



# **SOUNDING BOARD**

**Newsletter of the  
New Zealand Tinnitus and Hyperacusis Support Network  
Volume 1, Number 1  
December 2011**

## **From the Editor**

In June 2011, the New Zealand Tinnitus Association disbanded and vested its work and finances in the Audiology Department of Auckland University. One role that both the NZ Tinnitus Association and the Audiology Department both strongly agreed on, was the hope that a new publication could be produced to give Tinnitus and Hyperacusis sufferers, ear health professionals, medical academics, and other interested people, regular updates about latest research around the world and the steps being taken, however falteringly, towards a cure for these conditions.

As a sufferer of acute tinnitus, I have a vested interest in both finding the information and making it known.

We hope that this publication will provide information, and give hope to those who, like me, live day by day with the challenges that tinnitus and hyperacusis presents.



**Chris Bedford** - [cksrbedford@clear.net.nz](mailto:cksrbedford@clear.net.nz) 09 480 7229

**From the Director's Desk** – Volunteer organisations struggle in today's environment, many of you will no doubt be saddened to learn of the wind-up of the NZTA. The work of volunteers to help New Zealand's tinnitus sufferers has been tireless. So now to a new chapter, the work of the NZTA will be carried on in a new form, and as best we can, run out of our section in The University of Auckland. We hope to continue of the NZTA emphasis on the tinnitus community, to promote community awareness of tinnitus and how it can be prevented by limiting exposure to excessive noise. The Audiology team will also offer support and counselling services for people with tinnitus. Over time we believe that we can make a difference, and hope that you will enjoy this, and future, newsletters and learn all about the perplexing problem that is tinnitus.



## **Our Name and Our Logo**

As part of the change to a new home and organisation we've "re-branded". A sounding board is a structure built around a speaking podium which helps to project the sound of the speaker, and the term is also informally used to indicate the exchange of ideas. This newsletter is intended to project information as well as to seek "sound out" your thoughts on tinnitus. Our logo is a stylised Koru a new unfurling fern frond: symboling new life and growth. The Koru is an iconic NZ symbol, this one has an element of "ear & sound" symbolism, resembling the "sea-shell" shape of the inner ear. The image is a piece of digital "fractal" art gifted to us for the Logo by Dzeni a New Zealand digital artist (<http://dzeni.blogspot.com/>). We are grateful for her contribution to our efforts.

## **End of an Era – the New Zealand Tinnitus Association disbands and vests its work in the Audiology Department of Auckland University.**

At a friendly and well-attended morning tea at Auckland University's Centre for Population Health on 27<sup>th</sup> October the work of the NZ Tinnitus Association was passed to Grant Searchfield and his team at the Audiology Department. The New Zealand Tinnitus Association was



founded in 1987 by Joan and Peter Saunders. They wanted to provide information and support for tinnitus sufferers throughout New Zealand. Joan was well qualified to take the lead – she has suffered from tinnitus, and 97% hearing loss, since she was a young woman of 20. In later years it was led by Greg Gable of Tauranga and a small but committed team of workers. Secretary Netta Smith produced the magazine Buzzwords, drawing on information she gained from around the world. The NZ Tinnitus Association's website was often the first port of call for people seeking help and information. Many people, including the editor of this newsletter, speak with warm appreciation of the caring support and practical advice that Joan Saunders has given them. Thank you, Joan, and the people of the NZ Tinnitus Association for leading the way. We will do our best to carry on the good work you started!



Grant Searchfield discusses use of donated funds with Greg Gable chairman of the NZTA at the hand over on 27 October.

### **Need Someone to Talk to in a Hurry?**

Maybe you're just having a tough day with your tinnitus. We all have those. And you'd love someone who understands just to sound off to. Chris Bedford is willing to be an ear for you – give him a call at 09 480 7229 (up until 22 January, when he is moving to Tauranga. After that date check [www.tinnitus.org.nz/](http://www.tinnitus.org.nz/) for an updated phone number)

We hope to build a network of support people who can be available to 'be an ear of advice and encouragement' for people going through a hard time with their tinnitus. If you'd like to be one of those people contact Grant Searchfield – [Tinnitus@auckland.ac.nz](mailto:Tinnitus@auckland.ac.nz) or Chris Bedford - [cksrbedford@clear.net.nz](mailto:cksrbedford@clear.net.nz).

### **We'd like to hear from you....**

- Your story – what you are finding helpful as you live with tinnitus and/or hyperacusis.
- Do you have information about new developments, that we don't know about yet?
- Do you know of links to other websites that could be of interest and value to others?
- We'd love to interview some high profile people about their experience of tinnitus and/or hyperacusis, but we don't know about them yet. If you will let us know who they are, we'll do the rest!
- Contact Chris Bedford, [cksrbedford@clear.net.nz](mailto:cksrbedford@clear.net.nz) with your contribution.

### **In Our Own Backyard** – report of research being done by Auckland Audiology students.

**Kim wise** is an Audiologist who worked clinically at the University's Hearing & Tinnitus Clinic for over 5 years. She was inspired to attempt post-graduate research to learn more about tinnitus and how we might improve clinical treatment approaches. Her current study is investigating the effects of auditory and visual attention training presented in a computerised format, on tinnitus. We are objectively measuring attention and the brain's response to sound before and after the training and remain most interested to see which sensory domain will show the most promise with regards to attention training and tinnitus treatment. Our hope remains to offer effective, research-based tinnitus treatment options that are accessible to everyone.

**Giriraj Singh Shekhawat** is an audiologist. Giriraj has worked in the USA, India as well as Singapore. He has a history of academic achievement (young scientist in audiology ISHA 2003, and is one of the top graduating students in MASLP from Mumbai University). He has a strong interest in tinnitus. He is currently undertaking tinnitus studies for a PhD in University of Auckland. His PhD research is about non-invasive brain stimulation (Transcranial direct current stimulation, tDCS) and hearing aids for tinnitus intervention. His early research shows that tDCS leads to transient suppression of tinnitus and combining it with amplification settings directed towards tinnitus suppression can be a potential treatment for tinnitus.

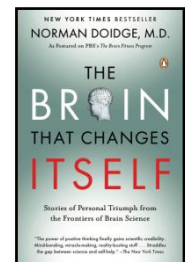
**Johnny Wu** recently completed his 3rd year of Medicine at The University of Auckland. His summer studentship project involves a questionnaire for over 500 participants currently with or had a history of tinnitus. The questionnaire focuses on potential sensory contributors to tinnitus such as pain, vision, hearing and taste. Through this questionnaire, we are hoping to establish any connections between multi-sensory input and tinnitus; ultimately contributing to sub-typing tinnitus, providing a platform for further studies into the causes of tinnitus as well as treatment options.

**William Harris** is a Summer Studentship project investigating the Test-re-test reliability of a new method for assessing Tinnitus (a condition characterised by a “ringing” sound in the head or ears). I have just finished my final year of my Bachelor of Science Degree specialising in Biomedical Science at the University of Auckland, and I am very excited to be involved in this project as it is an excellent opportunity to gain invaluable research experience. The specific aim of this study is to compare recently developed Tinnitus diagnostic software with existing clinical methods, particularly focussing on their Tinnitus matching abilities and reliability, with the hope of subsequently improving the diagnosis and treatment of Tinnitus.

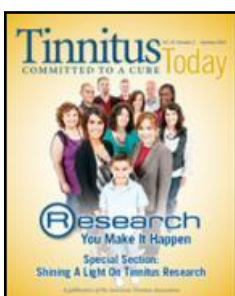
### A Book Worth Reading

The Brain that Changes Itself by Norman Doidge, MD.

Do you want a book that gives you up to date information and yet reads nearly as easily as a novel? Find yourself a copy of Norman Doidge’s book The Brain that Changes Itself. There are at least nine copies in the Auckland City Libraries so you should be able to get one easily in the Auckland region. And libraries further afield will surely have copies also. It’s a most interesting book about discoveries that hold out hope for people with a variety of Brain related conditions, including tinnitus and hyperacusis. Most of all, it is about “neuroplasticity” which is all about the brain’s ability to change and adapt to new circumstances. This new knowledge overthrows the centuries-old notion that the human brain is immutable. Psychiatrist and psychoanalyst Norman Doidge, M.D., provides an introduction to both the brilliant scientists championing neuroplasticity and the people whose lives they’ve transformed. It’s such a good book that having read the library’s copy I’m off to Amazon to order my own copy.



### We Recommend.....Join the American Tinnitus Association



The American Tinnitus Association is the group of people in the United States who are working to find a cure and alleviate the distress caused by tinnitus.

They support a highly developed research programme, and produce an excellent magazine three times a year called Tinnitus Today.

Membership of the American Tinnitus Association costs US\$35 (approx. NZ\$45) for on-line membership. That gives you access to the high quality online version of their magazine, and archived back copies of the magazine as well as to the latest tinnitus research news, clinical trials and ATA funded projects.

**The NZ Tinnitus and Hyperacusis Support Network strongly recommends membership of the ATA, and are grateful for their generosity in allowing us to reproduce for you some of the material they have produced. In a real sense, we are partners with them in the search for a cure.**

You will find all about the American Tinnitus Association at [www.ata.org](http://www.ata.org).

### **Roadmap to a Cure**

Unbeknown to most tinnitus sufferers, there is a huge amount of research being undertaken around the world into the origins of tinnitus, and where a cure might be found.

The American Tinnitus Association has produced a very helpful concept called *Roadmap to a Cure*. With their permission we reproduce, in a slightly modified form, the information from their website. For their full unabridged version see <http://www.ata.org/research/roadmap-cure>.

### **What is the *Roadmap to a Cure*?**

Simply, it's a chart that identifies what we know about tinnitus right now and what additional information we need so that we can make progress in developing a cure. Because science doesn't always follow a direct course, a roadmap is an excellent way to help shorten the path from the starting point to the final goal.

We see this *Roadmap* as a way to give tinnitus patients and researchers everywhere a firm grasp of what's going on in tinnitus research. There are many battles along the way, and each little battle is important to fight and win. If we find a solution to any one of the Paths, we will have helped improve people's lives. And though improvement is not a cure, our *Roadmap* will ultimately take us there.

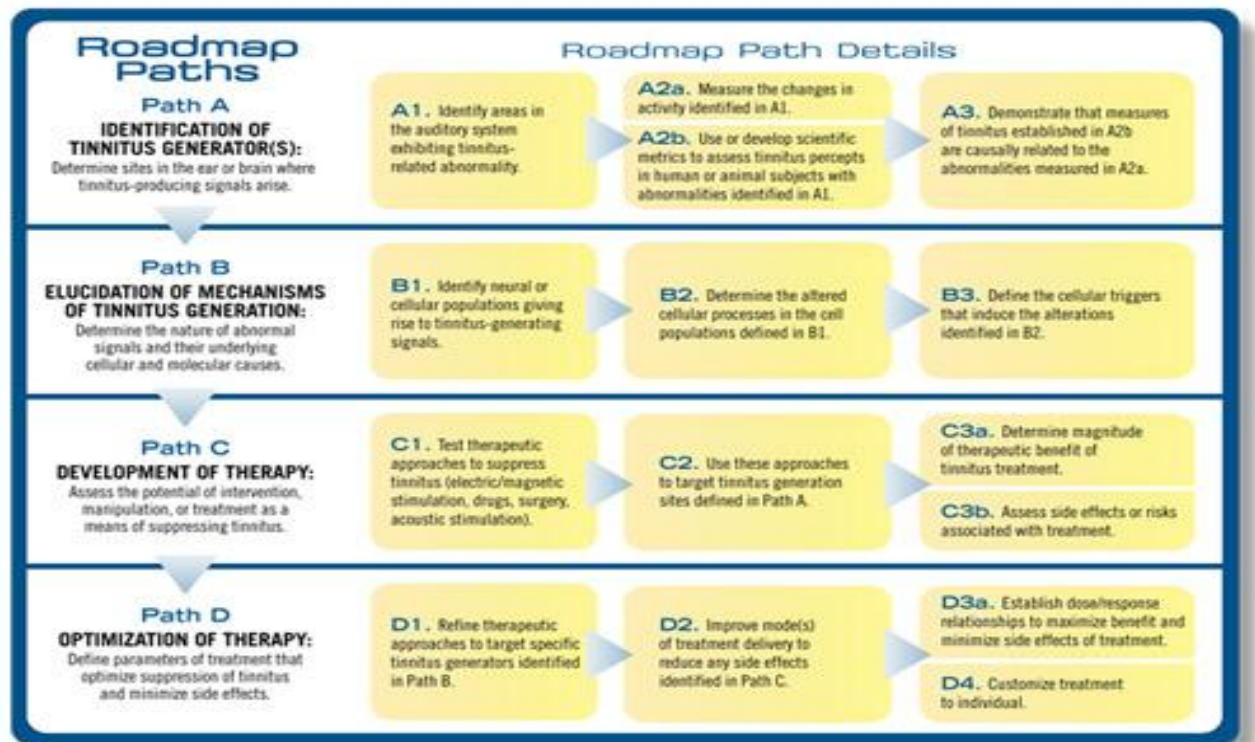
### **Who uses the *Roadmap*?**

When you look at ATA's *Roadmap*, you will see that no single individual could tackle all the different areas we identify. The map allows researchers in different areas of exploration to contribute to the overall success of the *Roadmap*. It also provides us with a way to attract talented researchers from a variety of specialties. This ultimately might have the biggest impact on resolving tinnitus.

### **What do the four paths of the *Roadmap* represent?**

The *Roadmap* is a sequence of steps along four paths- A, B, C & D- that begins with finding out what is responsible for producing tinnitus and ends with a successful tinnitus treatment.

## ATA's Roadmap to a Cure



- **Path A** leads us to identify where the problem is in the brain.
- **Path B** will determine the underlying mechanism (action) that causes tinnitus. Like doing an auto diagnostic, we identify the broken part and then what caused it to break.
- **Path C** will lead us to develop a general therapy for tinnitus.
- **Path D** leads us to customizing the therapy or therapies for individual tinnitus patients.

### How does work on the four paths coordinate?

Even though we don't have a full understanding of what's going on in Paths A and B, there is work going on now along Paths C and D. This doesn't at all rule out the potential for successful studies. Many discoveries are made serendipitously. Somebody may, in fact, come up with a therapy that works even though the reason why it works isn't fully understood.

### Where on the *Roadmap* are we now?

Different labs and clinics are in different places on the *Roadmap*. Clinicians tend to be in Path A, looking for abnormal activity in the brains of their tinnitus patients with imaging techniques, such as functional MRIs. Other researchers are working in Path C, looking for evidence that certain treatments are better than others, e.g., how one masking method may be better than another. Because we have not yet found any one treatment that works for most people with tinnitus, Path D is probably the furthest down the road.

## **When is the *Roadmap* going to make a difference in the lives of tinnitus patients?**

It could happen anytime. ATA is very optimistic about a cure because of the breakthroughs in areas like electrical stimulation, sound therapy, pharmacology and brain imaging studies that we've seen in the past five to ten years. Because of the work ATA is doing to increase public funding through the U.S. Government for research dollars - the pool of available funding has increased exponentially. All efforts that will help to expedite a cure. Here in New Zealand we are also working to increase funding available for research at the local level.

It is difficult to put a time frame on science - it is more important that we truly understand how tinnitus manifests itself in various subsets of patients and which treatment options are appropriate for each individual subset of tinnitus patients. For instance, curing those with noise-induced tinnitus, may be very different from curing those who suffer a brain injury and sustain tinnitus as a result.

So while we would love to tell you "when" it is more important that we focus on "how" and also consider that some tinnitus patients have already reaped the benefits of studies funded through the *Roadmap*. One thing we can tell is you is that ATA is here to be certain that one day everyone with tinnitus will benefit from an eventual cure.

We in New Zealand are grateful for this clear picture of the way research is developing. We can build our on road-map for NZ, with your support we can do more tinnitus research. We are always looking for volunteers for research and would welcome your participation.

### **Building Hope for the Future - the latest in Tinnitus Treatment Research**

With the permission of the American Tinnitus Association, we republish these items from the Summer 2011 edition of their magazine Tinnitus Today. They are reports of some of the most promising of clinical trials being undertaken in the USA. Some of these studies may soon produce viable treatments. In New Zealand we are constantly monitoring developments in these research areas with the intention of making new treatments available to tinnitus sufferers in New Zealand at the earliest possible opportunity.

#### **Electrical Stimulation**

##### **Vagus nerve stimulation**

Engineer ND, Riley JR, Seale JD, Vrana WA, Shetake JA, Sudanagunta SP, Borland MS, Kilgard MP. Nature. 2011 Feb 3;470(7332):101-4. Epub 2011 Jan 12.

Brain changes in response to nerve damage or cochlear trauma can generate pathological neural activity that is believed to cause tinnitus. Several studies report that the severity of tinnitus is correlated with the degree of *map reorganization* in *somatosensory* and *auditory cortex*, respectively. Direct electrical or transcranial magnetic stimulation of the sensory cortex can temporarily disrupt tinnitus. However, there is no direct evidence for a causal role of *neural plasticity* in the generation of tinnitus.

**Methods/Outcomes:** The findings indicate that, by reversing the brain changes responsible, the tinnitus signal can be eliminated in an animal model of noise-induced tinnitus. Exposure to intense noise degrades the frequency tuning of auditory cortex *neurons* and increases *cortical synchronization*. Repeatedly pairing tones with brief pulses of *vagus nerve stimulation* (VNS) completely eliminated the physiological and behavioral correlates of tinnitus in noise-exposed rats. These improvements persisted for weeks after the end of therapy. This method for restoring neural activity to "normal" may be applicable to a variety of neurological disorders including tinnitus. ***Why it's important:*** *Although this study was conducted on lab animals and not humans, it holds enormous potential for the*

*treatment of tinnitus. There are current efforts underway to test this in humans. Vagus nerve stimulation is already in use for the treatment of epilepsy and depression in more than 50,000 individuals in the U.S. If the clinical trials currently underway in humans show the same results, then VNS as a tinnitus treatment could come to market relatively quickly.*

### **Drug Therapy**

#### **Tinnitus control by dopamine agonist pramipexole in presbycusis patients: a randomized, placebo-controlled, double-blind study.**

Sziklai I, Szilvassy J, Szilvassy Z. 2011 The American Laryngological, Rhinological, and Otological Society, Inc. [PubMed - in process].

**Methods:** Forty *presbycusis* patients aged 50+ with subjective tinnitus were randomized to two groups (20 patients in both). Patients in the drug group took pramipexole over a period of four weeks, according to a specific dosage and schedule. Patients in the second group received *placebo*. **Outcomes:** A significant improvement in tinnitus annoyance was found in the group taking pramipexole versus placebo with respect to inhibition of tinnitus and a decrease of tinnitus loudness greater than 30 decibels. However, neither *electrocochleography* nor pure-tone threshold audiometry revealed any change in hearing threshold in response to either pramipexole or placebo. Pramipexole is an effective agent against subjective tinnitus associated with *presbycusis* at a dose schedule used for the treatment of Parkinson's disease. **Why it's important:** *Presbycusis contributes to tinnitus perception naturally as people age. The findings suggest that pramipexole could be used as an approved use for tinnitus mitigation at the currently prescribed dose for Parkinson's without additional auditory side effects.* **Terminology:** *Presbycusis* = age related hearing loss. Pramipexole – drug used for treating early-stage Parkinson's disease and restless legs syndrome. *Electrocochleography* - a technique of recording stimulus-related responses or electrical potentials of the inner ear and auditory nerve.

### **Neramexane**

BMC Ear Nose Throat Disord. 2011 Jan 11;11:1. Suckfüll M, Althaus M, Ellers-Lenz B, Gebauer A, Görtelmeyer R, Jastreboff PJ, Moebius HJ, Rosenberg T, Russ H, Wirth Y, Krueger H. **Methods:** Neramexane mesylate, an *NMDA receptor antagonist*, was tested on 431 tinnitus patients with moderate to severe tinnitus, who had an onset of tinnitus three to 18 months before screening. Participants were assigned randomly to receive either placebo or neramexane for 16 weeks at specific dosages, with assessment at four-week intervals. **Outcomes:** Compared with placebo, the largest improvement was achieved in the 50 milligram (mg) a day neramexane group, followed by the 75 mg a day group. This treatment difference did not reach statistical significance at the pre-defined endpoint, but consistent numerical superiority of both neramexane groups compared with placebo was observed. **Why this is important:** Few drugs have been specifically tested or developed for tinnitus treatment. Neramexane, and its subsequent, dosage-dependent results, may point to an approved drug therapy for tinnitus *patients*. **Neramexane** is a drug related to memantine, which acts as an NMDA antagonist has neuroprotective effects. It is being developed for various possible applications, including treatment of tinnitus, Alzheimer's disease, drug addiction and as an analgesic. **Memantine** is used to treat the symptoms of Alzheimer's disease. **Neuroprotection** within the nervous system protects neurons from degeneration, for example following a brain injury or as a result of chronic neurodegenerative diseases.

### **Sound Therapies**

#### **Effects of acoustical stimuli delivered through hearing aids on tinnitus.**

Sweetow RW, Sabes JH. Effects of acoustical stimuli delivered through hearing aids on tinnitus. J Am Acad Audiol. 2010 Jul-Aug;21(7):461-73.

The use of acoustic signals to mask or ease the distress associated with tinnitus has been employed for decades. **Methods:** Fourteen hearing-impaired participants listened to

experimental hearing aids containing several acoustic options and were asked to rate the sounds in terms of effect on relaxation and tinnitus annoyance. They wore the hearing aids for six months and completed tinnitus handicap and reaction scales. **Outcomes:** Thirteen of 14 participants reported their tinnitus annoyance reduced. Results suggest that use of acoustic stimuli, particularly fractal tones, delivered through hearing aids can provide amplification while allowing relief for some tinnitus sufferers. **Why it's important:** *It is well established that, for people who have hearing loss in addition to tinnitus, the use of hearing aids can have a therapeutic effect on tinnitus. This study suggests the specific types of sound most helpful to reduce tinnitus annoyance in those who benefit from hearing aids.*

**Open ear hearing aids in tinnitus therapy: An efficacy comparison with sound generators.** Parazzini M, Del Bo L, Jastreboff M, Tognola G, Ravazzani P. Int J Audiol. Epub 2011 May 19.

This study aimed to compare effectiveness of Tinnitus Retraining Therapy (TRT) with sound generators or with open ear hearing aids as a tinnitus treatment, for a group of subjects who can be treated with either approach. **Methods:** Ninetyone subjects were randomly assigned to one of two treatment groups: half the subjects were fitted *binaurally* with sound generators, and the other half with open ear hearing aids. Both groups received the same educational counselling sessions. A variety of measures were evaluated before the therapy and at three, six, and 12 months. **Outcomes:** Data showed a significant improvement for both tinnitus treatments at all follow up points, with a statistically significant decrease in tinnitus disability every three months. TRT and sound generator or open ear hearing aids gave identical, statistically indistinguishable results. **Why it's important:** *We're asked at ATA, "Which treatment is the best?" Our answer? "Sound therapy is currently the most effective." We're then often asked, "Which sound therapy is the best?" Our answer? "Sound therapy." These results indicate that proper administration of any sound therapy program in eligible candidates, can produce positive results.*

Sounding Board is published by

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**Would you like to participate in tinnitus research?**

Your involvement, often through participating in tests one of our advanced students is undertaking, can be a small but significant contribution to the search for a cure. Find out more by contacting us at the above address.

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