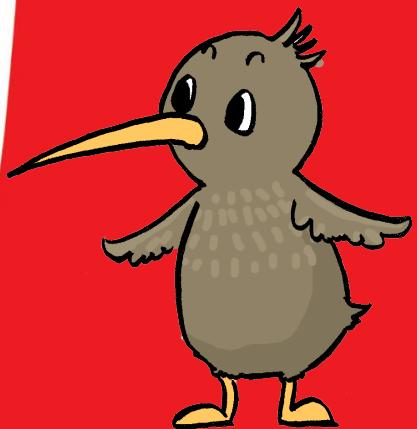
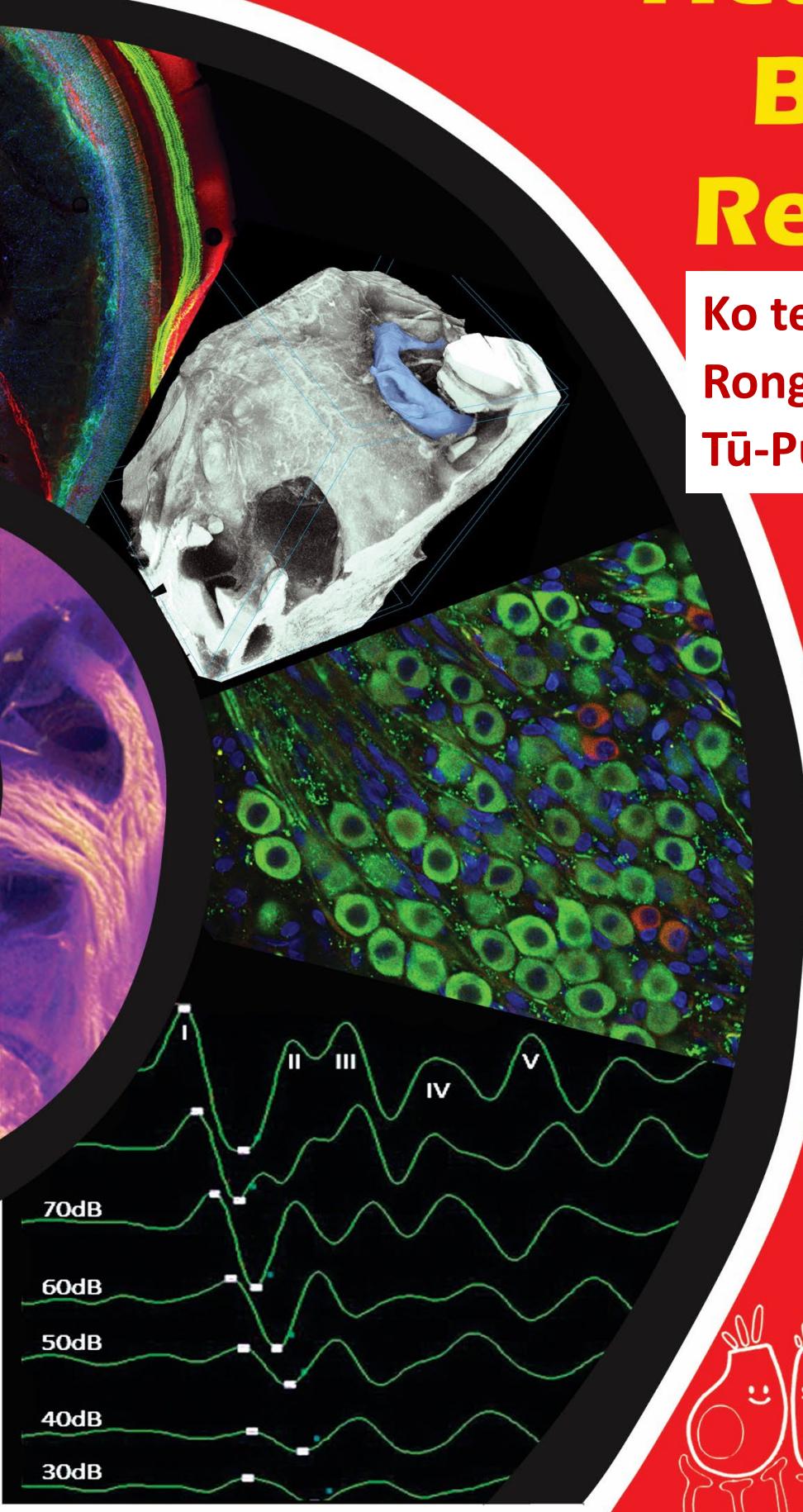


# Hearing & Balance Research

Ko te rangahau  
Rongo Ā-Taringa,  
Tū-Pūmau Ake.



@AVTNC

emc  
Eisdell Moore Centre

# Poutū-te-rangi Marama o Te Mātau a-Rongo



# **Whakarongo!**

*Listen!*

**Te Rongo**  
*hearing*

Hou  
sound

## **Whakarekareka** *Pleasant sound*

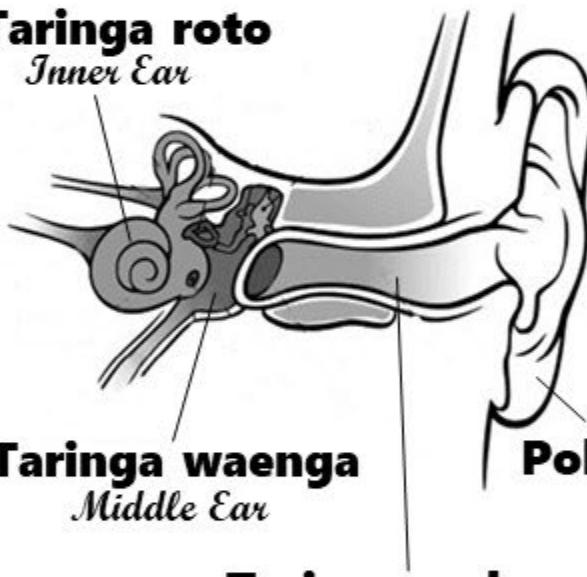
# **Waiata**

*Song*

**Kahaoro**  
*Sound volume*

### **Taringa roto**

Inner Earth



## Taringa waenga

### *Middle Ear*

## **Taringa waho** *Outer Ear*

## **Pokopoko/hoi**

We support World Hearing Day  
Hearing & Balance Research





Emc  
Eisdell Moore Centre

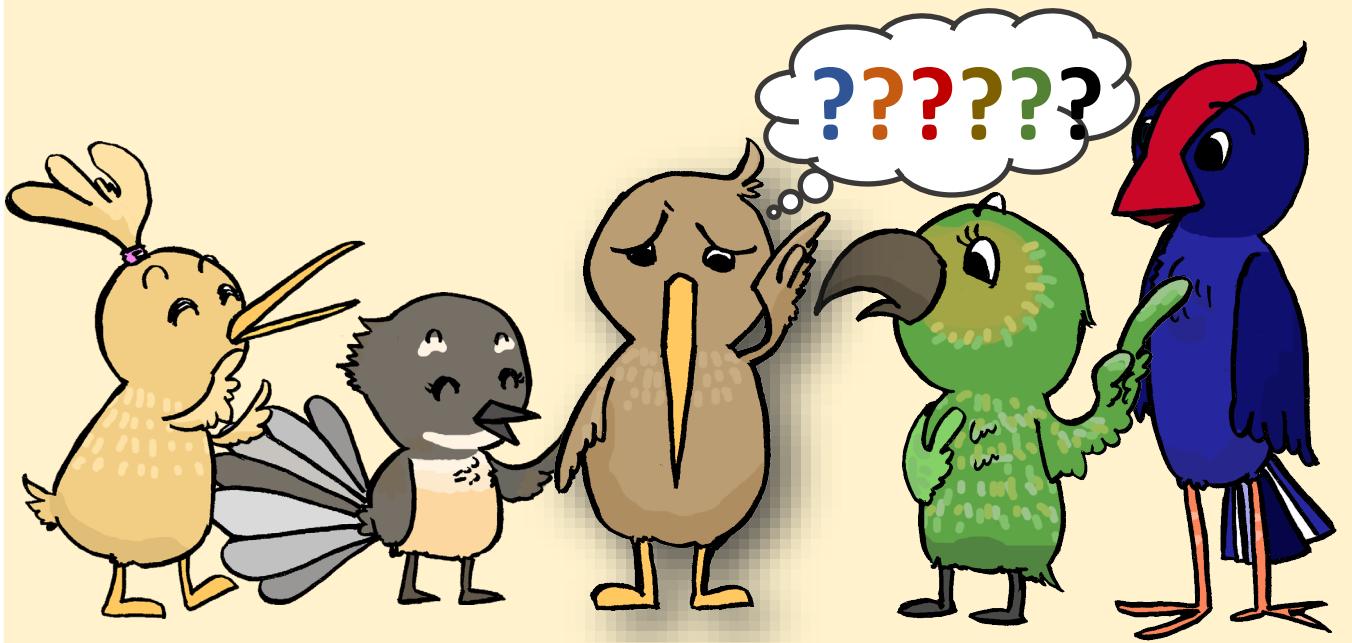


**Kāmehameha**  
*Hearing is precious.*

**Manaaki**  
*Protect your hearing.*

**Tūhono**  
*Stay connected.*

# Kotahi tangata o roto i te 5 e whai mate rongoa ā-taringa e whai uauatanga mō te whakawhitiwhiti kōrero.



Me whakaaro nui ki ngā hiahia o te katoa:



Kia āta kōrero, kia whakahua tika te reo kōrero.



Tāruatia ai te kōrero, mēnā rā e hiahiatia ana.



Whakamahi he taupānga e taea ana te reo ā-waha nei te huri hei reo tuhituhi, ngā rauemi tuhituhi rānei.



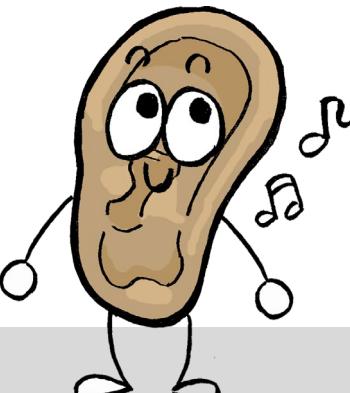
Kia mau i te kanohi ārai whakatīaho e kitea ai ū ngutu, mēnā rā e āhei ana.

# He aha māu hei whakahaumaru i ō taringa?

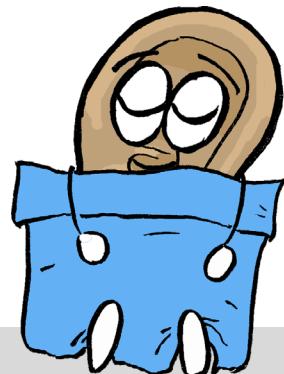
- Ina hīkoi nui noa nei ka ngenge haere ngā waewae ka rongo ai i te mamae.
- Ka ngenge anō hoki ō tātou taringa ina whakarongo ai ki ngā waiata tino kaha nei te reo mō te wā roa.



Mēnā rā e mahi ana koe i te taiao hoihoi, pēnei me te whakamahi i ngā mīhini e puta ai ngā reo kaha, tēnā whakamahia ngā purutaringa haumaru, kia whakahaumarutia ai ō taringa.



Kaua e kaha te whakamahia o ō taringa. Ko ngā puruwaea me ngā purutaringa, kia tūpato me te kaha o te reo, ā, kia kaua e whakarongo mō te roanga o te rā.



Whakatāngia ō taringa. He pēnei me te whakatā nei i ō karu mā te whakaweto i te Pouaka Whakaata, kia whai wā ngū ai mō ō taringa.



## Te whakarongo haumaru:

He taonga ū tātou taringa. E rongo pai ai koe mate noa, me nānā ngā taringa.

# Te mate rongo ā-taringa me tō mātou Whānau.

Kia whakaaro ake tātou:

- E pēhea nei tōna hāngai ki a koe?
- He aha ia te tikanga o te mate rongo ā-taringa?
- Me pēhea koe e āwhina atu ai?

**Hei mahi: Whakamaua he puru taringa kia 30 miniti te roa ka wheako ai k tōna āhua e rongo ai ki te mate ā-taringa nei.**

1. He aha rā ngā mahi o tō ao e whakaaweawetai ai i tēnei?

2. E taea ana e koe te whakawhitiwhiti me ō hoa?

3. He aha tāu hei tautoko mēnā rā kei te mōhio koe ki tētahi atu he mate rongo ā-taringa?

# “Te Rīpoata Rongo Ā-Taringa, Ā-Ao”

Over  
**1.5** billion people affected by hearing loss

Of them, nearly 1 out of 3 need hearing care  
80% live in low- and middle-income countries



#hearingcare

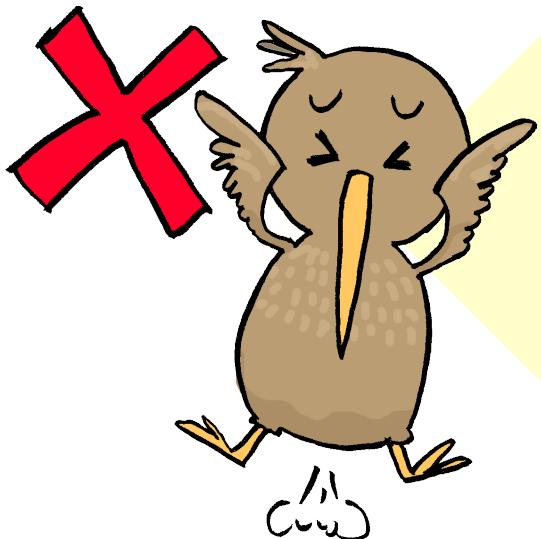


Ko “Te Rīpoata Rongo Ā-Taringa, Ā-Ao” te mea tuatahi kua puta ōkawa nei i a WHO e pā ana ki te mate rongo ā-taringa.

- He māori noa te mate rongo ā-taringa nei.
- 1.5 piriona tāngata e whakaaweawetia e te mate rongo ā-taringa puta i te ao.
- 430 miriona tāngata e hiahia ratonga whakamātūtū ake mō te mate rongo ā-taringa puta i te ao.
- Kei te piki haere tēnei mate. E whakatau tata ana mātou ka 2.5 piriona tāngata e whakaaweawetia ai e te mate rongo ā-taringa nei ā te 2050.



# He aha māu hei whakahaumaru i ō taringa?



Ka ngenge anō hoki ō tātou taringa ina whakarongo ai ki ngā waiata tino kaha nei te reo mō te wā roa. Ina tino māuiui ai ngā taringa, ka mame anō ai, ā, ka whakawhanake mai te mate rongo ā-taringa.



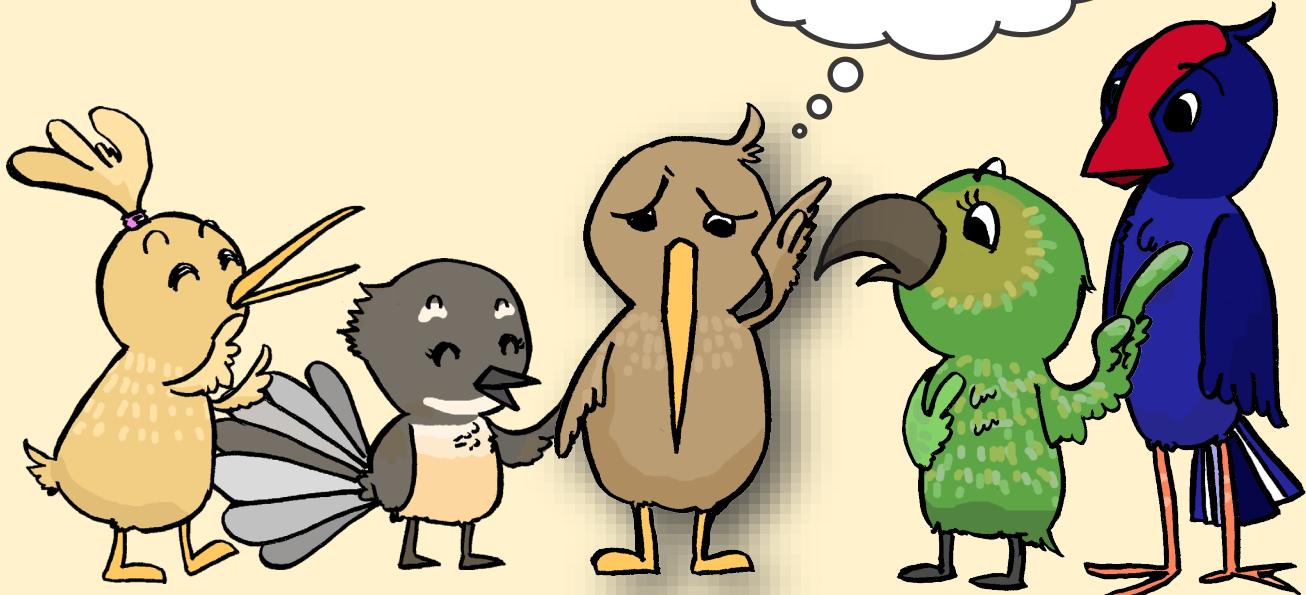
Mēnā rā e mahi ana koe i te taiao hoihoi, pēnei me te whakamahi i ngā mīhini e puta ai ngā reo kaha, tēnā whakamahia ngā purutaringa haumaru, kia whakahaumarutia ai ō taringa.



Kaua e kaha te whakamahia o ō taringa. Ko ngā puruwaea me ngā purutaringa, kia tūpato me te kaha o te reo, ā, kia kaua e whakarongo mō te roanga o te rā.

# He aha māu hei whakahaumaru i ō taringa?

He taonga ō tātou taringa. E rongo pai ai koe mate noa, me nānā ngā taringa.



Ki te hiahia whai mōhiotanga anō mō ngā aratohu haumaru taringa, tirohia te paetukutuku kei raro nei:

<https://www.who.int/health-topics/hearing-loss/hearwho>

<https://www.who.int/publications/i/item/9789241515276>



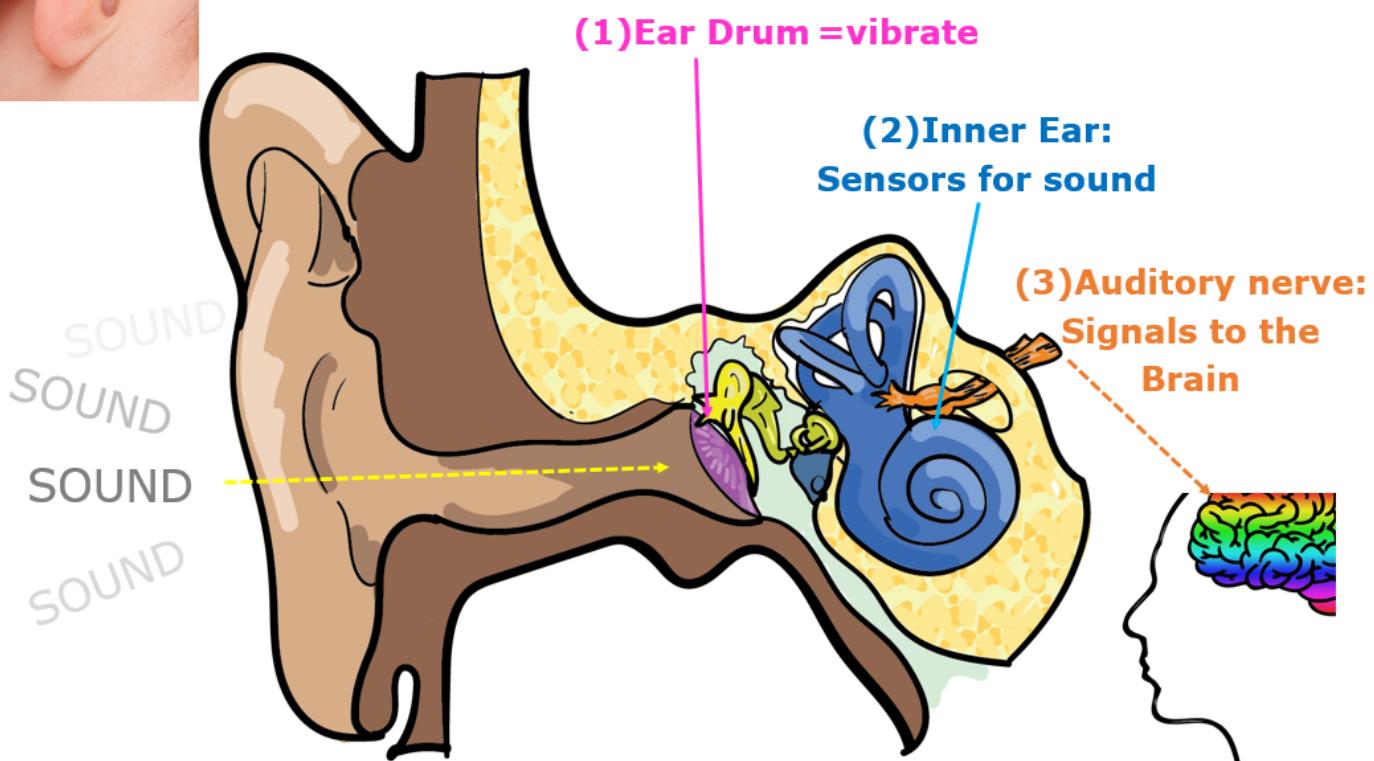
Download the app

# Ko ngā kōrero pūtaiao mō te rongo me te mate rongo ā-taringa.



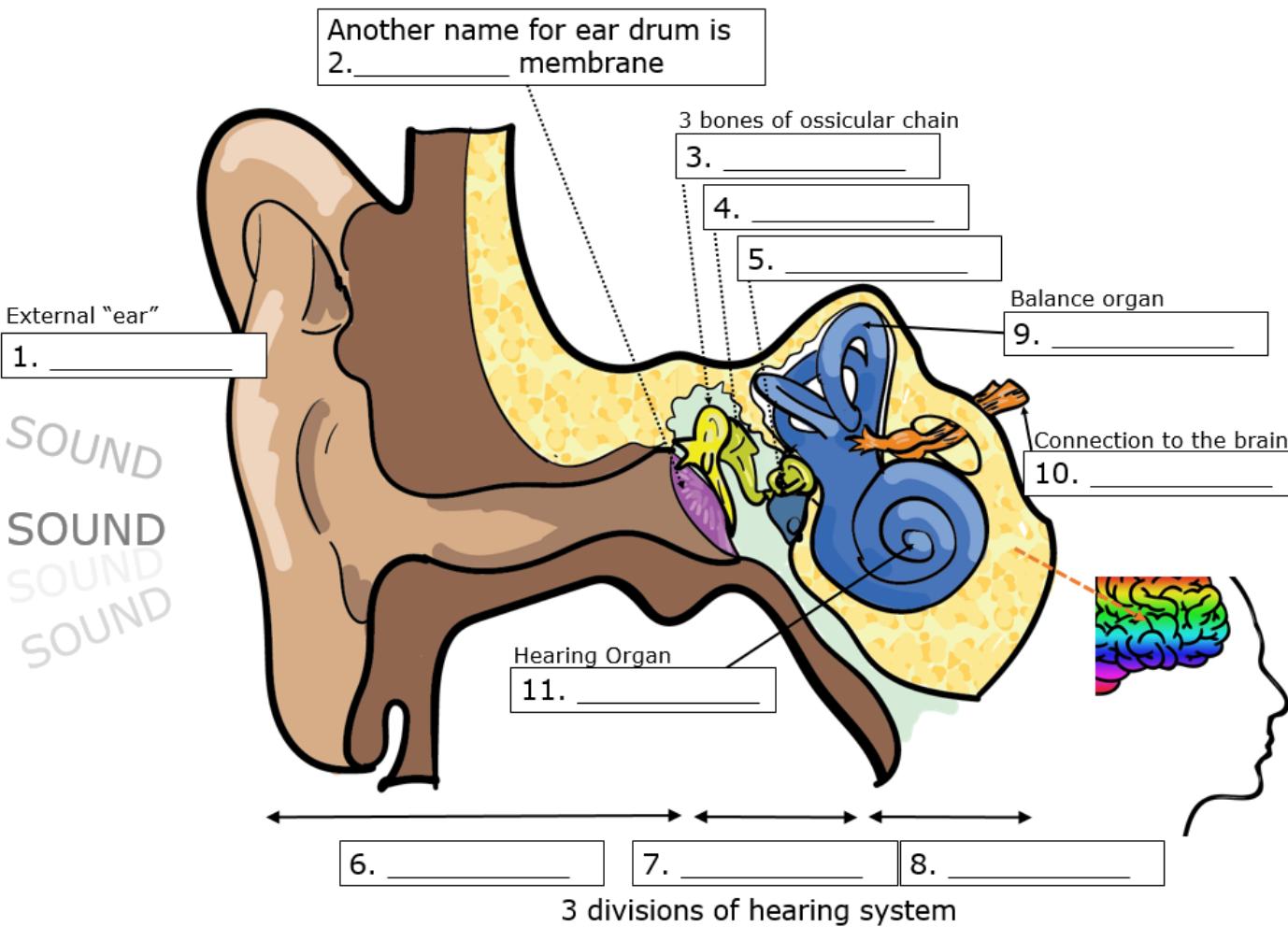
## Our “Hearing” System

### Auditory Neuroscience



- (1) Ko te hou me te ngateri e rere ai i te takiwā. Ka tae ake ki ō taringa ka ngateri ai i tētahi kōiwi pāpaku nei ki roto i ō taringa.
- (2) Ka tae atu te ngateri ki taha roto o te taringa. Ko te taha roto o te taringa e mau ana i ētahi pūtau motuhake hei paerongo i ngā ngaru hou.
- (3) Ka rongo ngā pārongo hou ka kawea ai ki te hinengaro mā te akaaka.

# Activity: Anatomy of Our Hearing System

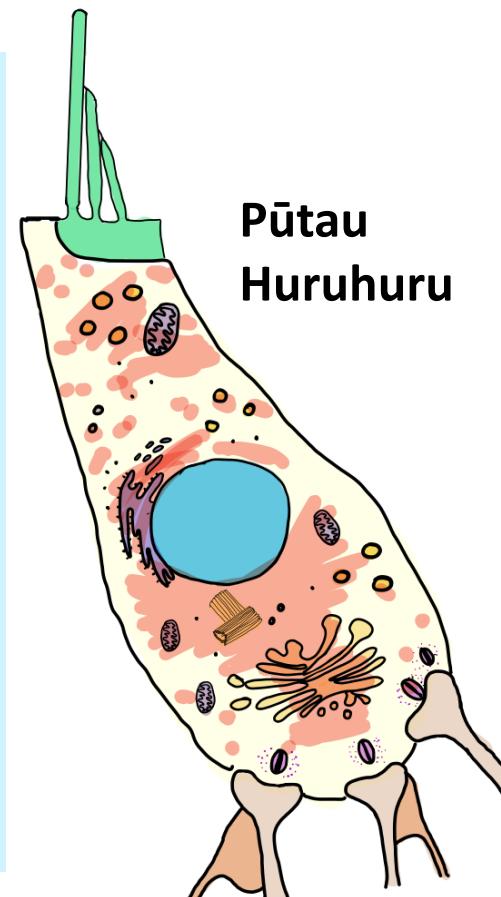


## HINT Glossary to choose from:

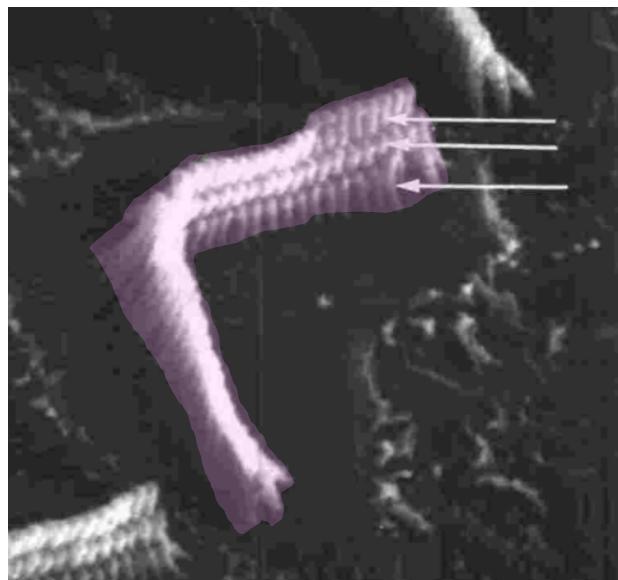
Cochlea, Stapes, Vestibulocochlear nerve, Pina, Middle Ear, Outer Ear, Inner Ear, Semicircular canals, tympanic, incus, malleus      Hair Cells (red)

# Ka ahatia ina pā ki te “mate rongo ātaringa?”

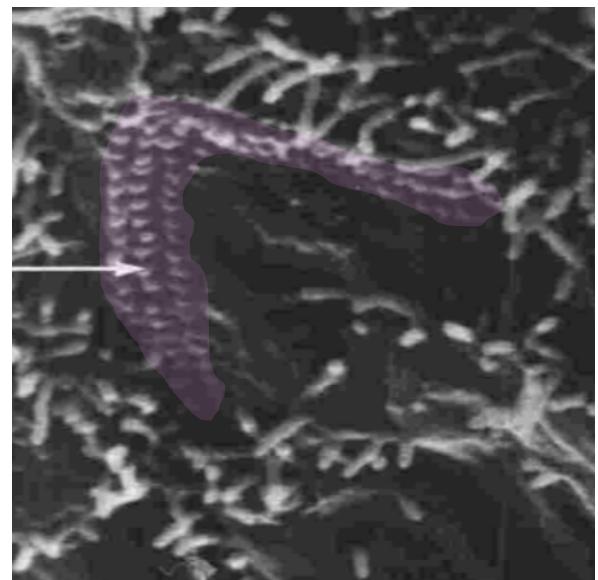
- Ō tātou paerongo motuhake mō te hou kei roto i ngā taringa e mea ana he “pūtau huruhuru”.
- Ko ngā pūtau huruhuru he “huruhuru” e taea ana te rongo i ngā nukutanga pakupaku i ngā ngateri o te hou.
- Ina heke haere te oranga o ēnei pūtau huruhuru ka ngaro ai ngā huruhuru. Ka kore e taea ināianei te rongo i ngā ngaru hou, ā, ka whakawhanake te mate rongo ā-taringa.



“Hauora” huruhuru



“Pakaru” huruhuru



We support World Hearing Day  
Hearing & Balance Research  
@AVTNC1



**emc**  
Eis dell Moore Centre

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<https://www.facebook.com/AVTNC1/>

THE UNIVERSITY OF  
AUCKLAND  
Te Whare Wānanga o Tamaki Makaurau  
NEW ZEALAND

To hear for life,  
listen with care!



# Ko tēhea pūtau kokore a tōu?

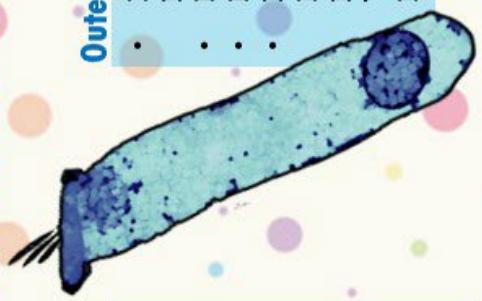
He nui ngā pūtau ora o te kokorea. Ko tēhea tōu momo?

## Inner Hair Cell

- He tino tere ahau kia hikaka tōku āhua, he tere ano kia tau mai anō.
- He toki ki te whakawhititwhiti korero.
- Ka kaha korero ki te pāata.
- Ka āwangawanga mōte tinana me tōna āhua e rite ana ki te pia.

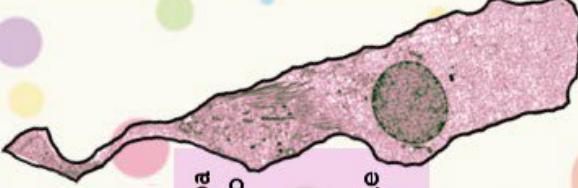
## Outer Hair Cell

- Ehara i te mea he pūioio tōku kaha.
- Ka hinga tuatahitia ai.
- He tōu tiwakawaka!
- He pāti te mahi!
- Ka whakawhirinaki rawatia ki ōna hoa.
- Kāore e pai ana te rongo moke.
- Whakahi ana ki ōku makawea kua herua.



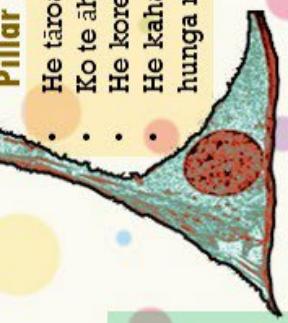
## Deiter Cells

- Ka tauteokona ngā hoa ā-tinana, ā-hinengaro anō hoki.
- He kaitākaro kappa.
- He ātahu.
- He whakamaimoa, he whanonga auau.



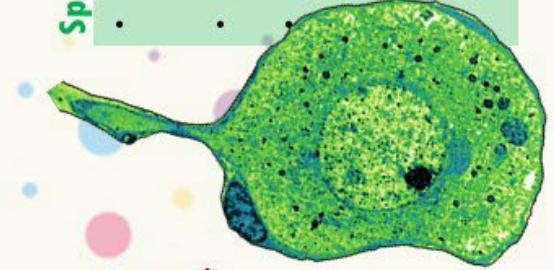
## Pillar Cells

- He tāroaroa, he kaha, he tāne ngū hoki.
- Ko te āhua nei he maroke.
- He kore aro, whai wariu i ōna hoa aropā.
- He kaha te mahi ā kapā i waenga i te hunga rite nei ngā whakaaro.



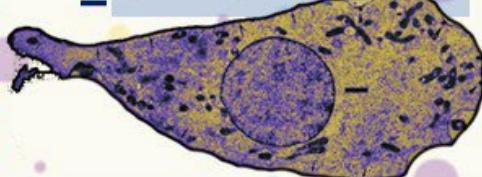
## Spiral Ganglion Neurons

- He nui ōku tūhonotanga tangata tata mai, kei tawhiti hoki.
- He tangata pūioio – he tino ūpoko pakaru te āhua.
- Ka tere te kore whakawhititwhiti kōrero ina pā ki te toimaha, ka ngū haere ai.
- He tau, he mōmōna me ngā ringaringa papai, roa anō hoki.



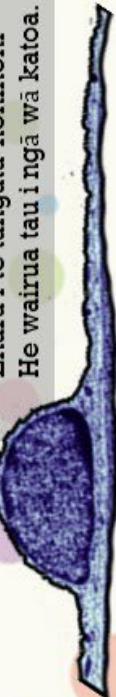
## Residential Macrophages

- He kaha ki te kimi
- He rite te tōmuri ki ngā kaupapa otia, ka noho takaroa kia whakapaipai i ngā korapu o ērā i mahue mai.
- Ina pōuri ana, ka roa e noho pōuri ana!
- He pai ki te kai. He nui te wā e kai ana.

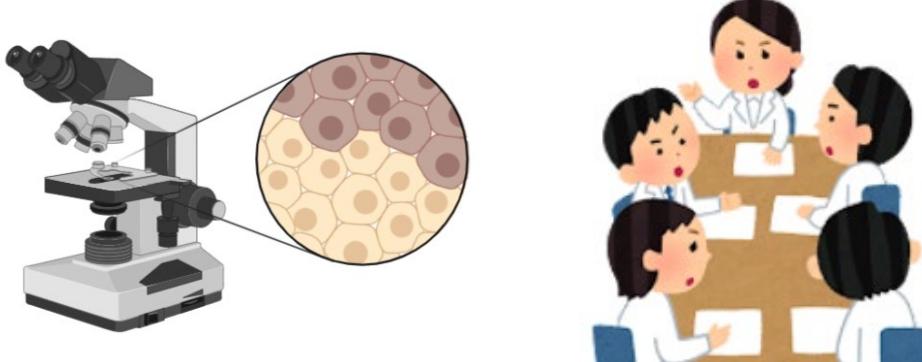


## Mesothelial cells

- Kei wiwi kei wāwā
- Tino porehu ana
- Ehara i te tangata nohinohi
- He wairua tau i ngā wā katoa.



# Auahatanga, Hangarau me te Anamata o te Kumanu i te Mate Rongo Ā-Taringa



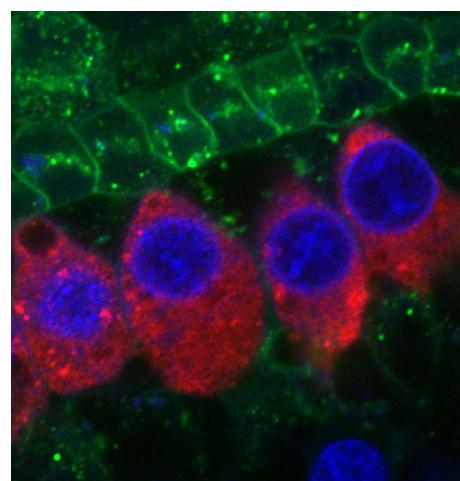
## *Kei te aha mātou hei kaipūtaiao rongoā-tinana??*

- Ka wānanga mātou ngā mea kei roto i te taringa kia kite mai he ara hōu kia ārai atu i te mate rongo ā-taringa, kia whakapaipai ake i te rongo ā-taringa mō te tangata.
- Ka tūhura mātou me pēhea ai e whāngai pūroi ki roto i te taringa.
- Kei te kimi anō mātou i ētahi ara hōu e taea ai e mātou te whakatau i te mate rongo ā-taringa.

Cochlea



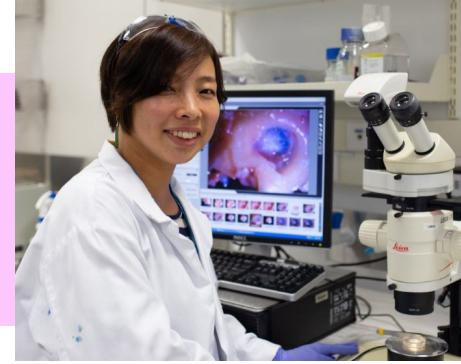
Hair Cells (red)





# *Uiui ki tō mātou kaipūtaiao!*

## Kairangahau Tākuta Haruna Suzuki-Kerr



**Q: Kei hea koe e mahi ana?**

A: He kairangahau au ki te Whare Wānanga o Tāmaki Makaurau.

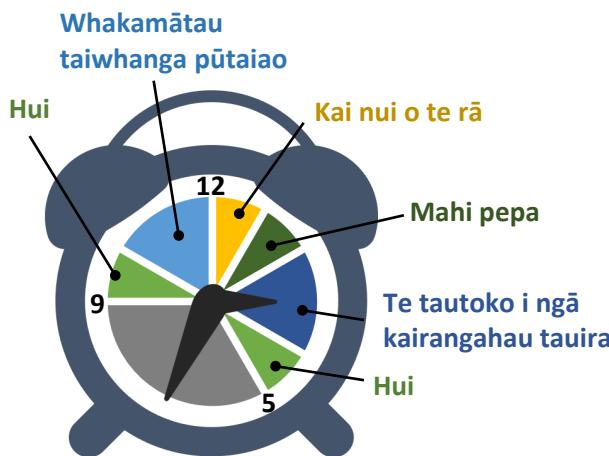
**Q: He aha koe i hiahia whai ai i te ara kairangahau mō te rongo ā-taringa hinengaro pūtaiao?**

A: Nō mai anō ahau i aro ai ki te mātauranga koiora. Ko ngā tairongo motuhake pēnei me ngā karu me ngā taringa he mea whakamiharo. I tino manawarū au i tōna āhua pīroi otiia, mō te ātaahua hoki o te āhua o te taha roto o te taringa.

**Q: I pēhea nei koe i tū hei kairangahau rongo ā-taringa hinengaro pūtaiao?**

A: I whakapōtaehia au ki te Whare Wānanga o Tāmaki Makaurau. Kātahi au ka whai i te tohu paerunga i Te Whare Wānanga o Tāmaki Makaurau. Nō muri o taku rironga i te tākutatanga ko te riro mai anō i tētahi mahi rangahau ki te whare wānanga nei te tīmatanga mai o taku umanga hei kairangahau rongo ā-taringa hinengaro pūtaiao.

**Q: Ka pēhea nei te āhua o tētahi mahi noa māu, arā 9-5?**



**Q: He aha te mea pārekareka atu ki a koe hei kairangahau?**

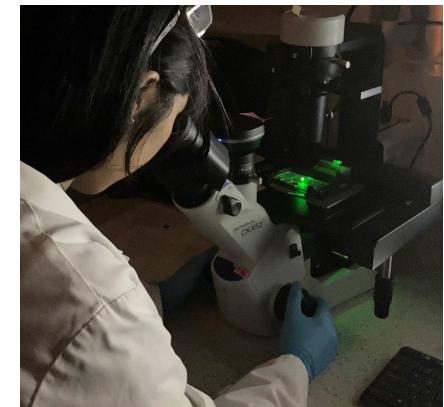
A: Ko te mahi rangahau tērā ko te kimi ake i ngā meka hōu kāore tētahi atu e mōhiotia ana puta i te ao, ā, he tino whakaihihi nei tēnei ki a au. E whakamahia ana anō hoki ngā taputapu tino motuhake nei, nui te utu pēnei me ngā karaihe kounga rawa atu o te ao. Hei kairangahau ka tūtaki ai, ka mahi tahi atu anō me ngā kairangahau o whenua kē, ā, he mea whakaihihi anō tēnei.

**Q: He aha te mea uua i te mahi hei kairangahau?**

A: I ētahi wā kāore koe e kimi mātauranga aha nei i āu mahi whakapau hāora maha atu nei. He tapenga ngā angitūtanga mahi.

**Q: He aha tō aro rangahau/whāinga i tēnei wā tonu nei?**

A: E aro ana au e pēhea nei ō tātou rongo ā-taringa e whanake ai ina he pēpi e tipu ana koe, ā, ka pēhea tēnei e whakaaweawetia ai.



# *Uiui ki tō mātou kaipūtaiao!*

## Ahorangi Tūhono

## Srdjan Vlajkovic



**Q: Kei hea koe e mahi ana?**

A: Ki te Tari Mātai Whaiaroaro i Te Whare Wānanga o Tāmaki Makaurau.

**Q: He aha koe i hiahia whai ai i te ara kairangahau mō te rongo ā-taringa hinengaro pūtaiao?**

A: Tōku aro ki te rangahau i te rongo ā-taringa e whai waahi nui ana nō te mate rongo ā-taringa o tōku pāpā e mea ana ko te mate Meniere's. Ka whakaaweawe tēnei mate i te rongo ā-taringa me te tū pūmau ake, me te aha, ka heke te kounga oranga.

**Q: I pēhea nei koe i tū hei kairangahau rongo ā-taringa hinengaro pūtaiao?**

A: I whakapōtae au ki te Whare Wānanga Tākuta o Belgrade (Serbia). Whai i muri mai i tēnā i whai ai au i te tohu paerunga ka whakawhiwhia ai ki te Tohu Paerua me te Tākutatanga. Kua mahi ai au ki Belgrade mō ētahi tau ruarua nei i mua i taku nukutanga mai ki Aotearoa. Kua mahi ai au ki Te Whare Wānanga o Tāmaaki Makaurau nō te tau 1994.

**Q. Ka pēhea nei te āhua o tētahi mahi noa māu, arā 9-5?**

**Q: He aha te mea pārekareka atu ki a koe hei kairangahau?**

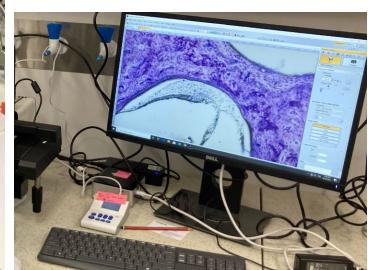
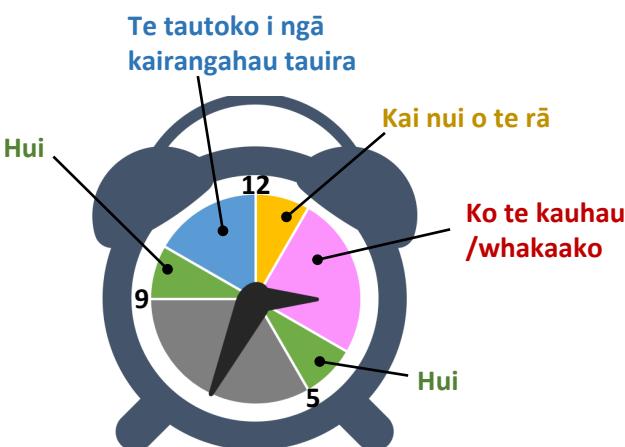
A: Ko te kimi mai i ngā rongoā mō ngā māniania hauora e whakaihihi nei i a au, ā, he pai ki a au te pānui me te ako whakaaro hōu. Waihoki, he pai ki a au te mahi tahi me ngā tauira me tā rātau matangareka e whakapakepake ana i a au.

**Q: He aha te mea uua i te mahi hei kairangahau?**

A: He tino whakataetae nei te riro haupū moni mai mō te rangahau me te tāia i ngā putanga rangahau. He tino whai hua ina angitu ai koe otia, pōuri ana ki te kore e tino pai te haere o āu hinonga.

**Q: He aha tō aro rangahau/whāinga i tēnei wā tonu nei?**

A: Ko tāku aro rangahau i tēnei wā ko te kimi i ngā maimoatanga hōu mō te mate rongo ā-taringa. Tae atu anō ki ngā pūroi e taea ai te ārai atu i te mate rongo ā-taringa, ko te whakatika rānei i ngā kinonga heketanga ā-whānau e whai pānga ana ki te mate rongo ā-taringa.





*Uiui ki tō mātou kaipūtaiao!*

## Kairangahau Tākuta Dr. Rachael Taylor



**Q: Kei hea koe e mahi ana?**

A: Kei te whare haumanu au e mahi ana (hei Tākuta Taringa), ā, he kaipūtaiao anō me taku aro ki ō te tangata rongo ā-taringa me tū-pūmau ake.

**Q: He aha koe i hiahia whai ai i te ara kairangahau mō te rongo ā-taringa hinengaro pūtaiao?**

A: Ka wehe atu au i te Kura Tuarua o Tikipunga i Whangārei me taku kore tino mōhio he aha hei mahi māku. I te tīmatatanga ka wānangahia e au te pāngarau ki te Whare Wānanga o Waikato, i konei ka tūpono atu ahau ki te pūtaiao hinengaro-io. Nō te mea i tino pārekareka nei ki a au ka whakatauhia ai kia haere ki Whare Wānanga kē. Ka tīmata i a au te whai i te tohu pūtaiao hinengaro-io ki Te Whare Wānanga o Ōtākou. I konei, ka whanake mai taku whakamaiohatanga mō te nui whakahirahira o te kite ā-karu, me te rongo ā-taringa mō tāua te tangata kia whakawhitihiti whakaaro me te whai mātauranga ki tō tātou nei ao.

**Q: I pēhea nei koe i tū hei kairangahau rongo ā-taringa hinengaro pūtaiao?**

A: Nō muri mai i taku whakapōtaetanga i Ōtākou, ka whai haere au i te tohu paerua i te akoranga Rongo ā-Taringa ki Te Whare Wānanga o Tāmaaki Makaurau. I tēnei wā kua mōhio mai ahau ko te rongo o te tū-pūmau tōku tino aro. Nō muri i taku whakapōtaetanga i te Rongo Ā-Taringa ka mahi ahau hei kairongo-ā-taringa i roto i ngā hohipera i Aotearoa, Ingarangi me Ahitireiria. Ka whai waahi ai au ki ngā mahi rangahau mā ngā mahi, ā, koia tēnei taku tino aro i tēnei wā.



**Q: He aha te mea pārekareka atu ki a koe hei kairangahau?**

A: E rata ana au ki te mahi tahi me ētahi atu kairangahau e kaingākaunui ana anō hoki ki tā rātau e mahi nei. Ngākaunui ana au ki te mahi tātari raraunga. Ka whanga hīkaka mai ahau ki ngā putanga i o āku tātari raraunga kia kite mēnā rānei e tautoko ana i ōku whakaaro whakataunga. Ka pai anō ki a au te meka kāore ō te mātauranga mutunga. Ko ngā putanga whakaohorere kāore pea e noho tahi ana i tāku i whakaaro ai, whakamahere ai rānei, he mea whaiwhakaarotanga māku ki āku anō tikanga mahi, ōku anō whakaaro anō hoki.

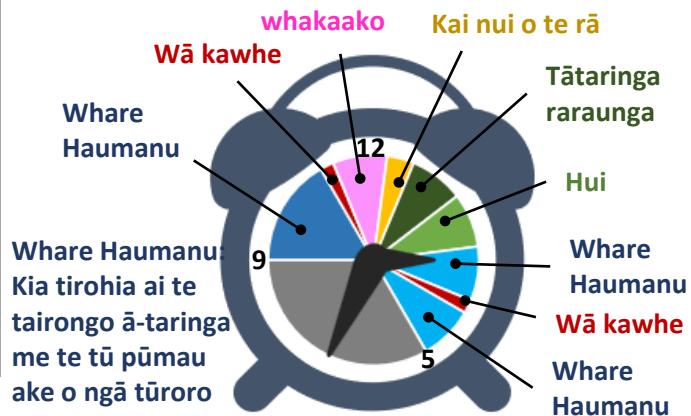
**Q: He aha te mea uua i te mahi hei kairangahau?**

A: He wero hoki kia mahi i ngā mahi rerekē i te wā kotahi. I ētahi wā he rā kati ruarua i te wā kotahi hei whakatutuki atu, ā, ko te āhua nei ka kore e rahi nei ngā hāora i te rā ki te whakatutuki atu.

**Q: He aha tō aro rangahau/whāinga i tēnei wā tonu nei?**

A: I nāianei, e aro ana e pēheatia ai ō tātou tairongo ā-taringa me te tū pūmau ake e mahi tahi ana kia tautokona mai tātou kia tū tika ake ai me te haerere haere ai i tō tātou taiao.

**Q: Ka pēhea nei te āhua o tētahi mahi noa māu, arā 9-5?**



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*Uiui ki tō mātou kaipūtaiao!*

# Ahorangi Peter Thorne



**Q: Kei hea koe e mahi ana?**

A: He kaipūtaiao pūtau io, he Ahorangi hoki ahau i Waipapa Taumata Rau.

**Q: He aha koe i hiahia whai ai i te ara kairangahau mō te rongo ā-taringa hinengaro pūtaiao?**

A: Kia pono te kōrero, i tūpono noa ahau ki tēnei mahi, ā, e harikoa ana i pērā ai! I tipu taku aronga ki te mātai koiora tairongo me ngā momo mate i te whare wānanga, ā, i rikarika ahau ki te whai i te ara o te rangahau hauora. Nō muri mai ka whakaawehia ahau e tētehi rata Taringa kia mātaihia ngā rongonga taringa me te whanake i ngā rongoā hei maimoa i ngā mate taringa. Mai i taua wā, ka anga whakamua te haere!

**Q: I pēhea nei koe i tū hei kairangahau rongo ā-taringa hinengaro pūtaiao?**

A: I otī i a au te tohu paetahi me te tohu paerua i te Mātai Whaiaroaro, te tohu Kairangi hoki i te Mātai Mate. Kātahi au ka mahi hei kaipūtaiao i tētehi Wānanga Rangahau Rongonga matua i Te Wānanga o Michigan, i Amerika. Nō muri mai, ka hoki mai au ki Aotearoa, ā, ka mahi tonu hei kaipūtaiao me te whakatū i tāku ake rōpū rangahau. Kātahi ka tonoa mai he tūranga mahi hei kaikauhau pūmau kia whakatūhia tētehi hōtaka tohu paetahi me tētehi ngohe rangahau hou i te kaupapa Rongonga Taringa.



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**Q: He aha te mea pārekareka atu ki a koe hei kairangahau?**

A: Kāore e ārikarika. Ko ngā tāngata kua mahi tahi i tōku taha, kua tūtakina hoki, ko te tūhura i ngā mea hou me ngā whakamātau o te rangahau, ko te whai wāhi ki ngā ākonga me ngā hapori. Ko te mea nui, ka utua ahau ki te mahi i tāku e aroha nui nei.

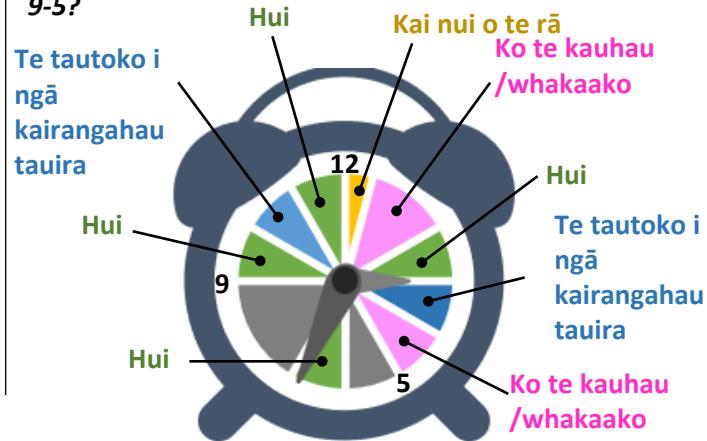
**Q: He aha te mea uua i te mahi hei kairangahau?**

A: Kātahi te pātai ko tēnā. He uua, he whakataetae nui hoki te whai i te pūtea hei tautoko i te rangahau. Me te aha, e kore pea ō whakaaro tino pai e whai huruhuru. Heoi, mā te waewae tūtuki e whai hua ai, ā, ka rongo i te momoho ina tāngia ai īna mahi, īna hua mai ai hoki he whanaketanga. He uua i ētehi wā mā te pūkenga mātauranga ki te whakataurite i ngā mahi whakaako, rangahau, whakahere hoki.

**Q: He aha tō aro rangahau/whāinga i tēnei wā tonu nei?**

A: He huhua ngā kaupapa e mahi ana au i te taha o ētehi o tō mātou rōpū kia whanakehia ngā haumanu mō ngā pūnaha me ngā mate taringa, kia whakarotohia ngā rongoā taringa me te ārai i ngā mate taringa mā te whai i ngā ara hauora tūmatanui. Ka hiahia hoki au ki te hoahoa i ngā ratonga maimoa taringa, rongonga taringa hoki i ngā whenua o Te Moananui-a-Kiwa.

**Q: Ka pēhea nei te āhua o tētahi mahi noa māu, arā 9-5?**



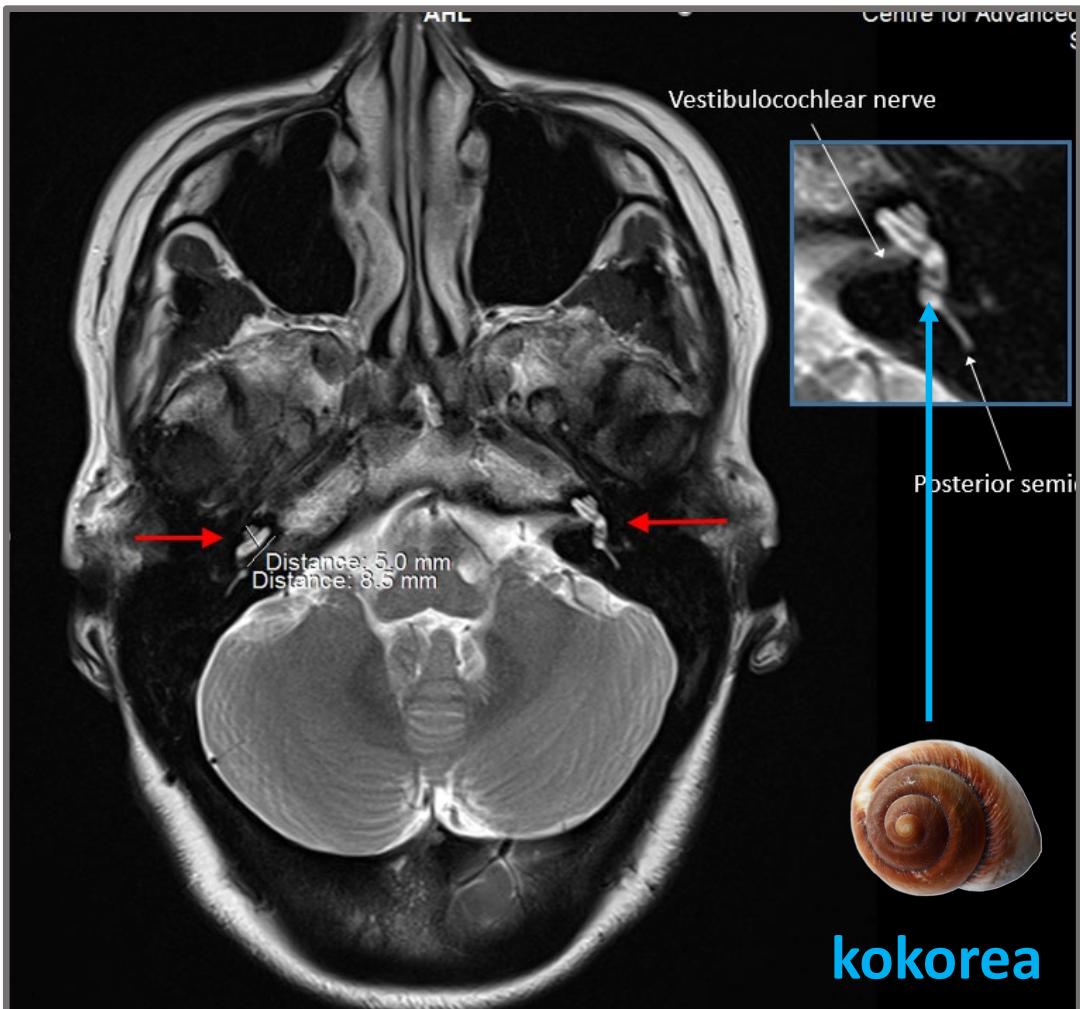
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# Kei hea te taha roto o te taringa?

He whakaahua MRI tēnei o te ūpoko tangata. Kei te rētōtanga iho o te ūpoko, kei te taha tonu o te hinengaro, kei reira ko te taha roto o te taringa ōna whanewhane e mea ana ko te "kokorea".



## Pātai:

- E taea ana e koe te kimikimi mai i te whakaahua?
- Mō te mahi whakahaumanu, ki ū whakaaro he ngāwari ki te tomo ki te kokorea?

**Ko te rongo tō tātou tairongo puiaki.**

- Hearing is our precious sense.

**E whakareiā ana tō tātou oranga e te rongo ki ngā oro huri noa.**

- Hearing enriches our life with all sounds surrounding us.

**Mā te rongo e taea ana te tūhono ki te hapori.**

- Hearing let us connect to the community.

**Parea tō rongo me tērā o ō tamariki me tō whānau.**

- Protect your hearing and of your children & family.

**Whakamātauria, kia mātau hoki ki tō rongo.**

- Test and be aware of your hearing.

**Parea tō rongo me te noho tūhono tonu.**

- Protect your hearing and stay connected.

**Poutū-te-rangi  
Marama o  
Te Mātau a-Rongo**

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# Auditory and Vestibular Translational Neuroscience Cluster

Ko te rangahau Rongo Ā-Taringa, Tū-Pūmau Ake: He rangahau tēnei e tautoko ai i ngā haumanu mō ngā taringa.

***E tautoko ana mātou i te rā rongo  
ā-taringa o te ao.***

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listen with care!



Hearing loss due  
to loud sounds can  
be prevented



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## ***Ko wai mātou??***

He rōpū kaipūtaiao mātou e wānanga ana i ō mātou tairongo o te rongo ā-taringa me te tū-pūmau ake. E tūmanako ana mātou ka whai koha ai ā mātou rangahau ki te whakawhanaketanga ake i ētahi haumanutanga hōu mō te mate rongo ā-taringa me ngā tūmomo mate tū-pūmau ake.



Prof. P Thorne



A/Prof. S. Vlajkovic



Dr. R. Taylor



Dr. R. Telang



Dr. H Suzuki-Kerr

***Mō ētahi pārongo atu anō, whakapā mai ki a mātou:***

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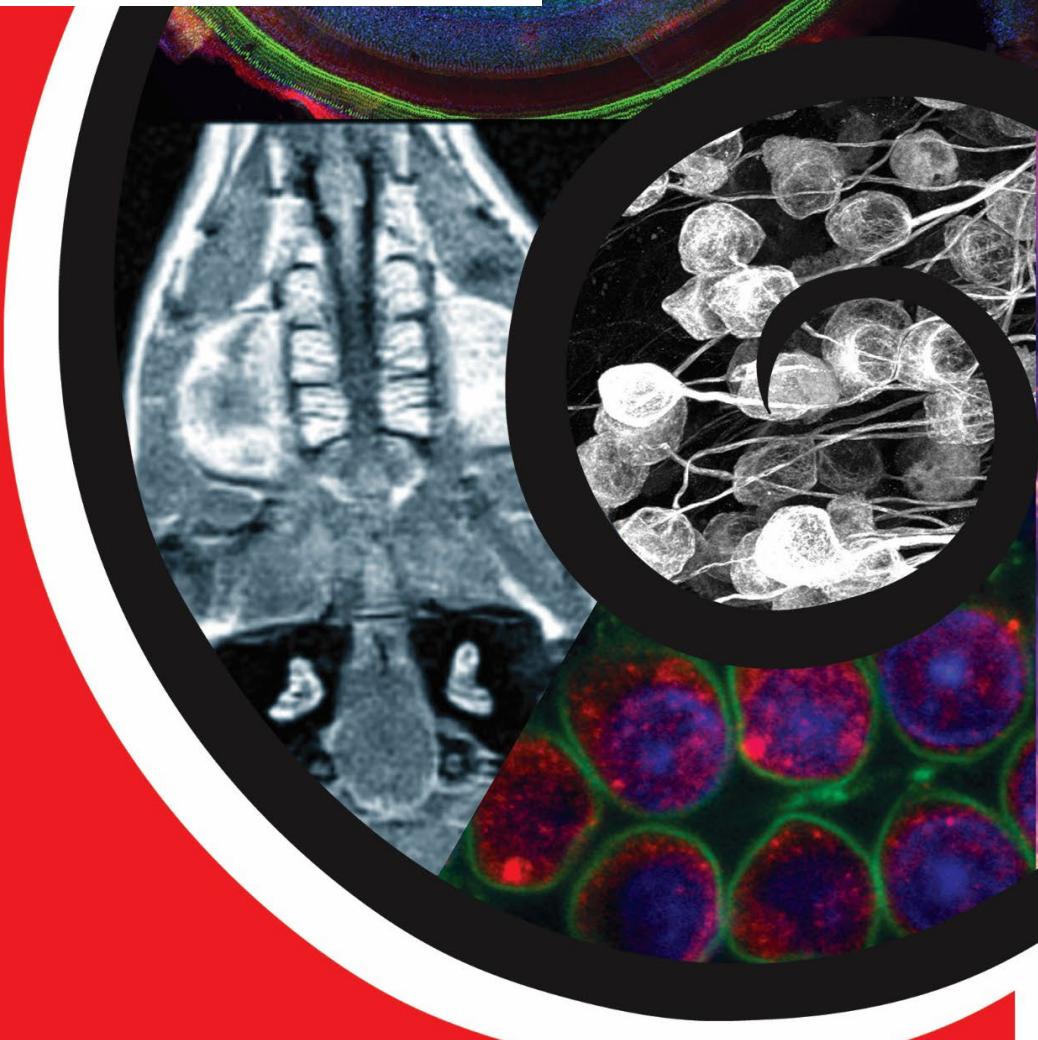


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# Functional, Structural & Cellular

*He rangahau tēnei e tautoko ai  
i ngā haumanu mō ngā taringa.*



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