

# XVII CONGRESO

NACIONAL DE LA ASOCIACIÓN  
ESPAÑOLA DE AUDIOLOGÍA

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# Luces y sombras en la pérdida de audición oculta

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AJA

Research Article

## Discovering the Unmet Needs of People With Difficulties Understanding Speech in Noise and a Normal or Near-Normal Audiogram

Kiri Mealings,<sup>a</sup>  Ingrid Yeend,<sup>a</sup> Joaquin T. Valderrama,<sup>a,b</sup> Megan Gilliver,<sup>a</sup> Jermy Pang,<sup>a</sup> Jason Heeris,<sup>a</sup> and Pamela Jackson<sup>a</sup>

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**Tengo que hacer un gran esfuerzo para escuchar.**  
No siempre escucho lo que están hablando alrededor mía. Me requiere muchísima concentración.



Otra gente debe ser capaz de filtrar el ruido de fondo y reducirlo para poder centrarse en la conversación. **Yo debo tener un problema porque no puedo hacer eso.**

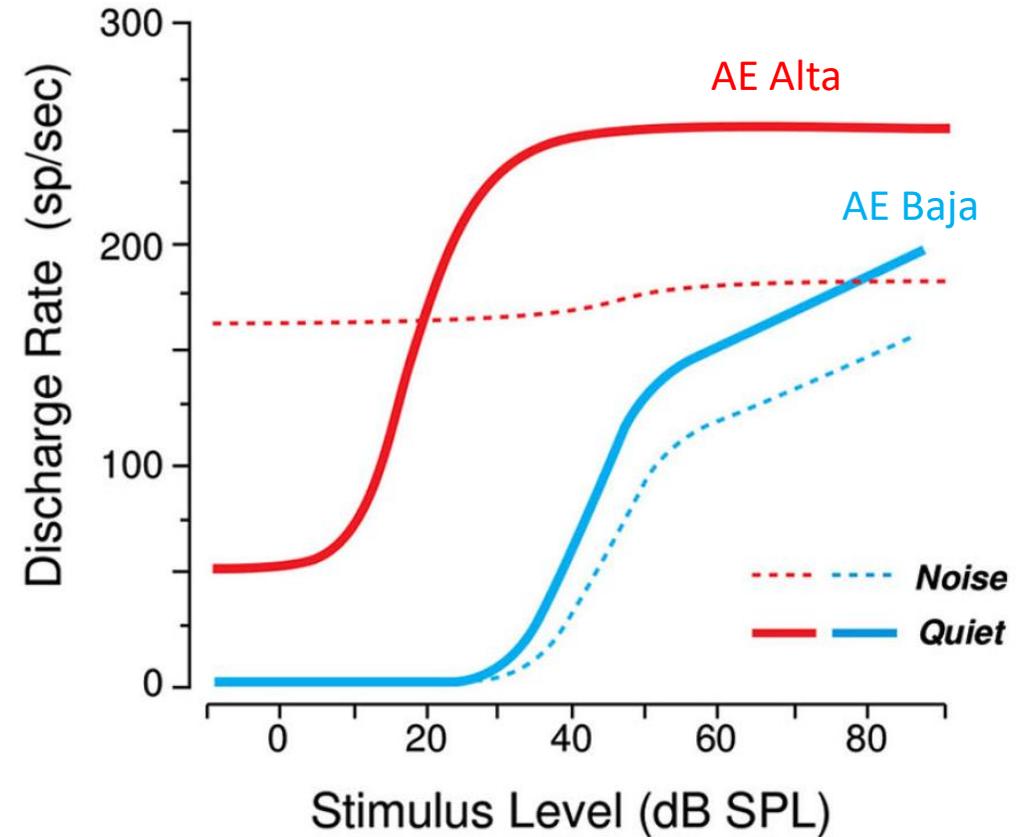
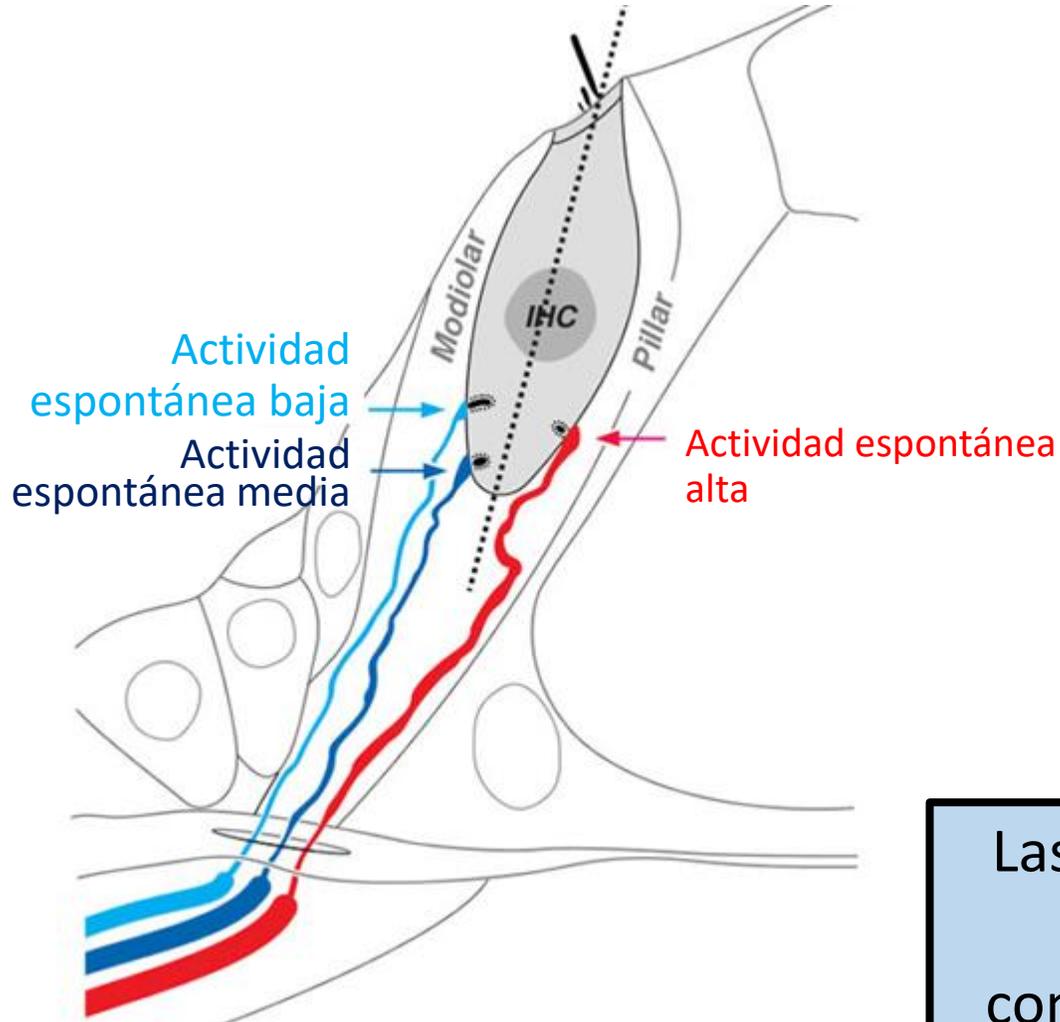


**No hay realmente un test** que muestre la patología asociada a problemas de comprensión en ambientes ruidosos.

*ansiedad*  
*frustración*  
*incomprensión constante*  
*cambio de comportamiento*  
*calidad de vida*  
*confusión*

# Mecanismos neuronales para entender la voz en ruido

▪ 120 dB  $\rightarrow I_{\max} = 1,000,000,000,000 \cdot I_{\min}$

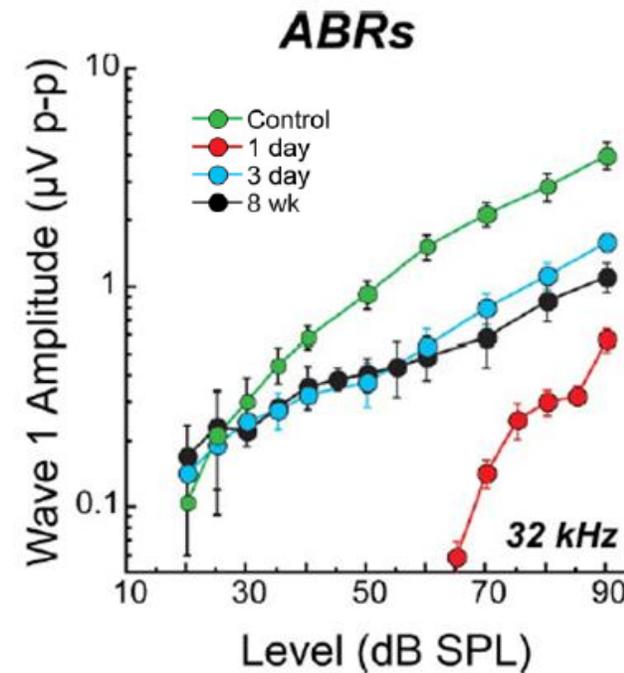
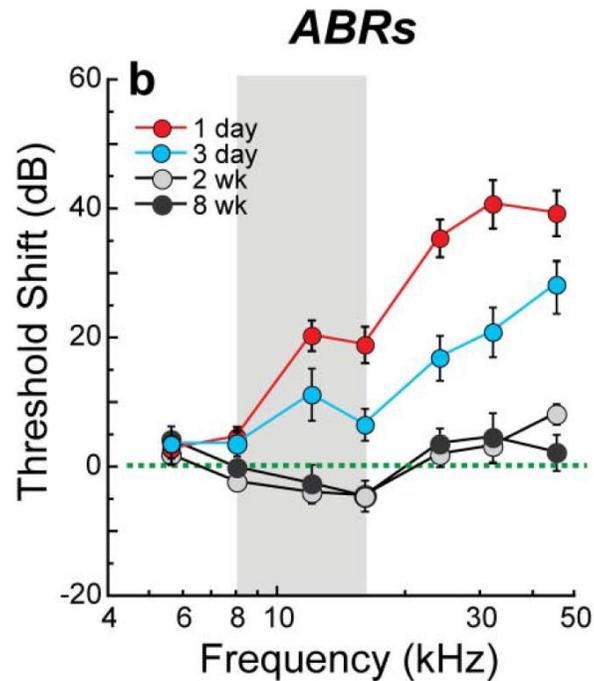


Las fibras de AE baja juegan un papel fundamental en la comprensión de la voz en ruido

- Ratones anestesiados
- Ruido de 8-16 kHz
- 2 h, 100 dB SPL

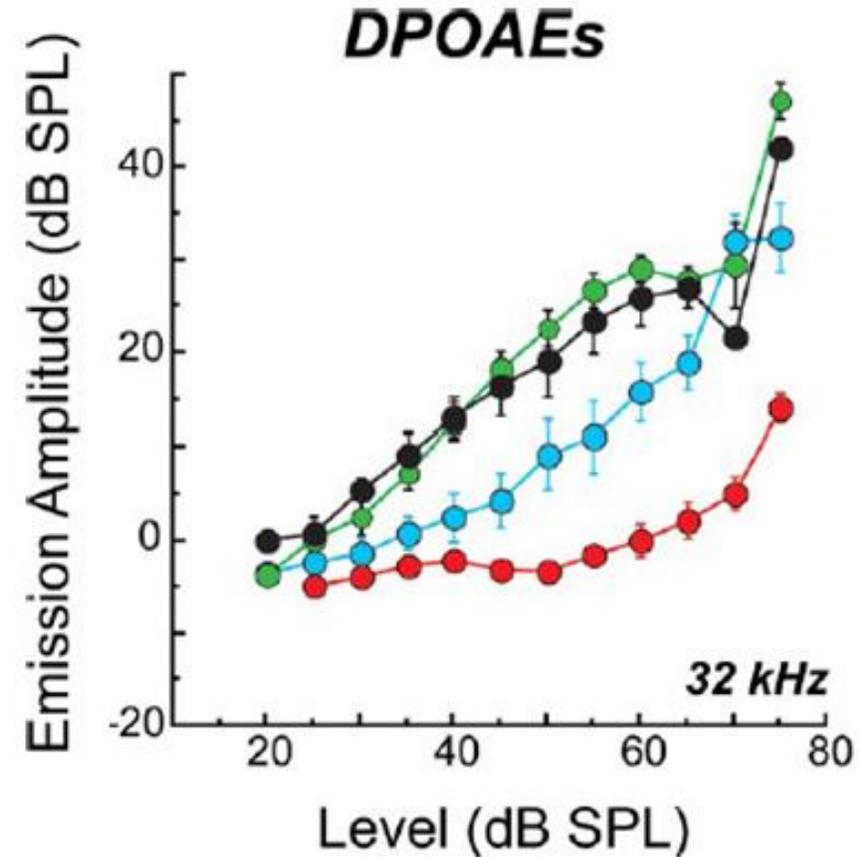
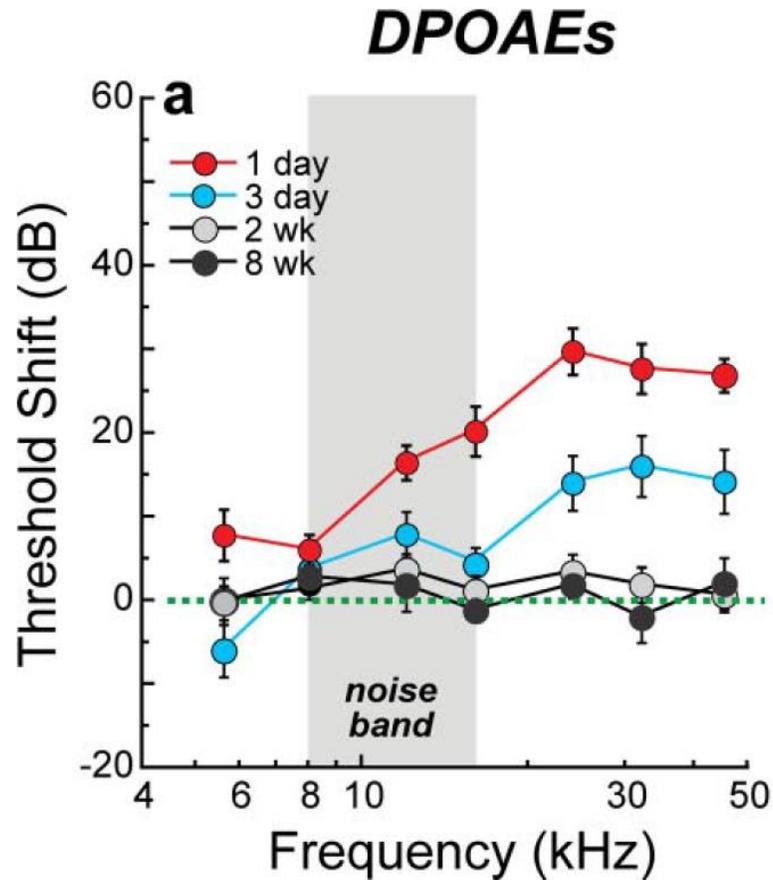
## Adding Insult to Injury: Cochlear Nerve Degeneration after “Temporary” Noise-Induced Hearing Loss

Sharon G. Kujawa<sup>1,2,3,4</sup> and M. Charles Liberman<sup>1,2,4</sup>

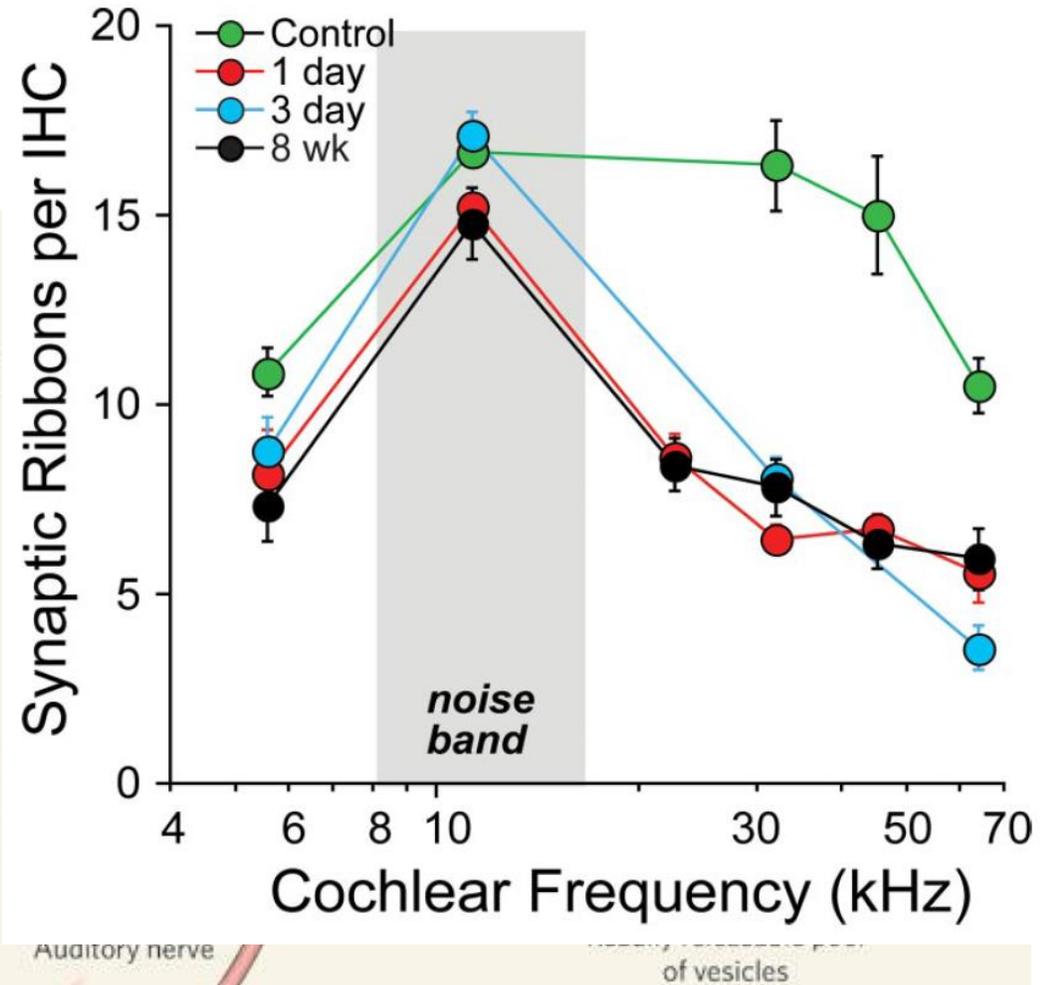
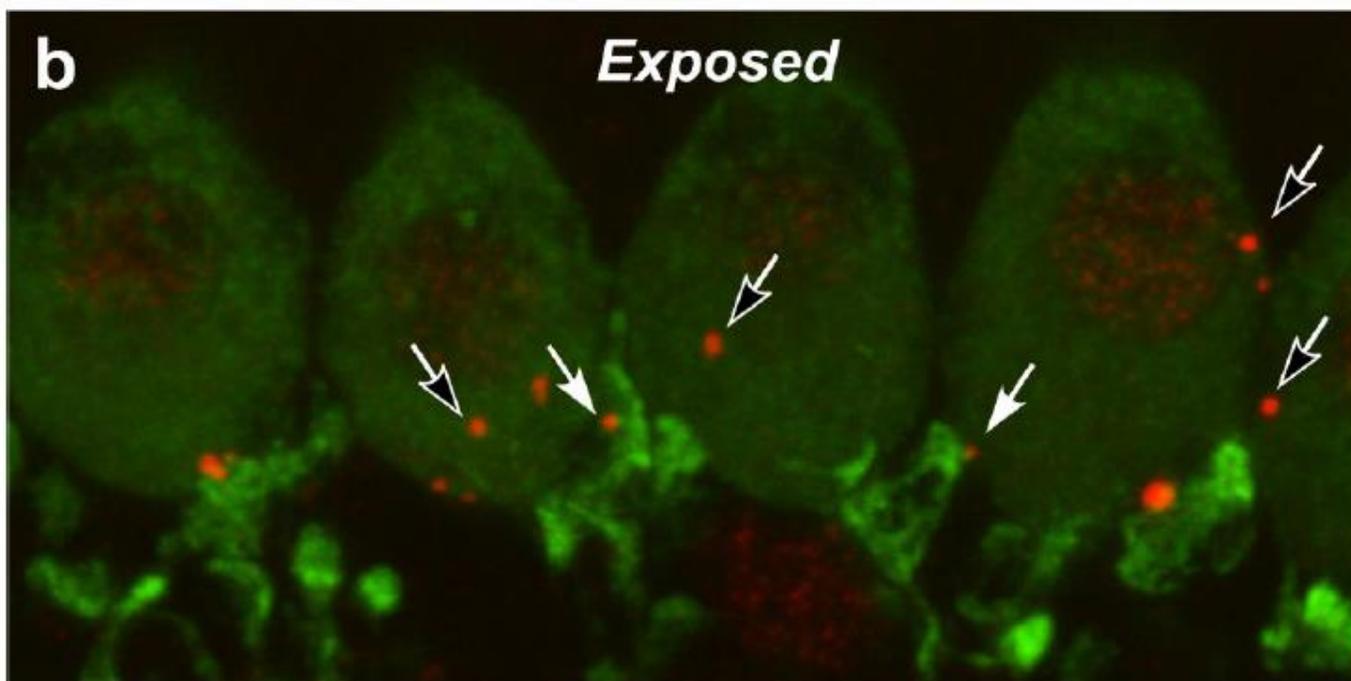
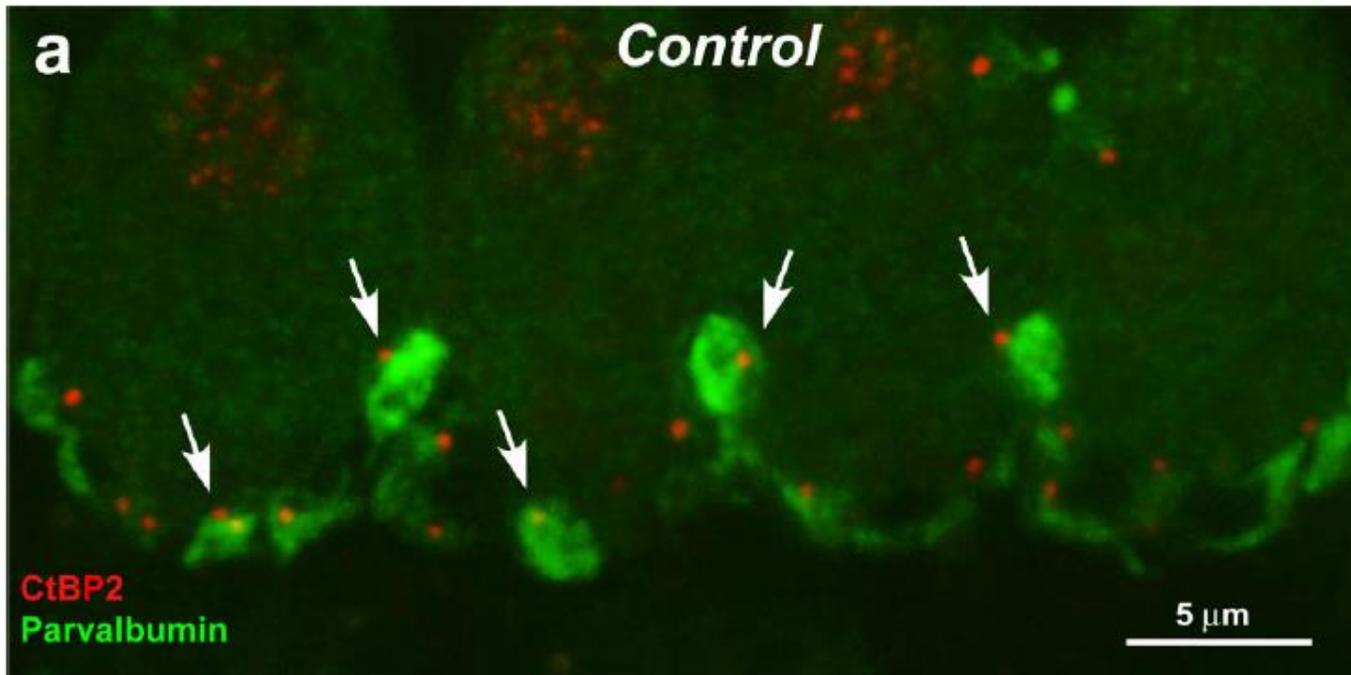


La exposición al ruido daña las fibras de AE baja

# ¿Y qué ocurrió con la células ciliadas?



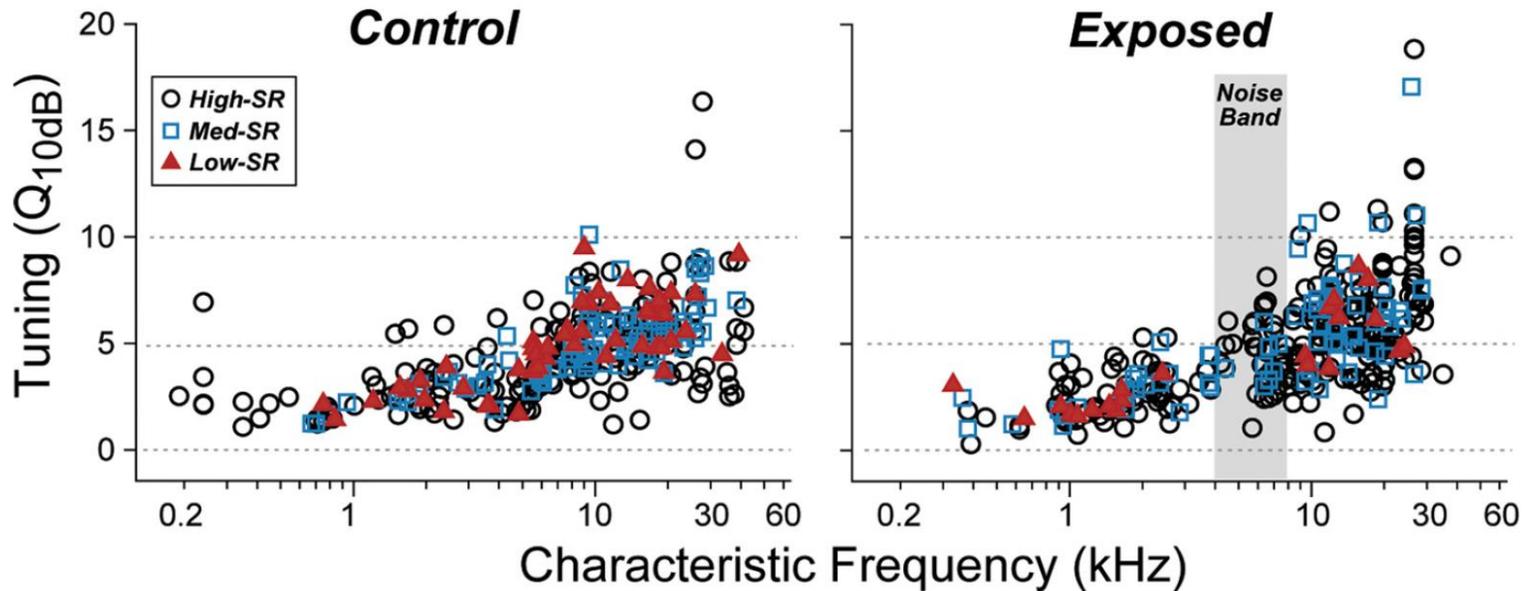
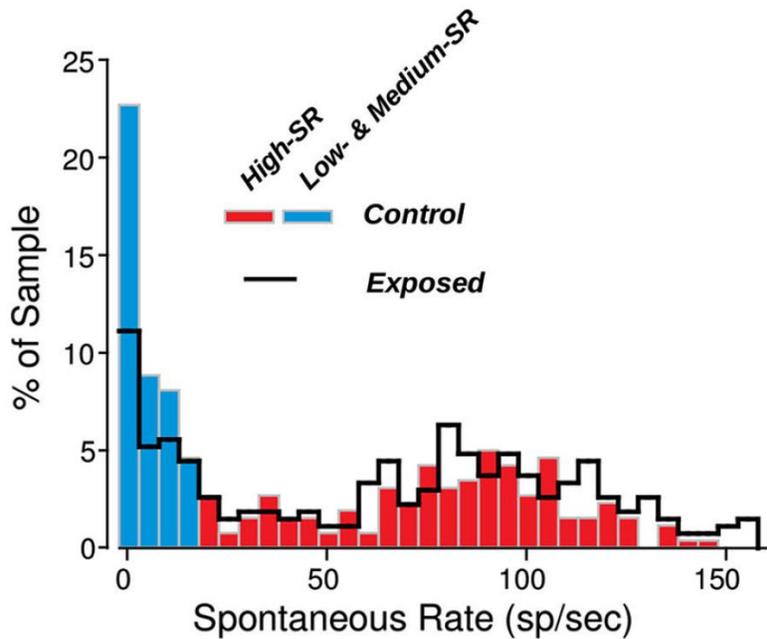
Las células ciliadas se recuperan de la exposición al ruido



La exposición al ruido  
“disconecta” las células ciliadas  
de las terminales nerviosas

# Noise-induced cochlear neuropathy is selective for fibers with low spontaneous rates

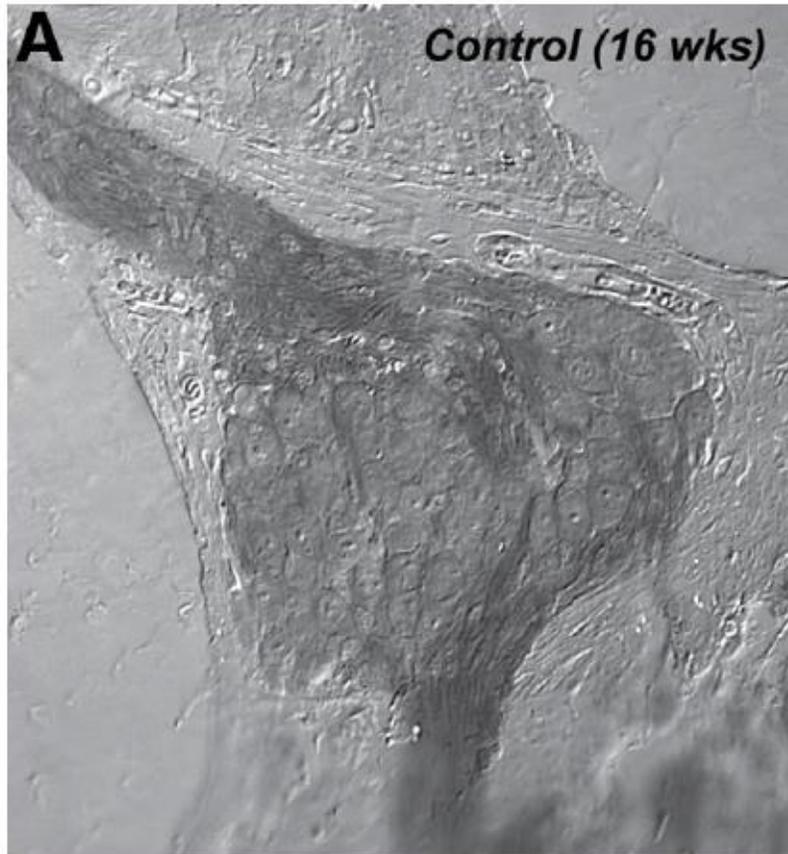
Adam C. Furman,<sup>2,4</sup> Sharon G. Kujawa,<sup>1,3,4</sup> and M. Charles Liberman<sup>1,2,4</sup>

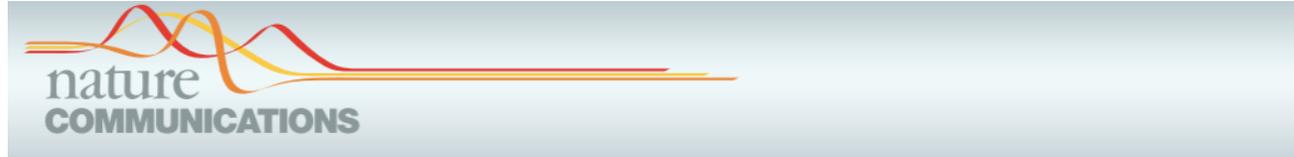
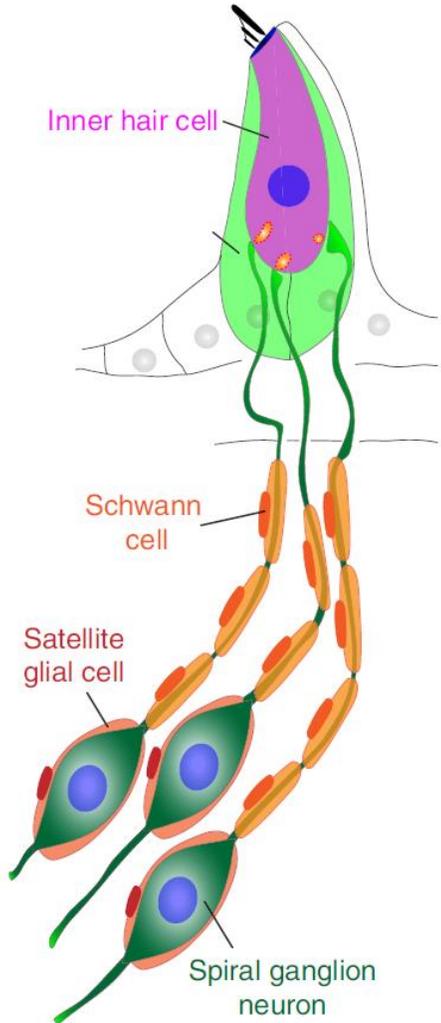


La exposición al ruido afecta a las fibras con AE baja

# Aging after Noise Exposure: Acceleration of Cochlear Synaptopathy in “Recovered” Ears

Katharine A. Fernandez,<sup>1,2</sup>  Penelope W.C. Jeffers,<sup>2</sup> Kumud Lall,<sup>1,2</sup> M. Charles Liberman,<sup>1,2</sup> and Sharon G. Kujawa<sup>1,2,3</sup>





## ARTICLE

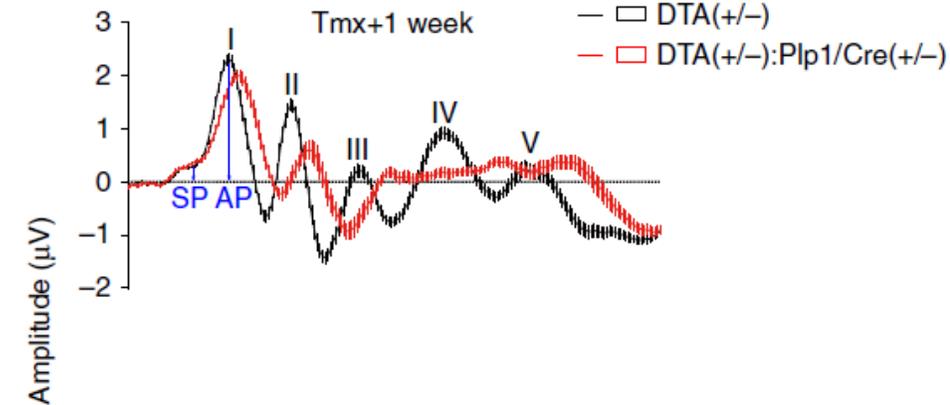
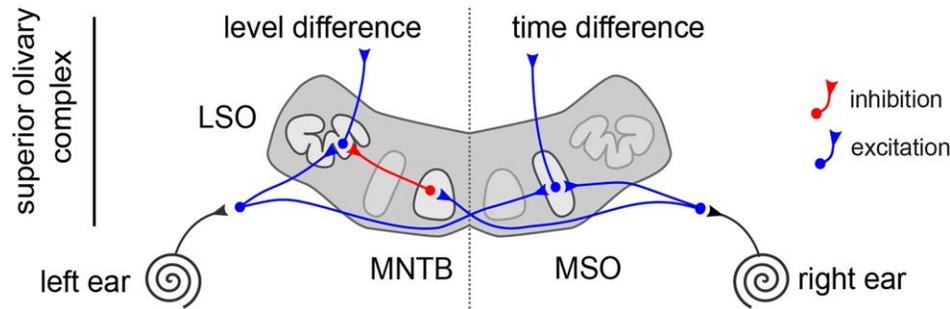
Received 23 Nov 2016 | Accepted 4 Jan 2017 | Published 17 Feb 2017

DOI: 10.1038/ncomms14487

OPEN

# Transient auditory nerve demyelination as a new mechanism for hidden hearing loss

Guoqiang Wan<sup>1,2</sup> & Gabriel Corfas<sup>1</sup>





ARTICLE

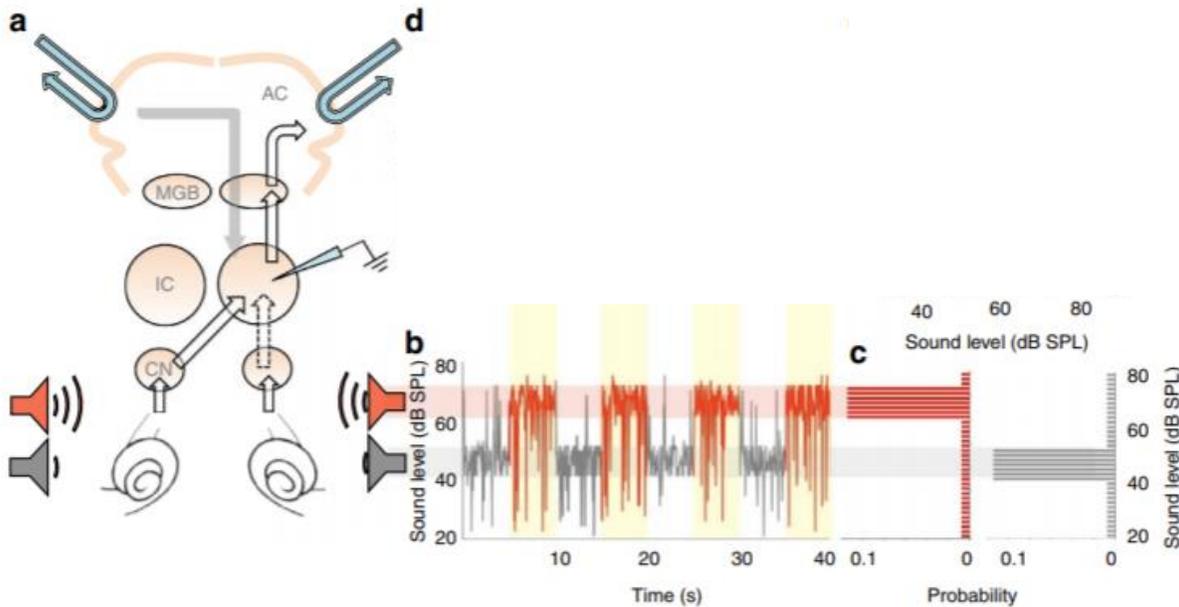
Received 5 Jul 2016 | Accepted 4 Oct 2016 | Published 24 Nov 2016

DOI: 10.1038/ncomms13442

OPEN

## Meta-adaptation in the auditory midbrain under cortical influence

Benjamin L. Robinson<sup>1,2,\*</sup>, Nicol S. Harper<sup>3,4,\*</sup> & David McAlpine<sup>1,5</sup>



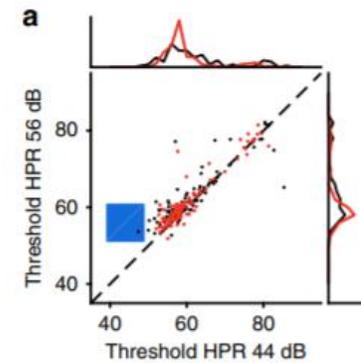
ARTICLE

DOI: 10.1038/s41467-018-06777-y

OPEN

## Hidden hearing loss selectively impairs neural adaptation to loud sound environments

Warren Michael Henry Bakay<sup>1,2</sup>, Lucy Anne Anderson<sup>1</sup>, Jose Alberto Garcia-Lazaro<sup>1</sup>, David McAlpine<sup>1,3</sup> & Roland Schaette<sup>1</sup>

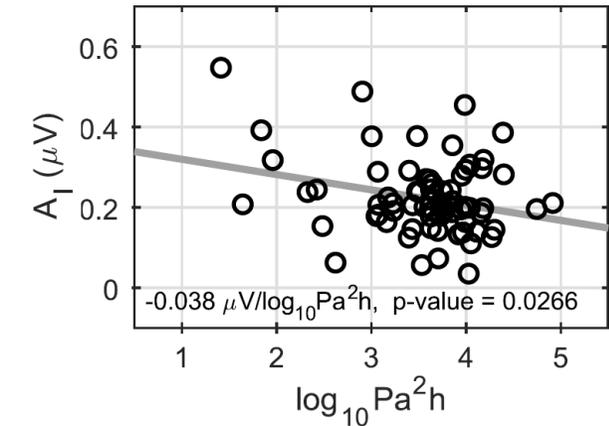
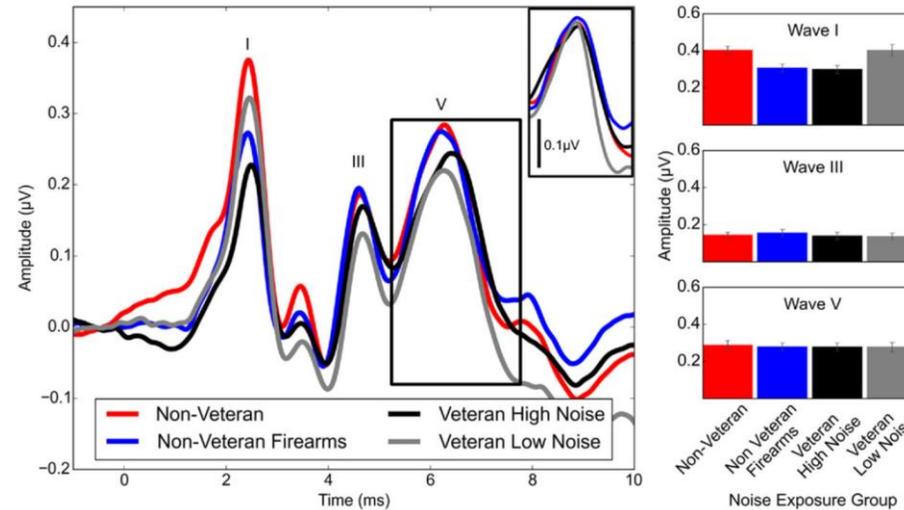
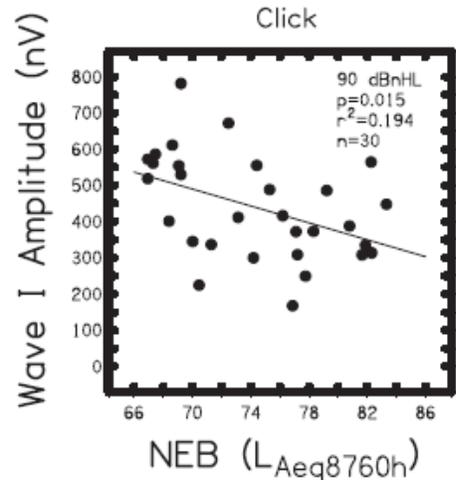


STAMPER AND JOHNSON / EAR & HEARING, VOL. 36, NO. 2, 172–184

## Auditory Function in Normal-Hearing, Noise-Exposed Human Ears

## Auditory Brainstem Response Altered in Humans With Noise Exposure Despite Normal Outer Hair Cell Function

Naomi F. Bramhall<sup>1</sup>, Dawn Konrad-Martin<sup>1,2</sup>, Garnett P. McMillan<sup>1</sup>, and Susan E. Griest<sup>1,2</sup>

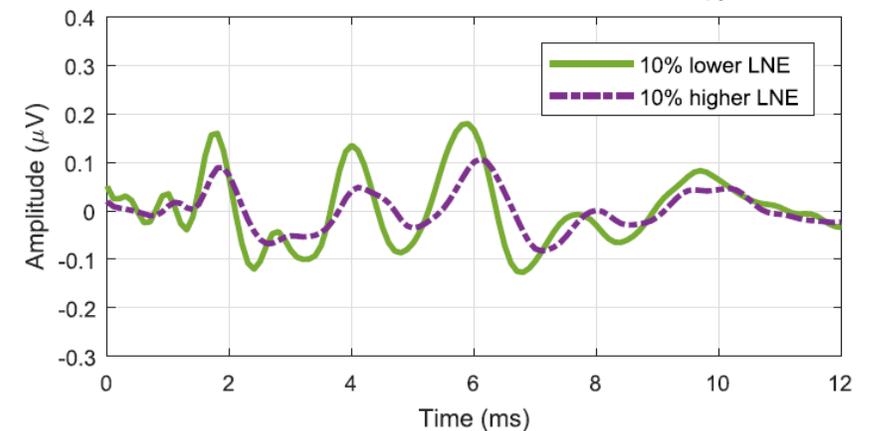
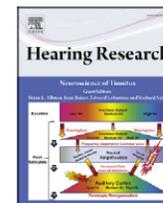


Research Paper

Hearing Research 365 (2018) 36–48

## Effects of lifetime noise exposure on the middle-age human auditory brainstem response, tinnitus and speech-in-noise intelligibility

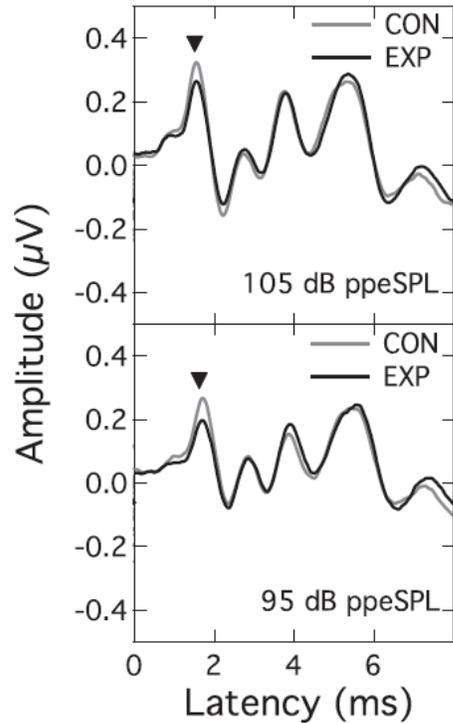
Joaquin T. Valderrama<sup>a, b, c, \*</sup>, Elizabeth Francis Beach<sup>a, c</sup>, Ingrid Yeend<sup>a, b, c</sup>, Mridula Sharma<sup>b, c</sup>, Bram Van Dun<sup>a, c</sup>, Harvey Dillon<sup>a, c</sup>



## Loud Music Exposure and Cochlear Synaptopathy in Young Adults: Isolated Auditory Brainstem Response Effects but No Perceptual Consequences

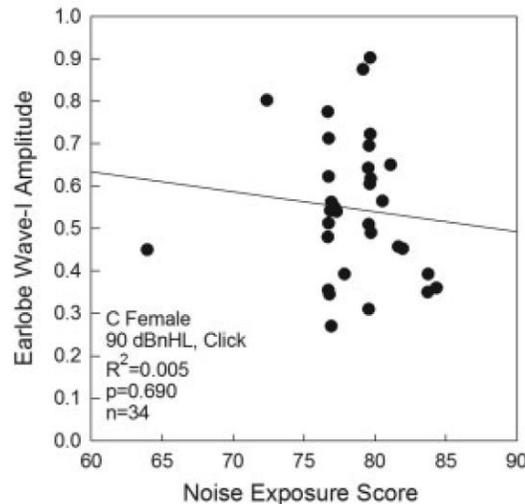
John H. Grose<sup>1</sup>, Emily Buss<sup>1</sup>, and Joseph W. Hall III<sup>1</sup>

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DOI: 10.1177/2331216517737417  
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## Effects of Recreational Noise on Threshold and Suprathreshold Measures of Auditory Function

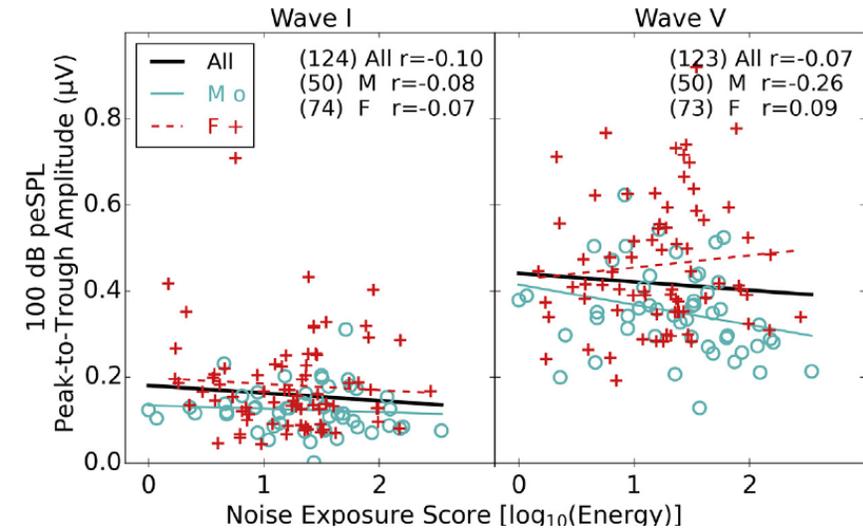
Angela N.C. Fulbright, Au.D., Ph.D.,<sup>2</sup> Colleen G. Le Prell, Ph.D.,<sup>1</sup> Scott K. Griffiths, Ph.D.,<sup>2</sup> and Edward Lobarinas, Ph.D.<sup>1</sup>



Research Paper

## Effects of noise exposure on young adults with normal audiograms I: Electrophysiology

Garreth Prendergast<sup>a,\*</sup>, Hannah Guest<sup>a</sup>, Kevin J. Munro<sup>a,b</sup>, Karolina Kluk<sup>a</sup>, Agnès Léger<sup>a</sup>, Deborah A. Hall<sup>c,d</sup>, Michael G. Heinz<sup>e</sup>, Christopher J. Plack<sup>a,f</sup>

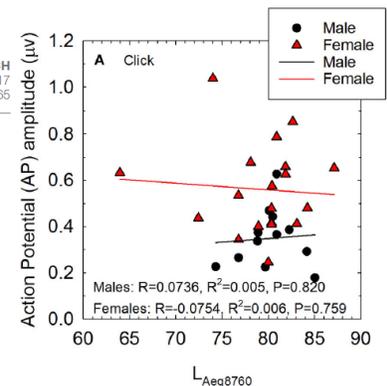


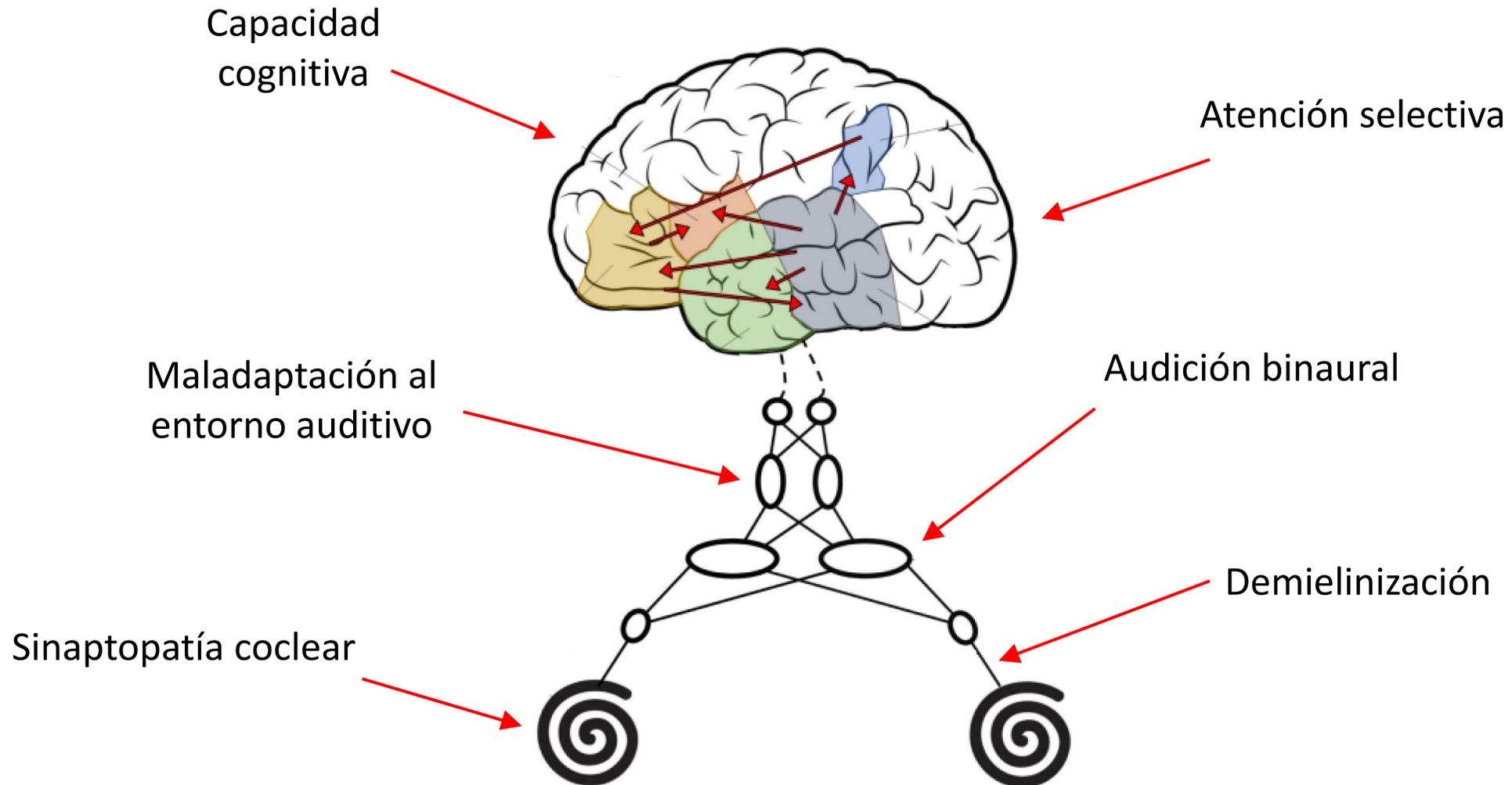
frontiers  
in Neuroscience

## Hidden Hearing Loss? No Effect of Common Recreational Noise Exposure on Cochlear Nerve Response Amplitude in Humans

Sarah K. Grinn<sup>1,2</sup>, Kathryn B. Wiseman<sup>1</sup>, Jason A. Baker<sup>1</sup> and Colleen G. Le Prell<sup>1\*</sup>

ORIGINAL RESEARCH  
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- La pérdida de audición oculta es un problema real.
- Los estudios en animales muestran que varias patologías pueden estar relacionadas
  - la sinaptopatía coclear,
  - la Demielinización del nervio auditivo, y
  - la maladaptación neuronal al entorno auditivo.
- Los estudios en humanos presentan dificultades a la hora de obtener índices neurofisiológicos relacionados con este problema de audición
- Nuevos enfoques son necesarios para obtener herramientas de diagnóstico precisas



## **Australian Hearing Hub**

*Macquarie University campus, Sydney, Australia*



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