Update: ATA funds research on three continents

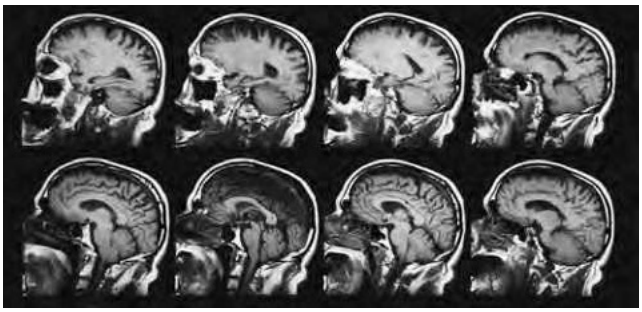
Five new projects funded July 2007

ATA takes its commitment to research seriously – $455,023 seriously. In their own words, here are what ATA's newly funded researchers are working on and their hopes for curing tinnitus.

Richard Altschuler, Ph.D.
The University of Michigan, Ann Arbor

Tinnitus Associated Changes in Excitatory Synaptic Strength and Intrinsic Properties in the Rat DCN

Two year grant: $99,917 – Roadmap Path A



Increased nerve activity in the hearing regions of the brain appears to cause central tinnitus (tinnitus generated by the central nervous system). Inhibitory chemicals normally prevent this rise in activity. Evidence demonstrates that a decrease in these chemicals causes a rise in nerve activity. Our study will examine whether glutamate, a chemical that increases (excites) brain activity, also plays a role.

We will test whether the presence of persistent tinnitus changes the inherent properties of the ion channels that regulate nerve activity. If our research shows that changes in glutamate or ion channels are associated with central tinnitus, it will open the avenue to new methods of intervention for the treatment of tinnitus.

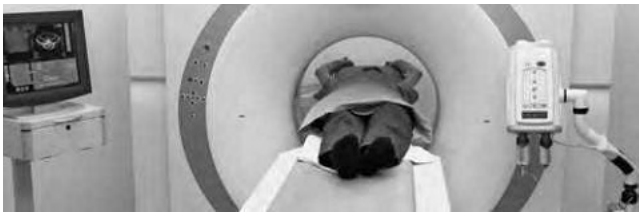
Dirk De Ridder, M.D., Ph.D.
University Hospital, Antwerp, Belgium

A Method for Measuring Tinnitus and Tinnitus Intensity Objectively: an fMRI-EEG Study

Two year grant: $96,668 – Roadmap Path A

Our research will help develop objective diagnostic tests for tinnitus that are affordable, simple and quick.

When a stimulus, such as a sound, becomes consciously perceived, brain waves oscillate at frequencies around 40 Hz. This is also called *gamma band activity*. This activity is present only during stimulation; when a sound wanes, so does the activity. If someone constantly perceives tinnitus, gamma band activity should be constantly present in the auditory cortex. Also, the louder the tinnitus, the more gamma band activity there might be. Using an electroencephalogram (EEG), we will look for gamma band measurements that objectively illustrate tinnitus



presence and loudness. A second part of the study will look at brain activity using a functional magnetic resonance imaging (fMRI) machine, and try to correlate fMRI images to tinnitus presence and intensity.

If we are able to objectively measure tinnitus, then we can use these same principles and technology to investigate tinnitus distress.

Didier A Depireux, Ph.D.
University of Maryland School of Medicine, Baltimore

Targeting the Changes in Inferior Colliculus Induced by Tinnitus

One year grant: $50,000 – Roadmap Paths A & C

There is a strong correlation between tinnitus and altered neural activity in the *inferior colliculus,* a brain structure essential for sound perception. This makes the inferior colliculus a natural place to measure the effect that various tinnitus treatments might have.

In a novel approach, we will measure neural activity in the inferior colliculus of animals before and after noise-induced trauma. We will also measure the changes in how an animal brain processes complex sounds such as speech and music before and after noise trauma.

Lidocaine (a local anesthetic) can alleviate tinnitus, but it has serious side effects. We will perform the above experiments with intravenous Lidocaine to better understand its effect. This will provide important clues about why Lidocaine reduces tinnitus, and will help determine other pharmaceuticals that might similarly quiet tinnitus but with fewer side effects.

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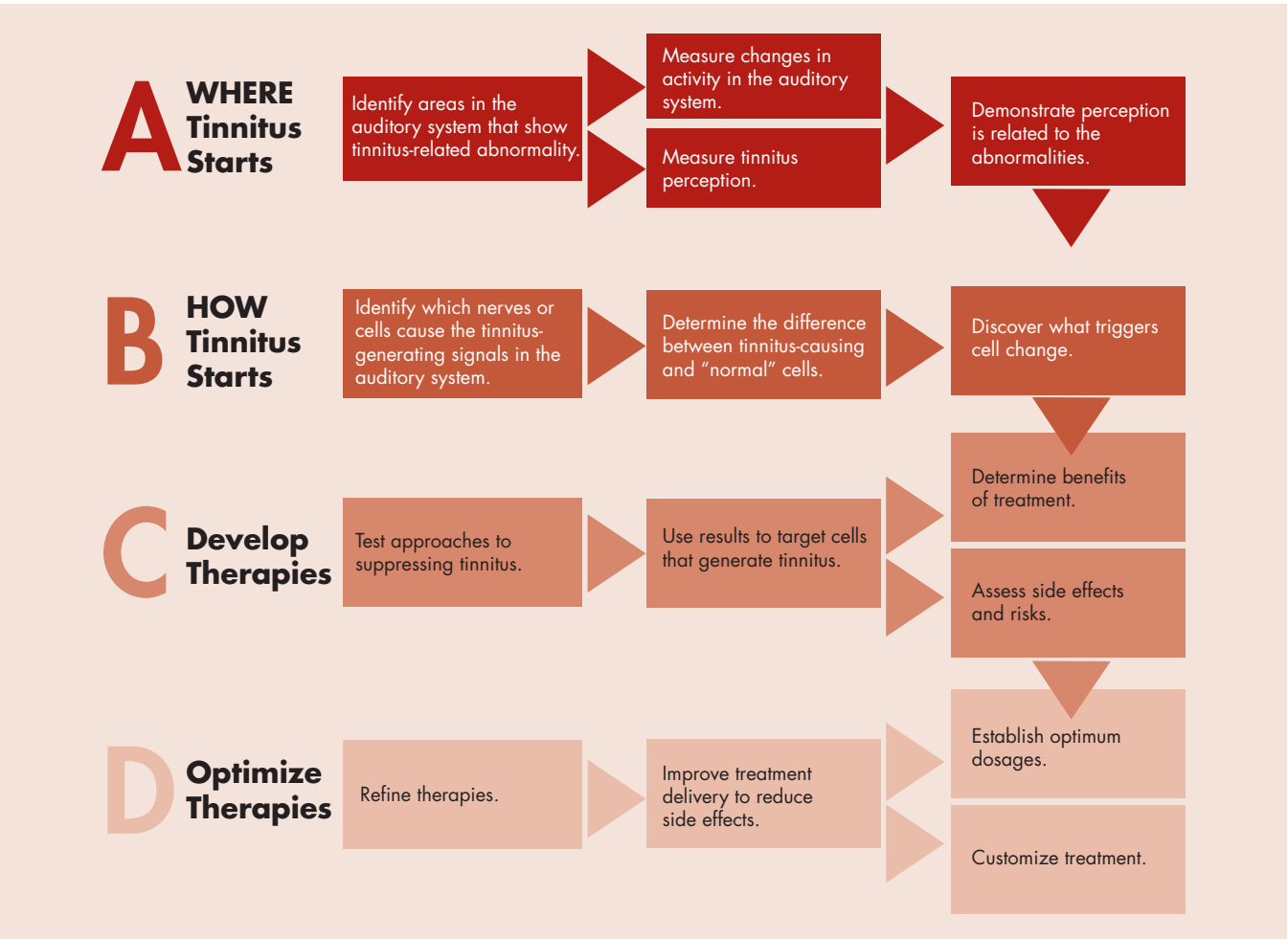
"We hope that this ATA-funded study will benefit other tinnitus researchers in the future. By combining this tinnitus research with all the progress being made worldwide, we hope to win the battle against this elusive condition." *~ Dirk De Ridder, M.D., Ph.D.*



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Edward Lobarinas, Ph.D.
State University of New York at Buffalo

Brain Imaging of Salicylate and Noise-Induced Tinnitus in Rats

Two year grant: $168,579 – Roadmap Path A

Why do some people develop tinnitus while others exposed to the same conditions do not? Studies in humans have shown that brain activity in patients with tinnitus differs from the activity of patients who do not experience tinnitus. However, in these studies, scientists cannot control the event that started the tinnitus or look at how the tinnitus developed and changed over time. Research using animal models can control conditions, such as exposure to loud noise, that are often associated with the onset of tinnitus. We use these models to study how tinnitus develops and what conditions maintain it.

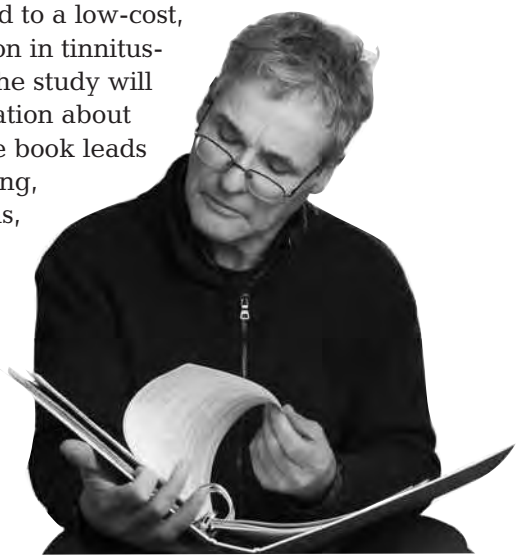
This study will combine animal models of tinnitus with brain imaging. The goal is to understand how tinnitus starts and which areas of the brain change as tinnitus develops after exposure to loud noise or treatment with drugs known to generate tinnitus. We will evaluate brain activity in animals that show behavioral evidence of tinnitus using a brain scanner known as MicroPET. We hope to use this advanced imaging technology to study tinnitus and lay a foundation for advanced diagnosis and a potential method of evaluating effective tinnitus treatment strategies.

Nicola Schutte, Ph.D.
University of New England, New South Wales, Australia

The Effectiveness of Bibliotherapy for Alleviating Tinnitus Distress

One year grant: $39,859 – Roadmap Paths C & D

Self-help books for tinnitus are low-cost, convenient to use and widely available. But do they actually help? This study will test whether a book using cognitive therapy techniques will actually help reduce tinnitus-related distress. Positive findings could ultimately lead to a low-cost, widespread reduction in tinnitus-related problems. The study will also provide information about whether reading the book leads to changes in thinking, emotions and actions, and what types of changes reduce tinnitus-related problems. This should lead to greater insight into which specific changes affect the quality of life of tinnitus sufferers.



Learn how you can support and participate in tinnitus research at www.ata.org, our newly designed Web site, coming soon.