Stanford

Nesrine Benkafadar

Instructor, Otolaryngology (Head and Neck Surgery)

Bio

BIO

Dr. Nesrine Benkafadar obtained her Pharm.D from the University of Constantine in Algeria. She then joined the Institute for Neurosciences of Montpellier in France, where she completed a master's degree in Industrial Pharmacy and obtained her Ph.D in Biology and Health. She mainly worked on establishing a functional interaction between oxidative stress, DNA damage and cochlear cell aging. From there, she conducted postdoctoral research in Dr. Stefan Heller's lab at Stanford University. Her current research is focused on studying the early regenerative triggers in damaged avian cochlea with the overarching goal to characterize the series of events that trigger and execute cochlear hair cell regeneration. Her ultimate goal is to investigate key trigger genes to induce adult mammalian supporting cells in damaged cochlea to reenter the cell cycle toward hair cell regeneration.

ACADEMIC APPOINTMENTS

- Instructor, Otolaryngology (Head and Neck Surgery)

HONORS AND AWARDS

- Invited Speaker: FPA AUDITORY HORIZONS WORKSHOP, FONDATION POUR L'AUDITION (10/2024)
- Publication of "Regrowing Hair Cells and Nerve Connections to Restore Hearing in Birds", Hearing Health Foundation Blog (04/2024)
- NIDCD Early Career Research Award R21 Grant, NIH (03/2024)
- Invited Speaker, MidWinter Meeting, Association for Research in Otolaryngology (02/2024)
- Publication of "Insights could pave the way for biological treatments of human hearing loss", Hearing Health Foundation Blog (01/2024)
- "How birds regenerate hearing may lead to therapies for people with hearing loss", Stanford Medicine News & Events (01/2024)
- Bellucci Trainee Award, 5th Annual Bellucci Symposium on Hearing Research (05/2023)
- MidWinter Meeting Don Henderson Travel Award, Association for Research in Otolaryngology (02/2023)
- Best Poster Award, Otolaryngology Head and Neck Surgery, Research Day at Stanford Medical School (10/2022)
- Katharine McCormick Advanced Postdoctoral Scholar Fellowship to Support Women in Academic Medicine, Stanford School of Medicine (04/2022)
- Discovery Grant, The American Hearing Research Foundation (01/2022)
- Publication of "Several Novel Findings Describing Cochlear Hair Cell Regeneration in Birds", Hearing Health Foundation Newsletter (07/2021)
- Postdoctoral Fellowship program, Stanford Dean's Postdoctoral Fellowship (01/2019)
- Best Poster Award, Otolaryngology Head and Neck Surgery, Research Day at Stanford Medical School (10/2018)
- Very honorable PhD distinction with unanimous congratulations from the jury, The French National Institute of Health and Medical Research (02/2018)
- Positive comment of "Benkafadar N et al., EMBO Molecular Medicine" in "News & Views", EMBO Molecular Medicine, 9: 4-6, by Nonnekens J and Hoeijmakers JH (01/2017)

- Publication of “Cancers & audition: The end of the double penalty”, Languedoc-Roussillon INSERM Newspaper (12/2016)
- Best Poster Award, Ageing 2016 Meeting (06/2016)
- Graduate fellowship program, Foundation of the Future for Medical Research (10/2014)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Guest Editor, JoVE Methods Collection (2021 - present)
- Member, Association for Women in Science - AWIS (2020 - present)
- Member, Association for Research in Otolaryngology (2014 - present)
- Member, Society for Neuroscience (2013 - present)

PROFESSIONAL EDUCATION

- PhD, Institute for Neurosciences of Montpellier, FRANCE , Neurobiology and Health Science (2018)
- Msc, Faculty of Pharmacy. University of Montpellier. FRANCE , Research and development of Pre-clinical products (2014)
- PharmD, Faculty of Pharmacy. University of Constantine. ALGERIA , Pharmacy (2012)

PATENTS

- Nesrine Benkafadar, Florence Francois, Bernard Malfroy-Camine, Jean-Luc Puel and, Jing Wang. "United States Patent EP18306467 METHODS AND COMPOSITIONS FOR PREVENTING AND/OR TREATING AGE-RELATED HEARING LOSS", Institut National de la Santé et de la Recherche Médicale (INSERM) - Universite De Montpellier, May 14, 2020
- Nesrine Benkafadar, Julien Menardo, Jean-Luc Puel and, Jing Wang. "United States Patent WO2017125429A1 The use of a temporary inhibitor of p53 for preventing or reducing cancer relapse", Institut National de la Santé et de la Recherche Médicale (INSERM) - Universite De Montpellier, Jul 27, 2017

Publications

PUBLICATIONS

- **Anatomical and Molecular Insights into Avian Inner Ear Sensory Hair Cell Regeneration.** *Developmental biology*
  Miranda Portillo, L. S., Huang, A. P., Hosamani, I. V., Sanchez, C. N., Heller, S., Benkafadar, N.
  2025
- **Hyperosmotic sisomicin infusion: a mouse model for hearing loss.** *Scientific reports*
  Maraslioglu-Sperber, A., Blanc, F., Heller, S., Benkafadar, N.
  2024; 14 (1): 15903
- **Protocol for in vivo elimination of avian auditory hair cells, multiplexed mRNA detection, immunohistochemistry, and S-phase labeling.** *STAR protocols*
  Sato, M. P., Huang, A. P., Heller, S., Benkafadar, N.
  2024; 5 (2): 103118
- **Hair cell regeneration, reinnervation, and restoration of hearing thresholds in the avian hearing organ.** *Cell reports*
  Sato, M. P., Benkafadar, N., Heller, S.
  2024; 43 (3): 113822
- **An essential signaling cascade for avian auditory hair cell regeneration.** *Developmental cell*
  Benkafadar, N., Sato, M. P., Ling, A. H., Janesick, A., Scheibinger, M., Jan, T. A., Heller, S.
  2023
- **Topical Delivery of Elastic Liposomal Vesicles for Treatment of Middle and Inner Ear Diseases.** *ACS applied bio materials*
  Kashfi Sadabad, R., Xia, A., Benkafadar, N., Faniku, C., Preciado, D., Yang, S., Valdez, T. A.
  2022
- **Cell-type identity of the avian utricle.** *Cell reports*
  Scheibinger, M., Janesick, A., Benkafadar, N., Ellwanger, D. C., Jan, T. A., Heller, S.

2022; 40 (13): 111432

- **Avian auditory hair cell regeneration is accompanied by JAK/STAT-dependent expression of immune-related genes in supporting cells.** *Development (Cambridge, England)*
  Janesick, A., Scheibinger, M., Benkafadar, N., Kirti, S., Heller, S.
  2022
- **Cell-type identity of the avian cochlea.** *Cell reports*
  Janesick, A. n., Scheibinger, M. n., Benkafadar, N. n., Kirti, S. n., Ellwanger, D. C., Heller, S. n.
  2021; 34 (12): 108900
- **Transcriptomic characterization of dying hair cells in the avian cochlea.** *Cell reports*
  Benkafadar, N. n., Janesick, A. n., Scheibinger, M. n., Ling, A. H., Jan, T. A., Heller, S. n.
  2021; 34 (12): 108902
- **ROS-Induced Activation of DNA Damage Responses Drives Senescence-Like State in Postmitotic Cochlear Cells: Implication for Hearing Preservation.** *Molecular neurobiology*
  Benkafadar, N., François, F., Affortit, C., Casas, F., Ceccato, J. C., Menardo, J., Venail, F., Malfroy-Camine, B., Puel, J. L., Wang, J.
  2019
- **Reversible p53 inhibition prevents cisplatin ototoxicity without blocking chemotherapeutic efficacy.** *EMBO molecular medicine*
  Benkafadar, N., Menardo, J., Bourien, J., Nouvian, R., François, F., Decaudin, D., Maiorano, D., Puel, J., Wang, J.
  2017; 9 (1): 7-26
- **New Strategies for Improving the Quality of Life of Cancer Survivors: Reversible p53 Inhibition** *Journal of Cancer Science & Therapy*
  Benkafadar, N., Coyat, C., Lloyd, R., Puel , J., Wang, J.
  2017; 9(6): 490-491
- **Impairment of Visual Function and Retinal ER Stress Activation in Wfs1-Deficient Mice** *PLOS ONE*
  Bonnet Wersinger, D., Benkafadar, N., Jagodzinska, J., Hamel, C., Tanizawa, Y., Lenaers, G., Delettre, C.
  2014; 9 (5)