

Tino Pleiner, PhD

■ Stanford University, 94305 Stanford, CA, USA ■ pleiner@stanford.edu ■ Updated 02/26/24

Education

04/2012-05/2016 **Georg-August University of Göttingen, Germany**
Ph.D. *summa cum laude* in Molecular Biology
Advisor: Prof. Dr. Dirk Görlich

09/2010-03/2012 **Georg-August University of Göttingen, Germany**
M.Sc. in Molecular Biology, Grade: A
Advisor: Prof. Dr. Dirk Görlich

10/2007-08/2010 **University of Leipzig, Germany**
B.Sc. with Honors in Biochemistry, Grade: A (1.2)
Advisor: Prof. Dr. Mario Mörl

Professional Appointments

06/2023 - **Assistant Professor of Molecular & Cellular Physiology**
Stanford University, School of Medicine, Stanford, CA, USA.

Research Experience

11/2017- 05/2023 **Postdoctoral Scholar**
California Institute of Technology, Pasadena, CA, USA.
Advisor: Rebecca M. Voorhees, Ph.D.

- Gained mechanistic and structural insights into membrane protein biogenesis by the essential insertase ‘ER membrane protein complex’ (EMC)
- Solved first structure ever of the nine-subunit human EMC by cryo-EM in collaboration with other lab members
- Revealed first insights into EMC function with cell-based reporter assays
- Demonstrated that EMC assembly is highly regulated in human cells and requires the essential stress-responsive kinase WNK1 as an assembly factor

04/2012-10/2017 **Ph.D. summa cum laude**
Max Planck Institute for Biophysical Chemistry, Göttingen, Germany.
Advisor: Dr. Dirk Görlich

- Established an academic facility for rapid nanobody discovery from alpacas
- Developed site-specific fluorescent labeling strategy for nanobodies and used them as ultra-small immunolabels for super-resolution microscopy
- Generated freely available toolbox of bright ‘secondary nanobodies’ against mouse and rabbit IgG that rival the signal amplification effect of conventional polyclonal antibodies
- Established single-step strategy to natively purify endogenous protein complexes in high yield and purity e.g. for cryo-EM
- Used nanobodies as intracellular inhibitors of nucleocytoplasmic transport

09/2011-03/2012 **M.Sc. Student**
Max Planck Institute for Biophysical Chemistry, Göttingen, Germany.
Advisor: Dr. Dirk Görlich

- Functional analysis of nuclear pore complex permeability in the *Xenopus* egg extract-based nuclear reconstitution system using confocal microscopy

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Awards and Fellowships

- 07/2019-09/2021 Fellowship of the German research foundation (DFG)
10/2018 37th Animal welfare prize by German Federal Ministry for Food and Agriculture
06/2018-06/2019 Caltech Ross fellowship
09/2016 Poster prize at the '13th Horizons in Molecular Biology Symposium'
07/2014 Selected participant of the '64th Lindau Nobel Laureate Meeting',
nominated by Göttingen Graduate School GGNB
09/2010-09/2011 International Max Planck Research School support
12/2010 Study prize for best B.Sc. Biochemistry degree, University of Leipzig
07/2009-03/2012 Fellowship of the German Academic Scholarship Foundation
(Studienstiftung des deutschen Volkes)

Original Peer-reviewed Research Publications (10):

(*denotes equal contribution co-first- and † denotes co-corresponding authorship)

10. Stevens, T.A., Tomaleri, G.P., Hazu, M., Wei, S., Nguyen, V.N., DeKalb, C., Voorhees, R.M.† and **Pleiner, T.**† (2024) A nanobody-based strategy for rapid and scalable purification of human protein complexes. *Nat. Protocols* Jan;19(1):127-158. doi: 10.1038/s41596-023-00904-w.
9. **Pleiner, T.***, Hazu, M.*, Pinton Tomaleri, G.*, Nguyen, V.N., Januszyk, K. and Voorhees, R.M. (2023) A selectivity filter in the ER membrane protein complex limits protein misinsertion at the ER. *J. Cell. Biol.* 222 e202212007.
8. **Pleiner, T.**; Hazu, M.; Pinton Tomaleri, G.; Januszyk, K.; Oania, R.S.; Sweredoski, M.J.; Moradian, A.; Guna, A.; Voorhees, R.M. (2021) WNK1 is an assembly factor for the human ER membrane protein complex. *Mol. Cell*, 81, 2693-2704.e12.
7. **Pleiner, T.***; Pinton Tomaleri, G.*; Januszyk, K.*; Inglis, A.J.; Hazu, M.; Voorhees, R.M. (2020) Structural basis for membrane insertion by the human ER membrane protein complex. *Science* 369(6502):433-436.
6. Aksu, M.*; **Pleiner, T.***; Karaca, S.; Kappert, C.; Dehne, H.J.; Seibel, K.; Urlaub, H.; Bohnsack, M.; Görlich, D. (2018) Xpo7 is a broad-spectrum exportin and a nuclear import receptor. *J. Cell Biol.* 217, 1143-1154.
5. **Pleiner, T.†**; Bates, M.†; Görlich, D.† (2018) A toolbox of anti-mouse and anti-rabbit IgG secondary nanobodies. *J. Cell Biol.* 217(3):1143-1154.
4. Göttfert, F.; **Pleiner, T.**; Heine, J.; Westphal, V.; Görlich, D.; Sahl, S.; Hell, S. (2017) Strong signal increase in STED fluorescence microscopy by imaging regions of subdiffraction extent. *PNAS*. 114(9):2125-2130.
3. **Pleiner, T.**; Bates, M.; Trakhanov, S.; Lee, C.T.; Schliep, J. E.; Chug, H.; Böhning, M.; Stark, H.; Urlaub, H.; Görlich, D. (2015) Nanobodies: site-specific labeling for super-resolution imaging, rapid epitope-mapping and native protein complex isolation. *eLife*. 4; e11349.
2. Chug, H.; Trakhanov, S.; Hülsmann, B.; **Pleiner, T.**; Görlich, D. (2015) Crystal structure of the metazoan Nup62-Nup58-Nup54 nucleoporin complex. *Science*. 350(6256): 106-10.
1. Migliorini, E.; Thakar, D.; Sadir, R.; **Pleiner, T.**; Baleux, F.; Lortat-Jacob, H.; Coche-Guerente, L.; Richter, R.P. (2014) Well-defined biomimetic surfaces to characterize glycosaminoglycan-mediated interactions on the molecular, supramolecular and cellular levels. *Biomaterials*. 35(32):8903-15.

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Preprints

2. Page, K.R.*, Nguyen, V.N.*, **Pleiner, T.***, Tomaleri, G.P., Wang, M.L., Guna, A., Wang, T.Y., Chou, T.F., Voorhees, R.M. (2023) Role of a holo-insertase complex in the biogenesis of bio-physically diverse ER membrane proteins. *bioRxiv* doi: <https://doi.org/10.1101/2023.11.28.569054>
1. Colom, M.S., Fu, Z., Güttler, T., Trakhanov, T., Srinivasan, V., Gregor, K., **Pleiner, T.** Görlich, D. (2023) Nucleoporin-binding nanobodies that either track or inhibit nuclear pore complex assembly *bioRxiv* doi: <https://doi.org/10.1101/2023.09.12.557426>

Presentations

- 02/13/2024 **Stanford Synthetic Biology Tea Talk**
Shriram Center. Invited talk.
- 10/23/2023 **Stanford Department of Biochemistry Retreat**
Fallen Leaf Lake, South Lake Tahoe, CA, USA. Invited talk.
- 09/07/2023 **Stanford Department of Molecular & Cellular Physiology Retreat**
Asilomar Conference Grounds, Pacific Grove, CA, USA. Invited talk.
- 06/14/2023 **FASEB Science Research Conference (SRC) - The Endoplasmic Reticulum.**
Melbourne, FL, USA. Selected talk.
- 09/16/2022 **Stanford Department of Molecular & Cellular Physiology Retreat**
Santa Cruz. Invited talk.
- 02/09/2022 **Stanford University, Stanford, CA, USA.**
Virtual. Invited talk.
- 11/22/2021 **Freie Universität (FU) Berlin, Germany.**
Invited talk.
- 11/12/2021 **European Molecular Biology Laboratory (EMBL) Heidelberg, Germany.**
Invited talk.
- 11/05/2021 **European Molecular Biology Laboratory (EMBL) Heidelberg, Germany.**
Invited talk.
- 08/12/2021 **University of Regensburg, Germany. SFB960 /RCB colloquium.**
Virtual. Invited talk.
- 07/19/2021 **Gordon Conference - Molecular Membrane Organization.**
Virtual. Selected talk.
- 06/23/2021 **FASEB Science Research Conference (SRC) - The Endoplasmic Reticulum.**
Virtual. Selected talk.
- 03/16/2021 **Membrane Translocation II: The ER and bacterial inner membrane.**
Virtual conference. Invited talk.
- 08/19/2020 **California Institute of Technology, Pasadena, CA, USA.**
Summer Postdoc Seminar Series. Virtual. Invited talk.
- 06/19/2020 **ASBMB Lipid Research Division Seminar Series.**
Virtual. Invited talk.
- 10/11/2018 **Animal welfare prize award ceremony. Federal Institute for Risk Assessment,**
Berlin, Germany. Invited talk.
- 09/28/2018 **California Institute of Technology. Division of Biology and Biological**
Engineering (BBE) Retreat. Long Beach, CA, USA. Selected talk.
- 04/10/2017 **MRC Laboratory for Molecular Biology (LMB) Cambridge, UK.**
Invited talk.
- 12/04/2016 **ASCB annual meeting, San Francisco, CA, USA.**
Poster presentation.
- 09/13/2016 **13th Horizons in Molecular Biology, Göttingen, Germany.**
Poster presentation. Best poster prize.

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Presentations (continued)

- 09/11/2016 **The EMBO Meeting 2016, Mannheim, Germany.**
Poster presentation.
- 03/31/2016 **67th Mosbach colloquium on Protein Design, Mosbach, Germany.**
Poster presentation.
- 09/15/2015 **12th Horizons in Molecular Biology, Göttingen, Germany.**
Poster presentation.
- 06/24/2015 **Max Planck Institute for Biophysical Chemistry, Göttingen, Germany.**
Campus seminar. Invited talk.
- 11/04/2013 **PEGS Europe, Protein and antibody engineering summit, Lisbon, Portugal.**
Poster presentation.
- 07/23/2012 **20th Jerusalem School in Life Sciences, Jerusalem, Israel.**
'Nuclear organization, dynamics and activity'; Poster presentation.

Teaching & Mentoring Experience

- 2021 Supervision of research technician in Voorhees lab (Sophia Wei)
- 2020-2023 Supervision of graduate student in Voorhees lab (Masami Hazu)
- 2020 Supervision of lab rotation student in Voorhees lab (2 months) (Masami Hazu)
- 2018 Supervision of lab rotation student in Voorhees lab (2 months) (Shilong Gao)
- 2014-2017 Supervision of research technician in Görlich lab (3 years) (Jens Krull)
- 2014-2015 Supervision of M.Sc. student in Görlich lab (6 months) (Marc Böhning)
- 2014-2015 Supervision of lab rotation student in Görlich lab (2 months) (Marc Böhning)
- 2014-2015 Lecture and supervision of a practical course on 'recombinant protein expression and purification' for graduate students within GGNB, Göttingen, Germany.
- 2014-2015 Tutoring for IMPRS for Molecular Biology, GGNB, Göttingen, Germany.
Meeting with students and answering question sets of the associated lectures.

Outreach

- 2023 **1st Generation Mentorship Program, Stanford University**
- 2021-2023 **Diversity, Equity & Inclusion (DEI) Representative** at Caltech BBE division
- 10/16/2017 **Short film describing my work on alpaca-derived nanobodies** produced by a professional film team on behalf of the Max Planck Society to promote understanding for the use of animals in research. (video in German).
Link: <https://youtu.be/wZrX8KG7IYg?t=400>
Featured on German TV e.g.: https://youtu.be/vxX_3vdHVhQ?t=81
- 07/09/2017 **Lecture and guided tour through alpaca facility** for undergraduate students of the University of Osnabrück, Germany at MPIbpc Göttingen.
- 11/19/2015 **Lecture, experiments and guided tour through alpaca facility** for high school students from Lindau, Germany at MPIbpc Göttingen.
- 07/23/2015 **Public 'Science slam' presentation** at summer festival of MPIbpc Göttingen.

Extracurricular Activities

- 2013 **Organization of the 10th 'Horizons in Molecular Biology' conference**
International Ph.D. Student Symposium at MPIbpc Göttingen; Head of Planning and Coordination. Delivered opening speech of the symposium.
- 2012 **Organization of the 9th 'Horizons in Molecular Biology' conference**
International Ph.D. Student Symposium at MPIbpc Göttingen; Public Relations.
- 2012-2013 **Graduate student representative for IMPRS for Molecular Biology program**