

**Personal Data**

Title	Prof. Dr. rer. nat.
First name	Carolin
Name	Wichmann
Current position	Professor (W2)
Current institution(s)/site(s), country	Institut für Auditorische Neurowissenschaften Universitätsmedizin Göttingen Göttingen, Germany
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**Qualifications and Career**

Stages	Periods and Details	
Degree programme	1993 - 1999	Studies of Biology (Diploma), University of Göttingen, Germany
Doctorate	1999 - 2002	Dr. rer. nat., Supervisor: Prof. Dr. F. Mayer, "Spezifische Kopplung von Enzymen an Liposomenmembranen", Institute for Microbiology and Genetics, University of Göttingen, Germany
Stages of academic/ professional career	Since 2016	W2 Professor "Molecular Ultrastructure of Synapses", Institute for Auditory Neuroscience, University Medical Center Göttingen, Germany
	2011 - 2016	Group Leader in the InnerEarLab University Medical Center Göttingen (Group: Molecular Architecture of Synapses), Department of Otolaryngology, Germany (since January 1st 2015: Institute for Auditory Neuroscience)
	2010 - 2011	Research Associate, Freie Universität Berlin, Germany (Prof. Dr. Stephan J. Sigrist)
	2008 - 2010	Research Associate at the Charité Berlin, Germany (Prof. Dr. S.J. Sigrist)
	2006 - 2008	Research Associate, Bio-Imaging Center, University of Würzburg, Germany (Prof. Dr. S.J. Sigrist)
	2005 - 2006	Research Associate at the Clinical Neurobiology, University of Würzburg, Germany (Prof. Dr. Manfred Heckmann/ Prof. Dr. S.J. Sigrist)
	2002 - 2005	Research Associate at the European Neuroscience Institute, University Medical Center Göttingen, Germany (Dr. S.J. Sigrist)

**Engagement in the Research System**

Since 2021	Board member of the Collaborative Research Centre (CRC) 1286
Since 2017	Representative of the BIN-research groups in the BIN-steering committee

Since 2015	Board member of “Sensory and Motor Neuroscience” Program, Göttingen Graduate School for Neuroscience, Biophysics and Molecular Biosciences
2018 - 2022	Board member of the Collaborative Research Centre (CRC) 889

## Scientific Results

### Category A

- Chen H, Monga M, *int. al.*, Brose N, Kusch K, **Wichmann C**, Strenzke N, Vona B, Preobraschenski J, Moser T (2024) Ca<sup>2+</sup>-binding to the C2E domain of otoferlin is required for hair cell exocytosis and hearing. *Protein Cell* 15(4):305-312. doi: [10.1093/procel/pwad058](https://doi.org/10.1093/procel/pwad058) (OA)  
*Significance:* Collaboration with Brose, Preobraschenski, Vona, Strenzke, and Moser labs combining bottom-up and top-down analysis of otoferlin function supported by CRC 889. We contributed ultrastructural analysis of the mutants.
- Hintze A\*, Lange F\*, Steyer AM, Anstatt J, Möbius W, Jakobs S#, **Wichmann C#** (2023) Developmental changes of the mitochondria in the murine anteroventral cochlear nucleus. *iScience* 27:108700. doi: [10.1016/j.isci.2023.108700](https://doi.org/10.1016/j.isci.2023.108700) (OA)  
*Significance:* Analysis of active zones and mitochondria in a deafness model (otoferlin-KOs) using electron tomography and focused ion beam scanning electron microscopy, the latter in collaboration with the Möbius lab. Supported by the CRC 1286.
- Michanski S\*, Henneck T, Mukhopadhyay M, Steyer AM, Agüi Gonzalez P, Grewe K, Ilgen P, Gültas M, Fornasiero EF, Jakobs S, Möbius W, Vogl C, Pangršič T, Rizzoli SO, **Wichmann C\*** (2023) Age-dependent structural reorganization of utricular ribbon synapses. *Front Cell Dev Biol* 11:1178992. doi: [10.3389/fcell.2023.1178992](https://doi.org/10.3389/fcell.2023.1178992) (OA)  
*Significance:* Collaboration with Rizzoli and Pangršič labs demonstrating a first analysis of ribbon synapse development in the utricle. The results are the basis for project A05 of the CRC 1690 proposal. Supported by CRC 889 and CRC 1286.
- Michanski S\*, Kapoor R\*, Steyer AM, Möbius W, Frühholz I, Ackermann F, Gültas M, Garner CC, Hamra KF, Neef J, Strenzke N, Moser T#, **Wichmann C#** (2023) Piccolino is required for ribbon architecture at cochlear inner hair cell synapses and for hearing. *EMBO Rep* 24:e56702. doi: [10.15252/embr.202256702](https://doi.org/10.15252/embr.202256702)  
*Significance:* Collaboration with Moser lab demonstrating the effect on inner hair cell ribbon synapses of lacking the presynaptic protein piccolo. We performed 3D EM analysis. Supported by the CRC 889.
- Chakrabarti R, Tobon MJ, Slitin L, Redondo-Canales M, Hoch G, Slashcheva M, Fritsch E, Bodensiek K, Özçete ÖD, Gültas M, Michanski S, Opazo F, Neef J, Pangrsic T, Moser T#, **Wichmann C#** (2022) Optogenetics and electron tomography for structure-function analysis of cochlear ribbon synapses. *eLife* 11:e79494. doi: [10.7554/eLife.79494](https://doi.org/10.7554/eLife.79494) (OA)  
*Significance:* Collaboration with Moser and Pangršič labs showing a structure-function analysis of inner hair cell ribbon synapses using optogenetics. Supported by CRC 889.
- Hintze A, Gültas M, Semmelhack SA, **Wichmann C** (2021) Ultrastructural maturation of endbulb of Held active zones comparing wild-type and otoferlin-deficient mice. *iScience* 24(4):102282. doi: [10.1016/j.isci.2021.102282](https://doi.org/10.1016/j.isci.2021.102282) (OA)  
*Significance:* Analysis of active zones in a deafness model (otoferlin-KO mice) using electron tomography. Supported by CRC 1286.
- Jean P, Anttonen T, Michanski S, de Diego AMG, Steyer AM, Neef A, Oestreicher D, Kroll J, Nardis N, Pangršič T, Möbius W, Ashmore J, **Wichmann C#**, Moser T# (2020)

Macromolecular and electrical coupling between inner hair cells in the rodent cochlea. *Nat Commun* 11:3208. doi: [10.1038/s41467-020-17003-z](https://doi.org/10.1038/s41467-020-17003-z) (OA)

*Significance:* Collaboration with Moser and Pangršič labs working on inner hair cell electrical coupling. We used various electron microscopic techniques to find connections between inner hair cells, also using focused ion beam scanning electron microscopy in collaboration with Wiebke Möbius. Supported by CRC 889.

8. Michanski S, Smaluch K, Steyer AM, Chakrabarti R, Setz C, Oestreicher D, Fischer C, Möbius W, Moser T, Vogl C#, **Wichmann C**# (2019) Mapping developmental maturation of inner hair cell ribbon synapses in the apical mouse cochlea. *Proc Natl Acad Sci U S A* 116:6415-6424. doi: [10.1073/pnas.1812029116](https://doi.org/10.1073/pnas.1812029116) (OA)

*Significance:* Collaboration with Moser lab on inner hair cell ribbon synapse development. We used different imaging techniques to analyse ribbon synapse assembly. This study sets also the basis for the current project application and was supported by CRC 889.

9. Chakrabarti R, Michanski S, **Wichmann C** (2018) Vesicle sub-pool organization at inner hair cell ribbon synapses. *EMBO Rep* 19pii:e44937. doi: [10.15252/embr.201744937](https://doi.org/10.15252/embr.201744937) (OA)

*Significance:* The project describes the effect of an otoferlin point mutation on inner hair cell ribbon synapse vesicle pools. We combined near-to-native structural preservation with electron tomography. The project was supported by CRC 889.

10. Vogl C#, Cooper BH, Neef J, Wojcik SM, Reim K, Reisinger E, Brose N, Rhee JS, Moser T#, **Wichmann C**# (2015) Unconventional molecular regulation of synaptic vesicle replenishment in cochlear inner hair cells. *J Cell Science* 128:638-44. doi: [10.1242/jcs.162099](https://doi.org/10.1242/jcs.162099) (OA)

*Significance:* Collaboration with Brose and Moser labs investigating the vesicle pools on ribbon synapses in otoferlin-KO mice. This study demonstrates fine structural changes in otoferlin mutants. Supported by CRC 889.

\*Equal contribution, #Shared correspondence.

(OA): Publicly available (e.g. open access, open archive, preprint, free access, etc.).

### Academic Distinctions

1999 - 2002 Fellowship for PhD thesis, Research Training Group 227 „Chemische Aktivitäten von Mikroorganismen“

### Data protection and consent to the processing of optional data

If you provide voluntary information (marked as optional) in this CV, your consent is required.

Please confirm your consent by checking the box below.