

# SONJA J. PYOTT

## GENERAL INFORMATION

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## RESEARCH OBJECTIVES

My research integrates investigation of the 1) fundamental biology of sensory transduction in the inner ear; 2) pathophysiology underlying hearing and balance disorders; and 3) consequences of hearing and balance disorders on health and wellbeing. The goal of my research is to develop new strategies to prevent and treat hearing and balance disorders. To achieve this goal, I use an interdisciplinary toolkit that leverages physiological, imaging, transcriptomic, genomic, and comparative and evolutionary approaches to investigate the auditory and vestibular pathways in animal models and humans. Offering excellent scientific and academic training of students at various academic levels is central to my research.

## EDUCATION

- 2001–2006 **PhD, Neuroscience**  
**Stanford University, Stanford, CA, USA**  
Supervised by Prof. Dr. Richard W. Aldrich:  
*Characterization of BK channels in mouse cochlear hair cells*
- 1995–1999 **BS, Biochemistry and Molecular Biology**  
**Minor in Chemistry, Honors in Biology, Honors in Chemistry**  
**Penn State University, University Park, PA, USA**  
Biology Honors, Thesis Supervised by Prof. Dr. S. Blair Hedges: *Molecular analysis of the evolutionary relationships of the iguanid lizard genus Leiocephalus*  
Chemistry Honors, Thesis Supervised by Prof. Dr. Andrew G. Ewing: *Quantitative amperometry and electron microscopy of PC12 cells*

## ACADEMIC APPOINTMENTS

- 2021-present **Associate Professor (Universitair Hoofddocent met het *ius promovendi*)**,  
Department of Otorhinolaryngology, Faculty of Medical Sciences  
**Coordinator Medical Education**, Institute for Medical Education  
University Medical Center (UMC) Groningen and University of Groningen,  
Groningen, the Netherlands
- 2017-2021 **Assistant Professor (Universitair Docent I)**, Department of Otorhinolaryngology  
**Coordinator Medical Education**, Institute for Medical Education  
UMC Groningen and University of Groningen, Groningen, the Netherlands
- 2014-2019 **Rosalind Franklin Fellow, Tenure Track**, Department of Otorhinolaryngology,  
UMC Groningen, Groningen, the Netherlands
- 2009-2014 **Assistant Professor, Tenure Track**, Department of Biology and Marine Biology,  
University of North Carolina Wilmington, NC, USA

- 2007-2009 **Research Assistant Professor**, Biology and Marine Biology, University of North Carolina Wilmington, NC, USA
- 2006-2007 **Postdoctoral Fellow**, Department of Otolaryngology - Head and Neck Surgery, Johns Hopkins School of Medicine, MD, USA (with Prof. Dr. Elisabeth Glowatzki)
- 2006 **Postdoctoral Fellow**, Department of Molecular and Cellular Physiology, Stanford University School of Medicine, CA, USA (with Prof. Dr. Richard W. Aldrich)
- 2001-2005 **PhD Graduate Student**, Department of Molecular and Cellular Physiology, Stanford University School of Medicine, CA, USA (with Prof. Dr. Richard W. Aldrich)
- 2000 **Max Planck Fellow**, Department of Membrane Biophysics, Max-Planck-Institute for Biophysical Chemistry, Göttingen, Germany (with Prof. Dr. Christian Rosenmund)
- 1999-2000 **Fulbright Scholar**, Department of Membrane Biophysics, Max-Planck-Institute for Biophysical Chemistry, Göttingen, Germany (with Prof. Dr. Christian Rosenmund)

## PEER-REVIEWED PUBLICATIONS

### Research Articles

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34. Makani P, Thioux M, **Pyott SJ**, van Dijk P, A Combined Image- and Coordinate-Based Meta-Analysis of Whole-Brain Voxel-Based Morphometry Studies Investigating Subjective Tinnitus. *Brain Sci*, 2022. 12(9):1192. PMID: 36138928
33. Schubert, NMA, Roelofs CG, Free RH, Wiersinga-Post EC, **SJ Pyott**, *Age-related high frequency hearing loss is not associated with horizontal semicircular canal function*. *Ear Hear*, 2022. [Online ahead of print.] PMID: 35696183
32. Schubert, NMA, M van Tuinen, and **SJ Pyott**, *Transcriptome-Guided Identification of Drugs for Repurposing to Treat Age-Related Hearing Loss*. *Biomolecules*, 2022. 12(4). PMC9028743
31. Buffenstein, R, V Amoroso, B Andziak, S Avdieiev, J Azpurua, AJ Barker, NC Bennett, MA Brieno-Enriquez, GN Bronner, C Coen, MA Delaney, CM Dengler-Crish, YH Edrey, CG Faulkes, D Frankel, G Friedlander, PA Gibney, V Gorbunova, C Hine, MM Holmes, JUM Jarvis, Y Kawamura, N Kutsukake, C Kenyon, WT Khaled, T Kikusui, J Kissil, S Lagestee, J Larson, A Lauer, LA Lavrenchenko, A Lee, JB Levitt, GR Lewin, KN Lewis Hardell, TD Lin, MJ Mason, D McCloskey, M McMahon, K Miura, K Mogi, V Narayan, TP O'Connor, K Okanoya, MJ O'Riain, TJ Park, NJ Place, K Podshivalova, ME Pamerter, **SJ Pyott**, J Reznick, JG Ruby, AB Salmon, J Santos-Sacchi, DK Sarko, A Seluanov, A Shepard, M Smith, KB Storey, X Tian, EN Vice, M Viltard, A Watarai, E Wywial, M Yamakawa, ED Zemlemerova, M Zions, and ESJ Smith, *The naked truth: a comprehensive clarification and classification of current 'myths' in naked mole-rat biology*. *Biol Rev Camb Philos Soc*, 2022. 97(1): p. 115-140. PMID: 34476892
30. Schubert, NMA, JGM Rosmalen, P van Dijk, and **SJ Pyott**, *A retrospective cross-sectional study on tinnitus prevalence and disease associations in the Dutch population-based cohort Lifelines*. *Hear Res*, 2021. 411: p. 108355.
29. Paplou, V, NMA Schubert, and **SJ Pyott**, *Age-Related Changes in the Cochlea and Vestibule: Shared Patterns and Processes*. *Front Neurosci*, 2021. 15: p. 680856. PMC8446668
28. Reijntjes, DOJ, JL Breitzler, D Persic, and **SJ Pyott**, *Preparation of the intact rodent organ of Corti for RNAscope and immunolabeling, confocal microscopy, and quantitative analysis*. *STAR Protoc*, 2021. 2(2): p. 100544. PMC8233256
27. Greguske, EA, J Llorens, and **SJ Pyott**, *Assessment of cochlear toxicity in response to chronic 3,3'-iminodipropionitrile in mice reveals early and reversible functional loss that precedes overt histopathology*. *Arch Toxicol*, 2021. 95(3): p. 1003-1021. PMC7904549
26. Barker, AJ, U Koch, GR Lewin, and **SJ Pyott**, *Hearing and Vocalizations in the Naked Mole-Rat*. *Adv Exp Med Biol*, 2021. 1319: p. 157-195.

25. **Pyott, SJ**, M van Tuinen, LA Screven, KM Schrode, JP Bai, CM Barone, SD Price, A Lysakowski, M Sanderford, S Kumar, J Santos-Sacchi, AM Lauer, and TJ Park, *Functional, Morphological, and Evolutionary Characterization of Hearing in Subterranean, Eusocial African Mole-Rats*. *Curr Biol*, 2020. 30(22): p. 4329-4341 e4. PMC8109146
24. Persic, D, ME Thomas, V Pelekanos, DK Ryugo, AE Takesian, K Krumbholz, and **SJ Pyott**, *Regulation of auditory plasticity during critical periods and following hearing loss*. *Hear Res*, 2020. 397: p. 107976.
23. Reijntjes, DOJ, C Koppl, and **SJ Pyott**, *Volume gradients in inner hair cell-auditory nerve fiber pre- and postsynaptic proteins differ across mouse strains*. *Hear Res*, 2020. 390: p. 107933.
22. Barone, CM, S Douma, DOJ Reijntjes, BM Browe, C Koppl, G Klump, TJ Park, and **SJ Pyott**, *Altered cochlear innervation in developing and mature naked and Damaraland mole rats*. *J Comp Neurol*, 2019. 527(14): p. 2302-2316. PMC6767702
21. Lingle, CJ, PL Martinez-Espinosa, A Yang-Hood, LE Boero, S Payne, D Persic, VG B, M Xiao, Y Zhou, XM Xia, **SJ Pyott**, and MA Rutherford, *LRR52 regulates BK channel function and localization in mouse cochlear inner hair cells*. *Proc Natl Acad Sci U S A*, 2019. 116(37): p. 18397-18403. PMC6744894
20. Reijntjes, DOJ, JH Lee, S Park, NMA Schubert, M van Tuinen, S Vijayakumar, TA Jones, SM Jones, MA Gratton, XM Xia, EN Yamoah, and **SJ Pyott**, *Sodium-activated potassium channels shape peripheral auditory function and activity of the primary auditory neurons in mice*. *Sci Rep*, 2019. 9(1): p. 2573. PMC6384918
19. Reijntjes, DOJ, NMA Schubert, A Pietrus-Rajman, P van Dijk, and **SJ Pyott**, *Changes in spontaneous movement in response to silent gaps are not robust enough to indicate the perception of tinnitus in mice*. *PLoS One*, 2018. 13(8): p. e0202882. PMC6114799
18. Ye, Z, JD Goutman, **SJ Pyott**, and E Glowatzki, *mGluR1 enhances efferent inhibition of inner hair cells in the developing rat cochlea*. *J Physiol*, 2017. 595(11): p. 3483-3495. PMC5451706
17. Reijntjes, DOJ and **SJ Pyott**, *The afferent signaling complex: Regulation of type I spiral ganglion neuron responses in the auditory periphery*. *Hear Res*, 2016. 336: p. 1-16.
16. Goutman, JD and **SJ Pyott**, *Whole-Cell Patch-Clamp Recording of Mouse and Rat Inner Hair Cells in the Intact Organ of Corti*. *Methods Mol Biol*, 2016. 1427: p. 471-85.
15. **Pyott, SJ** and RK Duncan, *BK Channels in the Vertebrate Inner Ear*. *Int Rev Neurobiol*, 2016. 128: p. 369-99.
14. Braude, JP, S Vijayakumar, K Baumgarner, R Laurine, TA Jones, SM Jones, and **SJ Pyott**, *Deletion of Shank1 has minimal effects on the molecular composition and function of glutamatergic afferent postsynapses in the mouse inner ear*. *Hear Res*, 2015. 321: p. 52-64. PMC4485438
13. Rohmann, KN, E Wersinger, JP Braude, **SJ Pyott**, and PA Fuchs, *Activation of BK and SK channels by efferent synapses on outer hair cells in high-frequency regions of the rodent cochlea*. *J Neurosci*, 2015. 35(5): p. 1821-30. PMC4315822
12. Sadeghi, SG, **SJ Pyott**, Z Yu, and E Glowatzki, *Glutamatergic signaling at the vestibular hair cell calyx synapse*. *J Neurosci*, 2014. 34(44): p. 14536-50. PMC4212060
11. Schuth, O, WJ McLean, RA Eatock, and **SJ Pyott**, *Distribution of Na,K-ATPase alpha subunits in rat vestibular sensory epithelia*. *J Assoc Res Otolaryngol*, 2014. 15(5): p. 739-54. PMC4164683
10. Maison, SF, **SJ Pyott**, AL Meredith, and MC Liberman, *Olivocochlear suppression of outer hair cells in vivo: evidence for combined action of BK and SK2 channels throughout the cochlea*. *J Neurophysiol*, 2013. 109(6): p. 1525-34. PMC3602942
9. Hoadley, KD, AM Szmant, and **SJ Pyott**, *Circadian clock gene expression in the coral *Favia fragum* over diel and lunar reproductive cycles*. *PLoS One*, 2011. 6(5): p. e19755. PMC3089635
8. Wersinger, E, WJ McLean, PA Fuchs, and **SJ Pyott**, *BK channels mediate cholinergic inhibition of high frequency cochlear hair cells*. *PLoS One*, 2010. 5(11): p. e13836. PMC2973960

7. Zorrilla de San Martin, J, **S Pyott**, J Ballestero, and E Katz, *Ca(2+) and Ca(2+)-activated K(+) channels that support and modulate transmitter release at the olivocochlear efferent-inner hair cell synapse*. *J Neurosci*, 2010. 30(36): p. 12157-67. PMC2963083
6. McLean, WJ, KA Smith, E Glowatzki, and **SJ Pyott**, *Distribution of the Na,K-ATPase alpha subunit in the rat spiral ganglion and organ of corti*. *J Assoc Res Otolaryngol*, 2009. 10(1): p. 37-49. PMC2644389
5. **Pyott, SJ**, AL Meredith, AA Fodor, AE Vazquez, EN Yamoah, and RW Aldrich, *Cochlear function in mice lacking the BK channel alpha, beta1, or beta4 subunits*. *J Biol Chem*, 2007. 282(5): p. 3312-24.
4. **Pyott, SJ**, E Glowatzki, JS Trimmer, and RW Aldrich, *Extrasynaptic localization of inactivating calcium-activated potassium channels in mouse inner hair cells*. *J Neurosci*, 2004. 24(43): p. 9469-74. PMC6730162
3. **Pyott, SJ** and C Rosenmund, *The effects of temperature on vesicular supply and release in autaptic cultures of rat and mouse hippocampal neurons*. *J Physiol*, 2002. 539(Pt 2): p. 523-35. PMC2290147
2. Rhee, JS, A Betz, **S Pyott**, K Reim, F Varoquaux, I Augustin, D Hesse, TC Sudhof, M Takahashi, C Rosenmund, and N Brose, *Beta phorbol ester- and diacylglycerol-induced augmentation of transmitter release is mediated by Munc13s and not by PKCs*. *Cell*, 2002. 108(1): p. 121-33.
1. Colliver, TL, **SJ Pyott**, M Achalabun, and AG Ewing, *VMAT-Mediated changes in quantal size and vesicular volume*. *J Neurosci*, 2000. 20(14): p. 5276-82. PMC6772308

### Book Chapters

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2. **Pyott, SJ** and H von Gersdorff, *2.25 - Auditory Afferents: Sound Encoding in the Cochlea*, in *Reference Module in Neuroscience and Biobehavioral Psychology*. 2020, Elsevier.
1. Hoadley, KD, PD Vize, and **SJ Pyott**, *Current Understanding of the Circadian Clock Within Cnidaria*, in *The Cnidaria, Past, Present and Future*, 2016, Springer. p. 511-520.

### GRANTS, SCHOLARSHIPS, AND PRIZES

- |           |  |
|-----------|--|
| 2022-2023 | <b>Targeting cellular senescence to slow age-related hearing loss</b><br>Innovation Prize UMCG<br>€50,000 (Role: PI with Prof. Dr. Marco Demaria)  |
| 2021-2022 | <b>Targeting cellular senescence to slow age-related hearing loss</b><br>Royal National Institute for Deaf People (formally Action on Hearing Loss)<br>€11,612 (Role: PI with Prof. Dr. Marco Demaria)   |
| 2019-2021 | <b>Biophysical mechanisms of the imbalance between neuronal excitation and inhibition in an animal model of tinnitus</b><br>Fonds Audiologie<br>€33,000 (Role: PI)   |
| 2019-2021 | <b>The cognitive, social, and anatomical impact of hearing loss in youth and over the lifespan</b><br>MeisnerFonds<br>€35,000 (Role: PI)   |
| 2019-2023 | <b>The cognitive, social, and anatomical impact of hearing loss in youth and over the lifespan</b> (Interdisciplinary PhD Position)<br>University of Groningen and the Young Academy Groningen<br>€104,353 (Role: PI/Supervisor with Prof. Dr. Jocelien Olivier) |

- 2019 **Comparative approach to examine how auditory input shapes brain circuits**  
(Endeavour Executive Leadership Award)  
Department of Education and Training and Garvan Institute of Medical Research  
AUS \$11,000/€6,805
- 2019-2024 **Heinsius Houbolt Fonds**  
€150,000 (Role: PI, salary support for five years)
- 2017-2022 **TIN-ACT: Tinnitus: Assessments, Causes and Treatments," ERC H2020-MSCA-ITN-2017** (Project Coordinator: Prof. Dr. Pim van Dijk, UMC Groningen)  
€3,951,643 (Role: Training Coordinator, Member of Management and Supervisory Boards, Direct supervision of two PhD students)
- 2016-2020 **Identifying ion channel drug targets to treat acquired hearing loss and tinnitus**  
Daiichi Sankyo Company, Limited (TaNeDs Research Grant)  
€365,391 (Role: PI)
- 2014-2019 **Rosalind Franklin Fellowship**  
University Medical Center Groningen  
€464,682 (Role: PI)
- 2015 **Mouse Hearing Phenotyping Equipment**  
University Medical Center Groningen  
€31,237 (Role: PI)
- 2014 **Development of biologic devices to treat vestibular disorders**  
North Carolina Biotechnology Center  
\$121,367/€108,045 (Role: PI)  
*Awarded but declined to accept current position*
- 2008-2013 **Introductory (marine) biotechnology workshop for high school teachers**  
North Carolina Biotechnology Center  
\$123,281/€109,749 (Role: PI)  
*5 independent competitive grants*
- 2011-2012 **Afferent synaptic transmission in the mammalian cochlea**  
National Institutes of Health (NIH) National Institute on Deafness and Other Communication Disorders (NIDCD) ARRA Supplement (PI: Prof. Dr. Elisabeth Glowatzki)  
\$32,207/€28,672 (Role: Subcontracted researcher)
- 2010-2011 **Synaptic transmission in the inner ear**  
Cahill Research Award, University of North Carolina at Wilmington  
\$6,000/€5,341 (Role: PI)
- 2009-2010 **Instrumentation to incorporate biotechnology skills across the undergraduate biology curriculum at the University of North Carolina at Wilmington**  
North Carolina Biotechnology Center  
\$89,151/€79,365 (Role: PI)
- 2008-2009 **Investigation of the role of cryptochromes in the synchronization of lunar reproductive cycles in the scleractinian coral, *Favia fragum***  
Center for Marine Science Pilot Project, University of North Carolina at Wilmington  
\$32,760/€29,164 (Role: PI)
- 2007-2009 **Enhancement of the efferent hair cell synapse by metabotropic glutamate receptors**  
The Deafness Research Foundation; American Audiology Association; National Organization of Hearing Research  
\$70,000/€62,316 (Role: PI)  
*3 independent research grants*

- 2007 **Olympus Bioscapes 2007 Fourth Place Winner**  
\$250/€223
- 2005 **Graduate Student Travel Grant**  
Association for Research in Otolaryngology  
\$1,000/€890
- 2003 **Linda McCormick Travel Grant Award**  
Stanford University  
\$1,000/€890
- 2002-2004 **National Science Foundation (NSF) Graduate Research Fellowship**  
\$110,500/€98,371  
*3 years of graduate (Ph.D.) funding for outstanding graduate students*
- 2002 **Howard Hughes Medical Institutes Research Equipment Request**  
\$90,000/€80,121 (Role: Co-PI with Prof. Dr. Richard Aldrich)
- 2000 **Max Planck Research Fellowship**  
Max Planck Institute for Biophysical Chemistry  
DEM 7,200/€3,681
- 1999-2000 **Fulbright Scholarship**  
Max Planck Institute for Biophysical Chemistry  
DEM 13,000/€6,647
- 1995-1999 **Schreyer Honors College Academic Scholarship**  
Penn State University, USA \$16,579/€14,668  
*4 years of undergraduate (BS) funding for academic excellence*

## HONORS AND AWARDS

- 2019 **Endeavour Executive Leadership Award**, Australian Government (Department of Education and Training)
- 2017 **Young Academy Groningen**, Member (former Chair, Board Member, and Chair of Public Engagement Committee)
- 2014 **Rosalind Franklin Fellow**, University Medical Center Groningen and the University of Groningen
- 2012 **Discere Aude Award** for distinguished student mentorship, University of North Carolina Wilmington
- 2007 **Olympus Bioscapes 2007 Winner**, University of North Carolina Wilmington; image and research featured in *Scientific American*
- 2007 **National Organization of Hearing Research Award**, University of North Carolina at Wilmington; proposal also named the "2007 Temple University Health System Grant in Auditory Science"
- 2007 **American Academy of Audiology New Investigator Award**, University of North Carolina at Wilmington
- 2005 **Association for Research in Otolaryngology Travel Grant Award**, Stanford University
- 2003 **Linda McCormick Travel Grant Award**, Stanford University
- 2002 **National Science Foundation Graduate Research Fellowship**, Stanford University (Three-year fellowship)
- 2000 **Max Planck Fellowship**, Max Planck Institute for Biophysical Chemistry
- 1999 **Fulbright Scholarship**, Max Planck Institute for Biophysical Chemistry (One-year fellowship)
- 1995 **Schreyer Honors Scholar**, Penn State University (Four-year academic scholarship)

## PHD THESES SUPERVISED AT THE UMC GRONINGEN AND UNIVERSITY OF GRONINGEN AND

*In addition to PhD theses, I have supervised a total of >20 MS and BS Honors theses at the University of Groningen, UMC Groningen, and University of North Carolina Wilmington.*

- 2022-present **Tom Naber**  
Neuroplastic changes in the auditory pathway underlying hearing loss and tinnitus: an integrative investigation  
Beginning November 2022 with expected completion November 2026  
\*Prestigious PhD fellowship awarded from the China Scholarship Council (CSC)
- 2022-present **Karen Castaño Gonzalez**  
The role of cellular senescence in acquired hearing loss  
Expected completion: January 2026  
\*Prestigious PhD fellowship awarded from the Mexican Council for Science & Technology (CONACYT)
- 2022-present **Zain Pardawala**  
The role of cellular senescence in acquired hearing loss  
Expected completion: January 2025
- 2019-present **Joëlle Jagersma** (co-supervision with Prof. Dr. Jocelien Olivier)  
The social, cognitive, and anatomical impact of hearing loss over the lifespan  
Expected completion: August 2023
- 2018-present **Sonny Bovee** (co-supervision with Profs. Drs. Georg Klump and Christine Köppl, University of Oldenburg, Germany)  
*Anatomical correlates of perceptual and physiological evidence of hearing loss*  
Expected completion: August 2022
- 2018-present **Dora Persic** (co-supervision with Prof. Dr. Pim van Dijk)  
*Biophysical mechanisms of the imbalance between excitation and inhibition in tinnitus*  
Expected completion: January 2023
- 2018-present **Punit Makani** (co-supervision with Prof. Dr. Pim van Dijk)  
*Relating a behavioral model and fMRI responses in a mouse model of tinnitus*  
Expected completion: February 2023
- 2017-present **Nick M. A. Schubert** (co-supervision with Prof. Dr. Pim van Dijk)  
*The contribution of ion channels to normal hearing and hearing loss and tinnitus*  
Expected completion: July 2022
- 20-2022 **Katja Bleckmann** (co-supervision with Prof. Dr. Georg Klump at the University of Oldenburg, Germany)  
*The effect of antioxidant enzymes on the hearing performance in different mouse lines*  
Defense date: 18 August 2022
- 2014-2019 **Erin A. Greguske** (co-supervision with Prof. Dr. Jordi Llorens at the University of Barcelona, Spain)  
*Vestibular damage and repair in chronic ototoxicity: cellular stages, physiological deficits and molecular mechanisms*  
Defense date: 11 July 2019  
*Awarded the prestigious International Doctorate Mention*
- 2014-2019 **Daniël O. J. Reijntjes** (co-supervision with Prof. Dr. Pim van Dijk)  
*Molecular composition and function of the spiral ganglion neuron peripheral synapse in mice*  
Defense date: 9 September 2019

*Graduated with prestigious cum laude distinction*

- 2014-2018 **Catherine M. Barone** (co-supervision with Prof. Dr. Thomas Park at the University of Illinois at Chicago, USA)  
*Maturation of the structure and function of the African naked mole-rat inner ear*  
 Defense date: 19 December 2018

#### PROFESSIONAL ACTIVITIES AT UMC GRONINGEN AND UNIVERSITY OF GRONINGEN

- 2022-present **Coordinator Perceptual and Cognitive Neurosciences**  
 Coordinate the PCN research program as part of the Research Institute Brain and Cognition (B&C) of the UMC Groningen
- 2022-present **BCN Research Masters N-Track Coordinator and Member Board of Examiners**  
 Coordinate research and educational activities for N-track MS students in this top-ranked research-focused master program in the University Groningen and UMC Groningen
- 2017-present **Member Board of Examiners PhD Scholarship Programme**  
 Develop assessment and approval procedures of ECTS gained by PhD candidates in the scholarship program
- 2017-2022 **Young Academy of Groningen** (former Chair, Board Member, and Chair of Public Engagement Committee)  
 As the Chair (2019-2020) of this interdisciplinary group of competitively selected young researchers, lead efforts to develop science policy, connect science and society, and support early career researchers through leadership and career development.
- 2017-2022 **BCN Research Masters Admissions Board Member**  
 N-track member of the admissions committee responsible for reviewing applications to the graduate research program; coordinated changes in the review process that resulted in more than doubling the number of applications and enrollment; stepped down to become N-track Coordinator
- 2016-present **UMC Groningen Genetics Lifelines Initiative (UGLI)** (2016 to present)  
 Lead organizer on behalf of the ENT department; obtained funding to support genotyping of the Lifelines cohort to investigate the genetic bases of hearing loss and tinnitus; coordinate research collaborations with Profs. Drs. Pim van Dijk (ENT), Judith Rosmalen (Psychiatry), and Harold Snieder (Epidemiology)
- 2014-present **UMC Groningen/CDP Mouse Hearing and Balance Testing Lab**  
 Founder and lead organizer with the Central Animal Facility (CDP); obtained funding to establish quantitative testing of (mouse) inner ear function available to all UMC Groningen researchers

#### ADDITIONAL SELECTED ACTIVITIES AT UMC GRONINGEN AND UNIVERSITY OF GRONINGEN

- 2022-present **Visie op Talent**  
 Goal: Enhance research talent policy  
*Activities:* Invited to provide input on behalf of the Faculty of Medical Sciences and Early Career Researchers as part of a think tank formed by (Rector Magnificus) Prof. Dr. Cisca Wijmenga  
*Significance:* Develops new, creative, and synergistic policy to enhance research talent along the length of the academic trajectory
- 2019-present **Partnership with the UG Industry Relations**



*Goal:* Enhance strategic industrial partnerships with UG/UMCG researchers, especially early career researchers

*Activities:* Increase the visibility of Industry Relations through the organization of meetings between Industry Relations and early career researchers (October 14 and 21, 2020); Collect invited input on the development of a new industry innovation agenda; Provide invited input on the topic of impact to the Dean of Industry Relations together with the Strategy Department of Education and Research

*Significance:* Guides the utilization and generation of scientific knowledge generated by UG/UMCG researchers through the formation of strategic industrial partnerships and develops new policy to enhance structured support of industrial partnerships

2019-present **Partnership with the UG Center of Entrepreneurship (UGCE)**

*Goal:* Enhance access to entrepreneurship education, especially of early career researchers

*Activities:* Increase the visibility of the UGCE through the organization of meetings between UGCE and early career researchers (Fall 2020); Organize a workshop on “Moonshot Thinking” on behalf of the UGCE and Google X (see below) for early career researchers (Fall 2020); Develop strategies together with the Dean of the UGCE to better align promotion criteria and entrepreneurship to the Dean of the UGCE

*Significance:* Guides the utilization of scientific knowledge generated by UG/UMCG researchers through enhanced access to entrepreneurial education and expertise

Ongoing **Invited input by Grant Support Hub, UMCG**

*Goal:* Improve grant support at the UMCG

*Activities:* Provide open feedback personally and on behalf of other young researchers within the UMCG on our past experiences and recommendations with grant support at the UMCG and personally test new tools for finding grant opportunities (Research Connect and Impactor)

*Significance:* Improved grant support is the essential first step for generating scientific knowledge for valorization and successful grant applications require a well-developed valorization plan

2020 **Ambassador for Google X**

*Goal:* Identify high potential moonshot ingredients, including technology, research, and talent—especially from within the UG/UMCG but also from across the world—filter and assess for fit, and introduce them to X

*Activities:* Serve as a liaison between X and the scientific, engineering, business/industrial, policy, and entrepreneurial communities around the world

*Significance:* Guides the utilization of scientific knowledge to solve real problems in impactful ways through the creation of self-sustaining businesses

## INTERNATIONAL PROFESSIONAL ACTIVITIES

2017-present **Training Coordinator, TIN-ACT: Tinnitus: Assessments, Causes and Treatments (H2020-MSCA-ITN-2017)**

Developed, implemented, and oversee the research training program of 11 international PhD students and directly supervise 2 PhD students; serve on both the Management and Supervisory Boards

2020-present **Editorial Board: *Hearing Research***

*Hearing Research* is the second ranked journal in the field of Otolaryngology

- 2019-present **Association for Research in Otolaryngology International Committee Member**  
Contributed to the redesign of the member website to facilitate participation by international researchers and currently aiding the design of the virtual annual meeting to enhance accessibility by international members
- 2017-2019 **Association for Research in Otolaryngology Research Animal Committee Member**  
Contributed to the development of a symposium and virtual toolkit to facilitate the compliance with rules and regulations regarding the use of research animals, especially by new investigators
- Ongoing **Reviewer/Reviewing Editor for the following journals:** Science Advances, Scientific Reports, Neurotoxicology, Neurobiology of Aging, Journal of Neuroscience, Journal of the Association for Research in Otolaryngology, Hearing Research, eLife, Journal of General Physiology, Frontiers In Neuroscience, PLoS ONE, Synapse, Journal of Clinical Medicine
- Ongoing **Reviewer for the following grant agencies:** Swedish Research Council, Medical Research Council (MRC), Netherlands National Research Organization (NWO), Action on Hearing Loss (<http://www.actiononhearingloss.org.uk>), Acting for Hearing ([www.agirpourelaudition.org](http://www.agirpourelaudition.org)), Neurological Foundation of New Zealand
- Ongoing **Member:** Association for Research in Otolaryngology, Society for Neuroscience, European Society for Neuroscience; Biophysical Society; American Academy of Audiology

#### SELECTED INVITED TALKS (SINCE 2014)

- 2022 **Ligand- and voltage-gated potassium channels in sound transduction:** International symposium in Saarland University (17 June 2022)
- 2021 **From molecules to behavior: Rodent models of hearing and hearing loss:** Oldenburg University (4 October 2021)
- 2021 **Molecular determinants of auditory neuron excitability:** SfN Minisymposium: New Insights into the Neural Mechanisms of Sound Encoding (8 November 2021)
- 2019 **Postsynaptic mechanisms regulating transmission at inner hair cell ribbon synapses:** Ribbon Synapses Symposium 2019 Max Planck Institute for Biophysical Chemistry, Göttingen, Germany (2-3 September 2019)
- 2019 **Animal models to understand auditory function and hearing loss:** Three separate talks at: Macquarie University, New South Wales, Australia (13 August 2019); Newcastle University, Callaghan New South Wales, Australia (16 August 2019); Garvan Institute of Medical Research, Sydney, Australia (21 August 2019)
- 2018 **Hearing loss and tinnitus in mice and men:** University of Marseille, France (27 September 2018)
- 2017 **Glutamatergic signaling in the inner ear: molecular mechanisms shaping development, function, and aging:** The Institute of Neurosciences, University of Barcelona, Spain (19 October 2017)
- 2017 **Molecular mechanisms shaping glutamatergic signaling in the inner ear:** Department of Anatomy and Cell Biology, University of Illinois at Chicago, IL, USA (29 June 2017)
- 2017 **Closing the loop: From ear to brain and back again: molecular determinants of efferent signaling:** International symposium in Krems, Austria (11 May 2017)
- 2016 **From ear to brain: Molecular determinants of auditory and vestibular afferent signaling:** RadboudUMC Department of Genetics in Nijmegen, the Netherlands (30 November 2016)

- 2016 **Shining light on the inner ear:** Focus Group "Optical Imaging in Neurosensory Science" in Delmenhorst, Germany (4 November 2016)
- 2016 **Sensory signaling in the inner ear: the auditory afferent signaling complex:** Signaling in cells and systems in Delmenhorst, Germany (7 March 2016)
- 2015 **Closing the loop: crosstalk between auditory and efferent synapses in the inner ear:** International symposium in Hannover, Germany (27 October 2015)
- 2015 **The auditory afferent signaling complex:** International symposium in University of Kaiserslautern, Germany (23 September 2015)
- 2015 **Structure and function of synapses in the inner ear:** WAS-Dag, University Medical Center Groningen, the Netherlands (20 May 2015)
- 2015 **How the ear hears: Structure and function of synapses in the inner ear:** Behavioural and Physiological Ecology Research Group at the Groningen Institute for Evolutionary Life Sciences (11 May 2015, Groningen)
- 2015 **How the ear hears: Structure and function of synapses in the inner ear:** BCN PI Meeting, University Medical Center Groningen, the Netherlands (23 April 2015)
- 2014 **Synaptic organization of the inner ear:** Wolfson Centre for Age-Related Diseases, King's College London (15 December 2014)
- 2014 **From molecule to mechanism: understanding the efferent auditory system one ion channel at a time:** University of Oldenburg, Germany (12 December 2014)
- 2014 **Shining light on the inner ear: understanding the molecular and cellular basis of hearing:** Audiology Conference, Putten, the Netherlands (13 November 2014)

#### INTERNATIONAL MEETINGS ORGANIZED

- 2021 **FENS Forum 2022 Satellite Event (SE21): "The vestibular system: basic mechanisms, new research tools, and emerging treatments"** (8 July 2021, Paris, France)  
*Activity:* Symposium organizer  
*Goal:* Highlight research investigating the basic function of the vestibular system, new research tools to investigate the vestibular system, and emerging treatments for vestibular disorders, with topics linking to broader challenges in neuroscience and neurology  
*Significance:* This activity brings together experts in the field and identifies new areas of collaboration and funding
- 2021 **Society for Neuroscience Annual Meeting Mini-Symposium: "New insights into the neural mechanisms of sound encoding"** (8 November 2021, online)  
*Activity:* Symposium organizer (with Prof. Dr. Tobias Moser, University of Göttingen, Germany)  
*Goal:* Highlight recent research that has utilized a diversity of techniques—imaging, single cell RNA sequencing, and electrophysiology—to provide new insights into the mechanisms that contribute to the fast and reliable encoding of sound  
*Significance:* This activity brings together researchers (3 women and 3 men) from different career stages and countries to present recent work in the auditory system, highlighting the relevance to other sensory systems and disciplines of neuroscience
- 2021 **Ribbon Synapse Symposium** (Multiple dates beginning 22 April 2021, online)  
*Activity:* Co-organizer with Dr. Mark Rutherford (Washington University in St. Louis, MO, USA) and Dr. Jakob Neef (University Medical Center Göttingen, Germany)  
*Goal:* Highlight recent research in the specialized field investigating ribbon synapses  
*Significance:* This activity brings together experts in the field and provide a platform for young scientists

- 2020 **University of Groningen and University of Oldenburg Jubilee Symposium** (29 October 2020, online)  
*Activity:* Co-organizer with Prof. Dr. Christine Köppl (University of Oldenburg, Germany) and speaker  
*Goal:* Highlight collaborative research between the UMC Groningen and University of Oldenburg in neuroscience  
*Significance:* Features and strengthens collaborative research between the UMC Groningen and University of Oldenburg
- 2019 **Guyot Prize Symposium** (29 October 2019, UMC Groningen)  
*Activity:* Symposium organizer (with Prof. Dr. Pim van Dijk, UMC Groningen) and speaker  
*Goal:* Highlight excellent research in otology and award the prestigious Guyot prize  
*Significance:* This activity brought together junior and senior researchers from within and outside of the UMC Groningen to discuss advances in cochlear implants
- 2019 **Association for Research in Otolaryngology Annual (Mid-Winter) Meeting Symposium: "Beyond the Mouse: Comparative Approaches to Auditory Encoding"** (11 February 2019, Baltimore, MD, USA)  
*Activity:* Symposium organizer (with Prof. Dr. Christine Köppl, University of Oldenburg, Germany)  
*Goal:* Highlight recent research that examines the mechanisms that shape auditory signal encoding from cochlea to cortex leveraging a comparative approach  
*Significance:* This activity brought together researchers (2 women and 3 men) from different career stages, and countries to promote the use of a comparative approach to investigate the auditory and vestibular systems
- 2018 **Association for Research in Otolaryngology Annual (Mid-Winter) Meeting Symposium: Ion channels in the inner ear** (12 February 2018, San Diego, CA, USA)  
*Activity:* Symposium organizer (with Prof. Dr. Ruth Anne Eatock)  
*Goal:* Highlight recent research on the identification, localization and function of voltage and chemically gated ion channels in the inner ear  
*Significance:* This activity brings together researchers (4 women and 3 men) from different career stages, countries, and systems (auditory and vestibular) to showcase recent research activities
- 2017 **TIN-ACT: Tinnitus: Assessments, Causes and Treatments (H2020-MSCA-ITN-2017)** (2017-present, various locations within Europe and online)  
*Activity:* Organization of various international training events  
*Goal:* Provide excellent research, academic, and soft skills training to 11 international PhD students  
*Significance:* This activity supports the international training of PhD students

## EDUCATIONAL ACTIVITIES

*I currently serve as an instructor and coordinator of medical education at the University Medical Center Groningen and University of Groningen. In addition to ongoing activities, I have developed a variety of courses in neuroscience, physiology, and biology also at previous universities. These activities have given me ample experience creating effective learning environments, engaging students of diverse backgrounds, developing learning objectives and supporting materials, assessing student learning as well as teaching effectiveness, and, finally, developing my skills as an educator. I completed the Basiskwalificatie Onderwijs/University Teaching Qualification (BKO/UTQ) on 3 November 2017. My complete UTQ portfolio is available online ([here](#)).*

**Curriculum Coordination at UMC Groningen and University of Groningen**

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- 2022-present **Coordinator Semester 3.1 Bachelor Medicine Competency Development**  
Responsible for the coordination of competency development curriculum, especially scientific and professional training and assessment for third year medical students (over 400 students) and a large instructional team (over 30 diverse educators);  
Facilitate communication between the students and instructional team;  
Implement curriculum re-design in response to G2020 (a patient-centered medical curriculum) and COVID-19
- 2021-present **Co-Coordinator Semester 3.2 Bachelor Medicine**  
Responsible for the co-coordination of curriculum, especially scientific and professional training, and assessment of the BS Research Thesis requirements;  
Facilitated communication between the students, thesis supervisors, and instructional team;  
Implemented curriculum re-design in response to COVID-19
- 2020 **Co-Coordinator Semester 1.1 Bachelor Medicine**  
Responsible for the co-coordination of curriculum;  
Developed online learning and testing materials;  
Facilitated communication between the students and instructors;  
Implemented curriculum re-design in response to COVID-19
- 2018-2020 **Coordinator of Life Sciences, Pre-University College, Institute for Medical Education**  
Coordinate life sciences education as part of a one-year program to prepare international students for medical school at the University of Groningen;  
Responsible for the coordination, development, and implementation of curriculum as part of a team of Life Sciences instructors as well as coordination with English and Dutch language instructors;  
Led curriculum re-design and implementation in response to COVID-19
- 2018 **Coordinator Semester 3.2 Bachelor Dentistry**  
Responsible for the coordination of curriculum, development of testing and online materials, and communication between the students and instructors

**Courses Developed and Instructed at UMC Groningen and University of Groningen**

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- *BCN Functional Neuroscience – N track* (2014-present): Instruct the lecture and laboratory practical on the auditory and vestibular system as part of a team-taught course for MS students in the Research School of Behavioral and Cognitive Neurosciences
- *BCN Project Management Course Part I and II* (2015-present): Developed and co-instruct a multi-part workshop on project management competences targeted to PhD students in the Research School of Behavioral and Cognitive Neurosciences
- *BCN Lecture and Master Class* (6 June 2016): Organized the lecture and master class with Prof. Dr. Chris Lingle (Washington University, St. Louis, MO) for PhD students in the Research School of Behavioral and Cognitive Neurosciences
- *BCN Introduction Course* (2015-present): Co-instruct a workshop for students in the Research School of Behavioral and Cognitive Neurosciences
- *BCN Retreat and Poster Presentation* (26 March 2015): Provided constructive and critical feedback on students' scientific research and delivery skills to PhD students in the Research School of Behavioral and Cognitive Neurosciences

- *BCN Symposium: "Sensory systems: from molecule to mind"* (23 June 2016): Led organization (with Dr. Amalia Dolga) for a symposium targeting students and PIs in the Research School of Behavioral and Cognitive Neurosciences
- *Scientific Integrity for Researchers* (Spring 2017): Instructed a discussion and literature-based introduction to topics essential in scientific ethics and integrity for PhD students
- *Junior Scientific Masterclass: From Bed to Bench and Back (Triple-B) Lecture* (2015-present): Organize and deliver lectures with clinicians and audiologists from the ENT Department for Junior Scientific Masterclass students (medical students interested in opportunities to become involved in basic research)

### Continuing Education at UMC Groningen

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- 2020 **Slechthorendheid op latere leeftijd: biologische mechanismes, relatie met dementie, en behandeling door cochleaire implantatie:** Refereevond, Department of Otorhinolaryngology (21 January 2020); Role: Organized and spoke as part of continuing education event for ENT clinicians from the Netherlands
- 2015 **Of mice and men: Hidden hearing loss and tinnitus:** Nascholingsdag voor Audiologen en Audiologen-in-Opleiding (Nederlandse Vereniging voor Audiologie (11 December 2015); Role: Spoke as part of continuing education event to audiologists from the Netherlands

### Curriculum, Course, and Program Development at Previous Institutions

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#### Biology Curriculum in the Department of Biology University of North Carolina Wilmington

Led a team of instructors to integrate the series of courses that together define the first-year undergraduate biology curriculum in the Department of Biology at the University of North Carolina Wilmington. The goal of this endeavor was to ensure that undergraduate majors in Biology received a coherent learning experience that laid the foundation for advanced biology courses. To achieve this goal, I structured a pedagogical shift in course content to emphasize fundamental themes in biology.

#### Neuroscience Minor at the University of North Carolina Wilmington

Founded the interdisciplinary Neuroscience Minor at the University of North Carolina Wilmington together with Prof. Dr. Mark Galizio (Psychology Department). This minor closed a curriculum gap and aimed to better prepare interested students for postgraduate education in neuroscience-related fields.

#### Courses Developed and Instructed at the University of North Carolina Wilmington

- *Human Anatomy and Physiology:* Principal instructor for a large lecture and laboratory practical course targeted to BS students
- *Principles of Biology: Cells:* Principal instructor for a large lecture and laboratory practical course targeted to BS students
- *Sensory Biology: Windows to the World:* Principal instructor of a seminar course targeted to fourth-year B.Sc. students
- *Cellular and Molecular Biology:* Principal instructor for a lecture course targeted to MS/PhD students
- *Directed Individual Studies:* Principal instructor/advisor for applied learning experiences engaging third- and fourth-year BS students in my research laboratory

- *Cell and Molecular Biology*: Principal developer of an online course developed in cooperation with the University of North Carolina 2+2 system

### Courses Instructed at Stanford University

- *The Nervous System*: Teaching assistant for the laboratory/practical section of the neuroanatomy lecture and laboratory course designed for first-year MD and PhD students
- *Ion Channels and Membrane Physiology*: Teaching assistant for the lecture course taken by advanced PhD students

### PUBLIC AND PATIENT ORGANIZATION ENGAGEMENT ACTIVITIES

#### Engagement with the Public

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- 2021 **“Making sense of senses: Nobel Prize in Physiology or Medicine 2021”**  
<https://www.youtube.com/watch?v=GxH4Vjebq8o&t=58s>
- 2021 **“How are hair dryers and headphones killing your ears?”**  
<https://www.universiteitvannederland.nl/colleges-en/how-are-hair-dryers-and-headphones-killing-your-ears/> (
- 2021 **“Naked mole rats are nearly deaf because their ears can’t amplify sound”**  
**“Partial deafness helps African naked mole-rats hear at all”**  
**“Hearing loss in naked mole-rats is an advantage, not a challenge”**  
**“Naakte molrat helpt doofheid door veroudering begrijpen”**  
<https://www.newscientist.com/article/2253661-naked-mole-rats-are-nearly-deaf-because-their-ears-cant-amplify-sound/>  
<https://www.forbes.com/sites/rebeccacoffey/2020/09/09/partial-deafness-helps-african-naked-mole-rats-hear-at-all/>  
<https://enewsplanet.com/hearing-loss-in-naked-mole-rats-is-an-advantage-not-a-challenge/>  
<https://kennisinzicht.umcg.nl/Paginas/Naakte-molrat-helpt-dooft-hoorden-begrijpen.aspx>  
*Multiple short descriptions of my research for the public published in New Scientist, Forbes, and ENewsPlanet (3 September 2020)*
- 2020 **“Time for a new approach to hearing loss”** (14 January 2020)  
<https://www.rug.nl/news/2020/01/time-for-a-new-approach-to-hearing-loss?lang=en>  
*Short description of my research and relevance for the public for the University of Groningen website.*
- 2019 **Zpannend Zernike: backstage in the wondrous world of science and technology** (1 October 2019)  
<https://www.rug.nl/news/2019/10/zpannend-zernike-backstage-in-de-wondere-wereld-van-wetenschap-en-technologie?lang=en>  
*Highlights public engagement activities to promote science and scholarship of Young Academy Groningen members (researchers from the University of Groningen and UMC Groningen) I co-organized as part of Zpannend Zernike*
- 2018 **Knowledge is King! in the Harmonie square** (26 April 2018)  
<https://www.rug.nl/news/2018/04/kennis-is-koning-bij-de-rug-op-koningsdag2018>  
<https://www.rug.nl/news/2018/04/koningsdag2018-kennis-is-koning>

- Highlights the public engagement activity "Kennis is Koning" that I organized on behalf of the Young Academy Groningen to promote science and scholarship of researchers from the University of Groningen and UMC Groningen as part of Groningen's King's Day celebrations*
- 2017 **Research Minute Young Academy Groningen: Sonja Pyott** (21 September 2017)  
<https://www.youtube.com/watch?v=5libxBMYMmY>  
*Brief overview of my research and relevance for the public.*
- 2017 Press Release concerning the TIN-ACT Marie Curie grant (13 September 2017)  
[https://www.rug.nl/research/portal/clippings/press-release-concerning-the-tinact-marie-curie-grant\(2b5ce5b7-214f-46f0-bfac-51120e6de005\).html](https://www.rug.nl/research/portal/clippings/press-release-concerning-the-tinact-marie-curie-grant(2b5ce5b7-214f-46f0-bfac-51120e6de005).html)  
*Announcement of funding with a short description of the research and relevance for the public.*
- 2017 **"A Balancing Act Before the Onset of Hearing"** (15 April 2017)  
<https://hearinghealthfoundation.org/blogs/a-balancing-act-before-the-onset-of-hearing>  
*Short description of my research findings for a patient health organization supporting my research.*
- 2014 **Rosalind Franklin Fellow: Sonja Pyott** (2014)  
<https://www.youtube.com/watch?v=Kv74QMaSpMo>  
*Short description of my research and relevance for the public.*
- 2008 **North Carolina Biotechnology Center** (2008-2014)  
<https://www.ncbiotech.org/>  
*Developed a week-long course offered on multiple occasions to support biotechnology education at the secondary level*
- 2007 **Scientific American** (December 2007, p. 78-83)  
*Short description of my research and investigative tools for the public.*

### Engagement with Patient Organizations

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- 2017-present **European Federation of Hard of Hearing People**  
<https://efhoh.org/about-efhoh/tinnitus/>  
 Partner organization of TIN-ACT: Tinnitus: Assessments, Causes and Treatments (H2020-MSCA-ITN-2017)  
*Organize lay summaries of research projects and results available for members; serve as a liaison between members within the organization and PhD students to facilitate deeper understanding of the patient-side of tinnitus; document input for the direction of future research projects.*
- 2017-present **TinnitusHub**  
<https://www.tinnitushub.com/research/our-work/tin-act/>  
 Partner organization of TIN-ACT: Tinnitus: Assessments, Causes and Treatments (H2020-MSCA-ITN-2017)  
*Organize lay summaries of research projects and results published on their website.*
- 2017-present **Hearing Health Foundation**  
<https://hearinghealthfoundation.org/blogs/a-balancing-act-before-the-onset-of-hearing>  
*Provided a lay summary of research results for their online patient magazine.*