

Postdoctoral Positions in Auditory Neuroscience

Two positions are available in the laboratory of Dr. Ulrich Mueller in the Solomon H. Snyder Department of Neuroscience at the Johns Hopkins Medical Center in Baltimore (<https://neuroscience.jhu.edu/>). The successful applicants will join a research team with diverse expertise to study the mammalian auditory system. We are particularly interested in mechanotransduction by hair cells as well as in the mechanisms of auditory circuit assembly. Recently, we have branched out to other mechanosensory systems. We combine approaches based in mouse genetics, genomics, biochemistry, structural biology, cell biology, imaging, and electrophysiology for our research. One position is for a candidate with expertise in electrophysiology. The second position is for an applicant with expertise in molecular, imaging or structural approaches. No prior expertise in studying the auditory system is required. Applications should be addressed to Dr. Ulrich Mueller, and can be submitted by e-mail (umuelle3@jhmi.edu).

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Selected Publications

Cunningham, C.L., Qiu, X., Wu, Z., Zhao, B., Peng, G., Kim, Y.H., Lauer, A., and Müller, U. (2020). TMIE Defines Pore and Gating Properties of the Mechanotransduction Channel of Mammalian Cochlear Hair Cells. **Neuron** 107, 126-143.

Sun, S., Babola, T., Pregonig, G., So, K.S., Nguyen, M., Su, S.M., Palermo, A.T., Bergles, D.E., Burns, J.C., and Müller, U. (2018). Hair Cell Mechanotransduction Regulates Spontaneous Activity and Spiral Ganglion Subtype Specification in the Auditory System. **Cell** 174, 1247-1263.

Dionne, G., Qiu, X., Rapp, M., Liang, X., Zhao, B., Peng, G., Katsamba, P., Ahlsen, G., Rubinstein, R., Potter, C.S., Carragher, B., Honig, B., Müller, U., and Shapiro, L. (2018). The cis-dimeric architecture of Pcdh15 is critical for mechanotransduction. **Neuron** 99, 480-492.

Wu, Z., Grillet, N., Zhao, B., Cunningham, C., Harkins-Perry, S., Coste, B., Ranade, S., Zebarjadi, N., Beurg, M., Fettiplace, R., Patapoutian, A., and Müller, U. (2017). Mechanosensory hair cells express two molecularly distinct mechanotransduction channels. **Nat Neurosci** 20, 24-33.

Zhao B, Wu Z and Müller U. (2016) Murine Fam65b forms ring-like structures at the base of stereocilia critical for mechanosensory hair cell function. **eLife** 5:e14222.

Müller, U., and Barr-Gillespie, P.G. (2015). New treatment options for hearing loss. **Nat Rev Drug Discov** 14, 346-365.

Zhao, B., Wu, Z., Grillet, N., Yan, L., Xiong, W., Harkins-Perry, S., and Müller, U. (2014). TMIE Is an Essential Component of the Mechanotransduction Machinery of Cochlear Hair Cells. **Neuron** 84, 954-967.

Franco SJ, Gil-Sanz C, Martinez-Garay I, Espinosa A, Harkins-Perry SR, Ramos C, and Müller U. (2012). Fate-Restricted Neural Progenitors in the Mammalian Cerebral Cortex. **Science**, 337:746-749.

Xiong, W., Grillet, N., Elledge, H.M., Wagner, F.J., Zhao, B., Johnson, K.R., Kazmierczak, P., and Müller, U. (2012). TMHS is an integral component of the mechanotransduction machinery of cochlear hair cells. **Cell** 151.

Grillet, N., Xiong, W., Reynolds, A., Kazmierczak, P., Sato, T., Lillo, C., Dumont, R.A., Hintermann, E., Sczaniecka, A., Schwander, M., Williams, D., Kachar, B., Gillespie P.G., and Müller, U. (2009). Harmonin mutations cause mechanotransduction defects in cochlear hair cells. **Neuron** 62, 375-387.

Kazmierczak, P., Sakaguchi, H., Tokita, J., Wilson-Kubalek, E.M., Milligan, R.A., Müller, U., and Kachar, B. (2007). Cadherin 23 and protocadherin 15 interact to form tip-link filaments in sensory hair cells. **Nature** 449, 87-91.

Siemens, J., Lillo, C., Dumont, R.A., Reynolds, A., Williams, D.S., Gillespie, P.G., and Müller, U. (2004). Cadherin 23 is a component of the tip link in hair-cell stereocilia. **Nature** 428, 950-955.