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## BIOGRAPHICAL SKETCH

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NAME HARTL, F. Ulrich	POSITION TITLE Prof. of Biochemistry		
eRA COMMONS USER NAME	Chair of the Department of Cellular Biochemistry, Max Planck Institute of Biochemistry		
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Heidelberg, Germany	M.D.	1982	Medicine
University of Heidelberg, Germany	Dr. med.	1985	Biochemistry
Postdoc, University of Munich with Walter Neupert		1985-1987	Biochemistry
Postdoc, UCLA with William Wickner		1990-1991	

### A. Personal Statement

Research in my laboratory focuses on the mechanisms of protein folding and quality control in the cell. Our goal is to reach a comprehensive understanding, at the structural and functional level, of how the machinery of molecular chaperones assists folding through the cooperation of co- and post-translational mechanisms. A long-standing interest is to understand how the cylindrical chaperonins of the Hsp60 type promote and modulate the folding process. A second research focus concerns the molecular mechanisms of proteotoxicity in diseases associated with protein misfolding and aggregation. Here we wish to understand how the cellular machinery of protein homeostasis (proteostasis) normally provides protection and why these defense mechanisms increasingly fail during aging, facilitating the manifestation of neurodegenerative diseases and other disorders. In understanding the proteostasis network we are increasingly using systems-based approaches, including quantitative proteomics and genetic screens.

### B. Positions and Honors

#### Positions and Employment

1987-1990 Group leader, Institute of Physiological Chemistry, University of Munich  
1991-1997 Associate Member and Member with tenure, Sloan-Kettering Institute, New York  
Professor of Cell Biology, Cornell University, New York  
1994-1997 Associate Investigator, Howard Hughes Medical Institute  
since 1997 Director at the Max Planck Institute of Biochemistry, Department of Cellular Biochemistry

#### Other experience and professional memberships

since 1996 Member of Editorial Board, The Journal of Cell Biology  
since 1999 Member of Editorial Board, The EMBO Journal  
2001-2003 Vice President of the German Society for Biochemistry and Molecular Biology  
2003-2005 President of the German Society for Biochemistry and Molecular Biology  
since 2004 Member of the Editorial Committee, The Annual Review of Biochemistry  
2005-2007 Chairman of the Biomedical Section of the Max Planck Society  
since 2006 Member of the Editorial Board, Molecular Cell  
since 2012 Member of the Editorial Board, PNAS

#### Honors and Awards (selection):

1997 Lipmann Award of the American Society of Biochemistry and Molecular Biology  
2000 Foreign Honorary Member of the American Academy of Arts and Sciences  
2002 Gottfried Wilhelm Leibniz-Prize of the Deutsche Forschungsgemeinschaft (German Research Council)  
2002 Member Leopoldina, German Academy of Sciences  
2004 Gairdner Foundation International Award, Canada  
2005 Ernst Jung-Prize for Medicine  
2006 Stein and Moore Award of the Protein Society, USA  
2006 Koerber European Science Award  
2007 Wiley Prize in Biomedical Sciences, Rockefeller University, USA

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- 2008 Lewis S. Rosenstiel Award, Brandeis University, USA
- 2008 Louisa Gross Horwitz Prize, Columbia University, USA
- 2009 Otto Warburg Medal of the German Society for Biochemistry and Molecular Biology (GBM)
- 2010 Heineken Prize for Biochemistry and Biophysics, Netherlands
- 2011 Foreign Associate of the National Academy of Sciences, USA
- 2011 Lasker Award for Basic Medical Research, New York, USA
- 2011 Massry Prize, Los Angeles, USA
- 2011 Heinrich Wieland-Prize of the Boehringer Ingelheim Foundation
- 2012 Shaw Prize in Life Science and Medicine, Hong Kong
- 2013 Herbert Tabor Award of ASBMB, USA
- 2019 Paul Ehrlich and- Ludwig Darmstaedter-Prize (University of Frankfurt)
- 2019 Dr. Paul Janssen Award for Biomedical Research
- 2020 Breakthrough Prize in Lifesciences
- 2022 Nakasone Award for Frontier Research of the Human Frontier Science Program
- 2022 ERC Advanced Grant
- 2023 Schleiden Medal, German Academy of Sciences (Leopoldina)

**C. Publications** (as of 7/2023: 320 publications, ~84,000 citations, h-index = 141; source Google Scholar)

**Most relevant to the current application**

1. Balchin, D., Milicic, G., Strauss, M., Hayer-Hartl, M., and **Hartl, F.U.** (2018). Pathway of actin folding directed by the eukaryotic chaperonin TRiC. *Cell* 174, 1507-1521.
2. Zhao, L., Castanié-Cornet, M.-P., Kumar, S., Genevaux, P., Hayer-Hartl, M. and **Hartl, F.U.** (2021). Bacterial RF3 senses chaperone function in co-translational folding. *Mol Cell* 81, 2914–2928.
3. Frottin, F., Schueder, F., Tiwary, S., Gupta, R., Körner, R., Schlichthaerle, T., Cox, J., Jungmann, R., **Hartl, F.U.\*** and Hipp, M.S.\* (2019). The nucleolus functions as a phase-separated protein quality control compartment. *Science* 365, 342-347.
4. Imamoglu, R., Balchin, D. Hayer-Hartl., M. and **Hartl, F.U.** (2020). Bacterial Hsp70 resolves misfolded states and accelerates productive folding of a multi-domain protein. *Nat Commun.*, 11(1):365. doi: 10.1038/s41467-019-14245-4. PMID: 31953415.
5. Müller, M.B.D., Kasturi, P., Jayaraj, G.G. and **Hartl, F.U.** (2023). Mechanisms of readthrough mitigation reveal principles of GCN1 mediated translational quality control. *Cell*, in press.

**Additional recent publications**

1. Wang, H., Yan, X, Aigner, H., Bracher, A., Nguyen, N.D., Hee, W.Y., Long, B.M., Price, G.D., **Hartl, F.U.** and Hayer-Hartl, M. (2019). Rubisco condensate formation by CcmM in  $\beta$ -carboxysome biogenesis. *Nature* 566, 131-135.
2. Broch-Trentini, D., Pecoraro, M., Tiwary, S., Cox, J., Mann, M., Hipp, M.S., and **Hartl, F.U.** (2020). Role for ribosome-associated quality control in sampling proteins for MHC class I-mediated antigen presentation. *Proc Natl Acad Sci U S A.*, Feb 11. pii: 201914401. doi: 10.1073/pnas.1914401117.
3. Klaips, C.L., Gropp, M.H.M., Hipp, M.S. and **Hartl, F.U.** (2020). The Sis1 chaperone acts as a critical regulator of the stress response to protein aggregation and elevated temperature. *Nature Commun.*, Dec 8;11(1):6271. doi: 10.1038/s41467-020-20000-x, PMID: 33293525.
4. Saha, I., Yuste-Checa, P., Da Silva Padilha, M., Guo, Q., Körner, R., Holthusen, H., Trinkaus, V.A., Dudanova, I., Fernandez Busnadiego, R., Baumeister, W., Sanders, D.W., Gautam, S., Diamond, M.I., **Hartl, F.U.\*** and Hipp, M.S.\* (2023). The AAA+ chaperone VCP disaggregates Tau fibrils and generates aggregate seeds. *Nature Commun.*, 2023 Feb 2;14(1):560. doi: 10.1038/s41467-023-36058-2. PMID: 36732333.
5. Gropp, M.H.M., Klaips, C.L. and **Hartl, F.U.** (2022). Formation of toxic oligomers of polyQ-expanded Huntingtin by prion-mediated cross-seeding. *Mol Cell* 82, 4290-4306.

**D. Research Support**

**Ongoing Research Support**

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