

Tino Pleiner, PhD

■ Stanford University, 94305 Stanford, CA, USA ■ pleiner@stanford.edu ■ Updated 09/02/24

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

07/2024	Donald E. and Delia B. Baxter Faculty Scholar
07/2019-09/2021	Postdoctoral 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 postdoctoral 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)

Manuscript Review

Nature Chemical Biology
Nature Structural and Molecular Biology

University Service

Graduate Admission committee member, Department of Molecular & Cellular Physiology,
Stanford University

Original Peer-reviewed Research Publications (12)

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

12. 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. (2024) Role of a holo-insertase complex in the biogenesis of bio-physically diverse ER membrane proteins. *Mol. Cell* doi: 10.1016/j.molcel.2024.08.005
11. Colom, M.S., Fu, Z., Güttler, T., Trakhanov, T., Srinivasan, V., Gregor, K., **Pleiner, T.** Görlich, D. (2024) Nucleoporin-binding nanobodies that either track or inhibit nuclear pore complex assembly *EMBO J.* 43, 2198-2232.
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.

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Original Peer-reviewed Research Publications (continued)

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

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.

Patents

- 2021 Görlich, D. et al. Therapeutic and diagnostic vhh antibodies against sars-cov-2 and methods for their enhancement (pending). US20230303664A1
- 2018 Görlich, D.; **Pleiner, T.** Anti-IgG Nanobodies. (pending)
US20240018267A1

Presentations

- 05/13/2024 **Stanford Basic Science & Engineering Initiative (BASE) CAMP**
Biomedical Innovations Building. Invited talk.
- 04/27/2024 **Cold Spring Harbor Meeting on Protein Homeostasis**
Cold Spring Harbor. Invited talk.
- 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.

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Presentations (continued)

- 07/19/2021 **Gordon Research 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.
- 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 **Protein and antibody engineering summit (PEGS) Europe, 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

- 2024- Supervision of graduate student (Caroline Scheuing)
- 2024- Supervision of postdococ (Mahamaya Biswal)
- 2023- Mentoring a First Generation Graduate Student (Leyna Doung)
- 2023- Supervision of research technician (Marinda Stanton)
- 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.

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Outreach

- 2023 **1st Generation Mentorship Program, Stanford University**
2021-2023 **Diversity, Equity & Inclusion (DEI) Representative** at Caltech BBE division
10/2017 **Professional short film describing my PhD work on alpaca-derived nanobodies**
produced by 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: 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 Max Planck Institute Göttingen.
- 11/19/2015 **Lecture, experiments and guided tour through alpaca facility** for high school students from Lindau, Germany at Max Planck Institute Göttingen.
- 07/23/2015 **'Science slam' presentation** at summer festival of Max Planck Institute Göttingen.

Extracurricular Activities

- 2013 **Organization of the 10th 'Horizons in Molecular Biology' conference**
International Ph.D. Student Symposium at Max Planck Institute 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 Max Planck Institute Göttingen;
Public Relations.
- 2012-2013 **Graduate student representative for International Max Planck Research School Molecular Biology program**