep and smartphone-based CBT to predictive brain markers and the emerging roles of gut health and hormones, this issue showcases just how multidimensional tinnitus science has become. We also examine how neural patterns differ between mild and severe cases, underscoring the importance of personalized approaches in both research and care.

Let’s dive in.

Is Deafferentation Enough to Cause Tinnitus?

Park et al. (2025)

Park, M., O’Beirne, G.A., Bird, P.A. and Maslin, M.R., 2025. Plasticity of the auditory cortex and brainstem in surgically induced unilaterally deaf adult humans with and without tinnitus. *Clinical Neurophysiology, 172*, pp.70-80.

When one ear falls silent, the brain doesn't simply stay idle. Researchers in New Zealand **studied adults who became deaf** in one ear after surgery, **comparing those who developed tinnitus to those who didn’t**. Using brainstem and cortical recordings, they found that while both groups showed increased brainstem activity, **only those with tinnitus exhibited elevated cortical responses near the functioning ear**. The takeaway? Losing input from one ear (a process called deafferentation) may prime the system—but it’s the brain’s heightened cortical reactivity that might tip the scales toward tinnitus. Their findings reinforce the idea that **tinnitus is a product of both bottom-up and top-down auditory processing.**

Ongoing Relief: Long-Term Benefits of Smartphone-Based CBT for Tinnitus

Walter et al. (2025)

Walter, U., Pennig, S., Bleckmann, L., Röschmann-Doose, K., Wittig, T., Thomsen, J. and Schlee, W., 2025. Continuous Improvement of Chronic Tinnitus Through a 9-Month Smartphone-Based Cognitive Behavioral Therapy: Randomized Controlled Trial. *Journal of Medical Internet Research, 27*, p.e59575.

Can you really treat tinnitus with your smartphone? A research team across Germany put it to the test, enrolling 187 **people with chronic tinnitus in a 9-month CBT-based app program**. The verdict? Slow and steady wins the race. While early improvements were modest, by month nine, patients reported significantly reduced distress and better scores across stress, mood, and self-efficacy measures. This large-scale randomized trial provides **compelling evidence that digital CBT isn't just a stopgap**—it's a long-term strategy.

Predicting the Quiet: EEG Markers of Tinnitus Suppression

Shabestari et al.

Shabestari, P.S., Schoisswohl, S., Wellauer, Z., Naas, A., Kleinjung, T., Schecklmann, M., Langguth, B. and Neff, P., 2025. Prediction of acoustic tinnitus suppression using resting-state EEG via explainable AI approach. *Scientific Reports, 15*(1), p.10968.

In a recent Scientific Reports publication, Shabestari et al. used machine learning on EEG data to pinpoint brainwave patterns that distinguish tinnitus patients based on their ability to experience brief relief from the noise. Their model—especially the random forest classifier—achieved high accuracy by identifying distinct patterns in brain activity, **particularly in alpha and gamma frequency bands**. Individuals who experienced suppression (BATS) showed right-dominant alpha activity and enhanced gamma in the left auditory

cortex. **Differences in connectivity between auditory and limbic regions** also played a key role, suggesting that **neural architecture may underlie who benefits most from sound-based interventions**. The findings point toward the potential of EEG-based predictors in guiding individualized tinnitus care.

The Gut-Brain-Ear Axis – A New Frontier in Tinnitus Research?

Jiang Wang et al. (2025)

Wang, J., Xiang, J.H., Peng, X.Y., Liu, M., Sun, L.J., Zhang, M., Zhang, L.Y., Chen, Z.B., Tang, Z.Q. and Cheng, L., 2025. Characteristic alterations of gut microbiota and serum metabolites in patients with chronic tinnitus: a multi-omics analysis. *Microbiology Spectrum, 13*(1), pp.e01878-24.

Could gut health influence tinnitus? In a piece published in Clinical Microbiology, Wang et al. identified a **connection between gut microbiota imbalances and neuroinflammatory pathways associated with tinnitus,** suggesting that certain microbial profiles may contribute to symptom severity. The study builds on growing evidence that **gut-brain interactions extend to auditory processing**, raising the possibility that **probiotics, dietary changes, or microbiome-targeted therapies** could play a role in tinnitus management.

Hormonal Influences and Tinnitus – A Missing Piece of the Puzzle

Zuriekat et al. (2025)

Zuriekat, M., Al-Rawashdeh, B., Nanah, A., Nanah, M. and Basha, A.S., 2025. The link between tinnitus and menstrual cycle disorders in premenopausal women. *Scientific Reports, 15*(1), p.2821.

Hormonal fluctuations may contribute to tinnitus severity, yet this factor remains underexplored. A study by Margaret Zuriekat and colleagues from The University of Jordan & Jordan University Hospital examined **hormonal influences in women with menstrual irregularities and conditions like PCOS**. They found that tinnitus symptoms **worsened during periods of hormonal instability**. These results suggest that **hormone-related pathways could be a another factor in tinnitus perception**, paving the way for further investigation into **hormone-based treatment options** for affected individuals.

Neural Mechanisms of Tinnitus Severity – Different Brain Networks for Different Cases?

Jiapei Xie et al. (2025)

Xie, J., Zhang, W., Bai, Y., Wei, W., Shen, Y., Li, W., Wang, X., Yu, C., Pan, J., Jia, X. and Liu, H., 2025. Neural Mechanisms of Tinnitus: An Exploration from the Perspective of Varying Severity Levels. *Brain Research Bulletin*, p.111250.

Not all tinnitus cases are the same—so why should treatment approaches be? A team of researchers from Henan People's Hospital in Zhengzhou, China used **neuroimaging to compare brain network activity in mild versus severe tinnitus cases, revealing distinct neural disruptions based on symptom severity**. While mild tinnitus was linked to sensory processing areas, **severe tinnitus showed dysfunction in emotion and sleep-related regions,** reinforcing the idea that **emotional distress and sleep disturbances may drive more debilitating cases**. These findings support the need for **tailored treatment approaches that account for individual differences in neural involvement**.

Final Thoughts: Where Do We Go From Here?

This issue highlights the rapidly expanding—and increasingly interconnected—landscape of tinnitus research. Whether it's cognitive-behavioural therapy delivery through smartphones, examining the gut-brain-ear axis, or investigating how hormones and sleep circuitry play into symptom severity, these findings keep pushing the boundaries.

Some lingering questions to consider:

- How can we better integrate public awareness efforts (like Alesso & Garrix's stories) with scientific outreach?
- What research gaps remain in personalized tinnitus treatment approaches?
- How can the TRI Academy continue to support and connect researchers across these diverse fields?

Until next time,
The TRI Academy Team

***Note**: The research articles featured in this newsletter were selected to represent a diverse cross-section of recent tinnitus studies available at the time of publication. Our aim is to highlight new and noteworthy work from around the world that reflects the broad and evolving nature of tinnitus research. If you'd like to suggest future articles—or share your own work—please don't hesitate to reach out!*

Help us improve by sharing your thoughts in this brief survey here.

PhD Positions in Tinnitus Neuromodulation Research at Trinity College Dublin

Apply to join Professor Sven Vanneste's team at Trinity College Dublin to help pioneer a novel bimodal treatment for tinnitus. This **fully funded PhD opportunity** offers hands-on experience with clinical trials, EEG analysis, and international collaboration in a cutting-edge neuroscience environment.

Tinnitus and Cognitive Decline at the University of Granada

Join a multidisciplinary team at the University of Granada exploring the link between tinnitus and cognitive decline using advanced multi-omics and bioinformatic tools. This **fully funded, 3-year PhD fellowship** is part of the prestigious ArchiFun European Doctoral Program.

Fundraising Internship with Tinnitus Quest

Tinnitus Quest — a new non-profit with the sole purpose of silencing tinnitus by funding innovative cure-focussed research — is calling for applicants for an internship position regarding fundraising in the US. The ideal candidate is passionate about tinnitus research, based in the US or with a strong affinity with the US market, fluent in English, and loves conducting online research and organizing information in a structured manner. Interested applicants should send a CV and letter of interest to info@tinnitusquest.com.

TRI 2025 **- May 15-18, 2025 | Seoul, South Korea** - Join scientists, physicians, and healthcare professionals from around the globe for the opportunity to share ideas and research along with clinical innovations relevant to tinnitus.

7th Annual Bellucci Symposium on Hearing Research **- May 23, 2025 on the Creighton University campus/hybrid online** - Topic: Noise Related Hearing Disorders

International Conference - Management of the Tinnitus and Hyperacusis Patient **- August 14-15, 2025 | Iowa City, IA** - Researchers, clinicians, and patients come together to learn from one another about problems of hearing, sleep, concentration, thoughts and emotions.

2nd International Conference on Pharmacology & Gene Therapy for Tinnitus **- October 2, 2025 | Virtual Event** - researchers and clinicians from hearing science, pharmacology, and gene therapy come together to share perspectives, discoveries relevant to tinnitus treatments.

2025 Tinnitus & Cognition Summit **- October 24-25, 2025 | Chicago, IL** - Audiologists, hearing experts, and private practice owners are invited to attend a two day event focused on improving patient care by bridging clinical research and innovative practice.