

Curriculum vitae: **Karin Römisch**

Current address: Professor of Microbiology
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Education and Training

University of Konstanz, Germany:

1982-1987 biology undergraduate; diploma thesis: "Cloning of the *mall* gene of *E.coli* and identification of its gene product" with Dr. W. Boos
1985/86 part-time technician with Dr. E. Bade working on experimental metastasis and *in vitro* migration of malignant cells

NIDR, NIH, Bethesda, U. S. A.

July-Oct. 1986 summer student with Dr. G. Martin, working on laminin expression and *in vitro* migration of malignant cells

EMBL, Heidelberg, Germany

1987-1988 work with Dr. G. Griffiths on transferrin receptor endocytosis in chicken erythroblasts, and with Dr. B. Hoflack on mannose-6-phosphate receptor endocytosis
1988-1991 Ph. D. with Dr. B. Dobberstein on "Structural and functional characterization of the 54 kD protein of signal recognition particle"; EMBL graduate student courses in cell biology, gene expression, differentiation, structures and biocomputing, instrumentation

University of California at Berkeley, U. S. A.

1991-1994 postdoctoral fellow with Dr. R. Schekman, working on glycopeptide export from the endoplasmic reticulum in *S. cerevisiae*

Cold Spring Harbor Laboratory, U. S. A.

July/Aug. 1991 participant in the Cold Spring Harbor course on Yeast Genetics

McMurdo Research Station, Antarctica

Jan./Feb. 2000 participant in NSF course on Integrative Biology and Adaptation of Antarctic Marine Organisms

Jan./Feb. 2002 collaboration with Dr. Cheng-deVries, University of Illinois, on biosynthesis and secretion of anti-freeze glycopeptides in Antarctic notothenioid fish

Lawrence Berkeley Laboratory, U. S. A.

Oct. 2005 participant in workshop on Genomics in Biomedical Research

Academic Positions

- 1994-1998 *University College London, MRC Laboratory for Molecular Cell Biology and Dept. Biochemistry, UK*
Independent Research Group Leader and Wellcome Senior Fellow
- 1999-2007 *University of Cambridge, Cambridge Institute for Medical Research and Dept. Clinical Biochemistry, UK*
Independent Research Group Leader and Wellcome Senior Fellow
- May 2006 *University of Cambridge, Cambridge Institute for Medical Research and Dept. Clinical Biochemistry, UK*
Reader (equivalent to Associate Professor) in Clinical Biochemistry
- Dec. 2007 *University of Trento, Faculty of Sciences, Center for Integrative Biology, Italy*
Full Professor in Protein Biochemistry
- Oct. 2008- *Saarland University, Saarbruecken, Germany*
Full Professor (W3) of Microbiology
- 2023 *Joseph Meyerhoff Visiting Professorship at the Weizmann Institute, Rehovot, Israel*
(for 3 months)

Competitive Fellowships and Grants

- EMBL graduate student fellowship, 1987-1991
- Boehringer Ingelheim Fund postdoctoral fellowship, 1991/92
- BASF/German Scholarship Foundation postdoctoral fellowship, 1992-1994
- Senior European Fellowship from The Wellcome Trust, Nov. 1994-1999
- Senior Fellowship from The Wellcome Trust, Nov. 1999-May 2006
- Wellcome Prize Studentship for Carol Harty in the lab, Oct. 2000-2003
- MRC graduate studentship for Louise Hutt in the lab, Oct. 2002-2005
- Croucher Foundation studentship for Candy Ng in the lab, Oct. 2003-2006
- MRC graduate studentship for Christina Soromani in the lab, Oct. 2003-2006
- 1st recipient of BMBF Female Professor's Programme I grant, 2008-13
- Saarland government (Konjunkturpaket II zur Forschungsförderung)
to refurbish one of my labs as isotope lab, 2009/10
- Landesforschungsfördermittel Saarland (phosphorimager) 2009
- Landesforschungsfördermittel Saarland for PhD position, 2013/14

Memberships of Academic Organizations

- American Society for Cell Biology
- EMBL Alumni Association
- BIF Alumni Association
- German Scholarship Foundation Alumni Association
- Faculty of 1000; member of the year 2014, 2016
- Editorial Board Molecular Biology of the Cell, until 2010
- Associate Editor BioMed Central Cell Biology, until 2015
- Editorial Board F1000 Research

Administration

Organizer of departmental seminar series, LMCB, London, 1996/97
Organizer of Clinical Biochemistry seminar series, Cambridge, 2000-2003
CIMR General Purposes Committee; Interview Committee for CIMR graduate programme
Chair of 5th floor PI meetings, CIMR, 2001-2005
CIMR Radiation Safety Officer, 2002-2006
Member/Deputy Member Governing Assembly of Center for Human Biology (ZHMB Rat), UoS
Member/Deputy Member Exams Committee (Prüfungsausschuss), Faculty NT, UoS
Member Faculty PhD Committee (Promotionsausschuss), Faculty NT, UoS
Deputy Member University Research Committee (Forschungsausschuss), UoS
Member/Deputy Member Faculty Assembly Member (Fakultätsrat), UoS
Deputy Head of Biology, Saarland University, since 2017
Member of Saarland University, Fraunhofer & Leibniz Institute search committees

Teaching

Teaching assistant for histology practical, University of Konstanz, 1985, 1986;
for EMBL course on Methods in Cell Biology, 1989, 1990
Graduate student tutorials on protein translocation across the ER membrane:
LMCB, London, 1996, 2001, 2003, 2004; CIMR, Cambridge, annually 1999-2007
Undergraduate lectures on protein translocation across membranes, Dept. Biochemistry,
University of Cambridge
External examiner for Ph. D. theses: University of Helsinki; University of Manchester;
Karolinska Institut; Bergen University; KU Leuven; internal examiner for Cambridge &
Saarland University graduate students

UoS: Basic Microbiology, lectures: 4h /week, entire summer semester; basic microbiology
practical, half day, 2 weeks
Advanced Microbiology Lectures (Aufbauvorlesung) & practical, on secretory protein
biogenesis in bacteria and eukaryotes, 10h lectures & 2 weeks practical
Master module Infectious Diseases, 10h lectures on biogenesis of pathogenicity factors in
infectious organisms, 1.5 weeks practical
Vordiplom-, Diploma-, und PhD exams; Evaluations of Diploma-, Bachelor, MSc and
PhD theses
Supervision in the lab of PhD, diploma, MSc, BSc projects, and undergraduate volunteers
(UoS internal & external)
9 SWS total (equivalent to about 280 teaching hours per year)

Publications

- Yadhanapudi L, Bhadra P, Barbieri G, Jung M, Lommel M, Helms V, **Römisch K** (2024). The conserved membrane-proximal domain of Sbh1/Sec61beta guides signal peptides into the Sec61 channel. *bioRxiv* 2024.03.12.584615
- Barbieri G, Simon J, Barbarit A, Lupusella C, Pereira F, Elia F, Meyer H, Schuldiner M, Hanes SD, Nguyen D, Helms V, **Römisch K** (2023). ER translocation of suboptimal targeting sequences depends on Sec61beta/Sbh1 and is fine-tuned by phosphorylation. *J Biol Chem* 299:102895.
- Santiago Tirado F, Hurtaux T, Helms V, Geddes-McAlister J, Nguyen D, Helms V, Doering T, **Römisch K** (2023). The ER protein translocation channel subunit Sbh1 controls virulence of *Cryptococcus neoformans*. *mBio* 14(1):e0338422.
- Bhadra P, Römisch K, Helms V (2022). Effect of Sec62 on the conformation of the Sec61 channel in yeast. *Biochim Biophys Acta Biomembr* 1864:184050.
- Bhadra P, Yadhanapudi L, Römisch K, Helms V (2021). How does the presence/absence of Sec63 affect Sec61 conformations? *PLoS Computational Biology* 17(3):e1008855.
- Elia F, Yadhanapudi L, Tretter T, **Römisch K** (2019). The N-terminus of Sec61p plays key roles in ER protein import and ERAD. *PLoS ONE* 14(4):e0215950.
- Pereira F, Rettel M, Stein F, Savitski MM, Collinson I, **Römisch K** (2019). Effect of Sec61 interaction with Mpd1 on endoplasmic reticulum-associated degradation. *PLoS ONE* 14(1):e0211180.
- Kaiser ML & **Römisch K** (2015). Proteasome 19S RP binding to the Sec61 channel plays a key role in ERAD. *PLoS ONE* 10(2): e0117260.
- Servas C & **Römisch K** (2013). The Sec63p J-domain is required for ER-associated degradation of soluble proteins in yeast. *PLoS ONE* 8(12): e82058.
- Tretter T, Pereira FP, Kalies KU, Allan S, Helms V, **Römisch K** (2013). ERAD & protein translocation defects in a *sec61* mutant lacking ER-lumenal loop 7. *BMC Cell Biol* 14:56.
- Harty C & **Römisch K** (2013). Analysis of Sec61p and Ssh1p interactions in the ER membrane using the split-ubiquitin system. *BMC Cell Biol.* 14:14.
- Soromani C, Zeng N, Hollemeyer K, Heinzle E, Klein MC, Tretter T, Seaman MNJ, **Römisch K** (2012). N-acetylation and phosphorylation of Sec complex subunits in the ER membrane. *BMC Cell Biol.* 13:34.
- Miranda E, McLeod I, Davies MJ, Perez J, **Römisch K**, Crowther DC, Lomas D (2008). The intracellular accumulation of mutant neuroserpin polymers explains the severity of the dementia FENIB. *Hum Mol Gen* 17, 1527-39.
- Feng DJ, Zhao X, Soromani C, Toikkanen J, **Römisch K**, Keränen S, Jäntti J (2007). The trans-membrane domain is sufficient for Sbh1p function, its association with the Sec61 complex and its interaction with Rtn1p. *J Biol Chem* 282, 30618-28.
- Ng W, Sergeyenko T, Zeng N, Brown JD, **Römisch K** (2007). Characterization of the interaction between the proteasome and the Sec61 channel at the ER membrane. *J Cell Sci* 120, 682-91.
- Römisch K**, High S, Miller FW, Dobberstein B (2006). Human autoantibodies against the 54 kDa protein of signal recognition particle block release of the nascent chain at the ER membrane. *Arthritis Res & Therapy* 8, R39.
- Kalies KU, Alan S, Sergeyenko T, Kröger H, **Römisch K** (2005). The protein translocation channel binds proteasomes to the endoplasmic reticulum. *EMBO J* 24, 2284-93.
- Miranda E, **Römisch K**, Lomas DA (2004). Mutants of neuroserpin that cause dementia accumulate as polymers within the endoplasmic reticulum and are degraded by proteasomes. *J Biol Chem* 279, 28283-91.

- Lee RJ, Liu C, Harty C, McCracken AA, **Römisch K**, DeMartino GN, Thomas PJ, Brodsky JL (2004). The 19S (PA700) cap of the 26S proteasome is sufficient to retro-translocate and deliver a soluble polypeptide for ER-associated degradation (ERAD). *EMBO J* 23, 2206-15.
- Scheper W, Thaminy S, Kais S, Stagljar I, **Römisch K** (2003). Coordination of N-glycosylation and protein translocation across the ER membrane by Sss1 protein. *J Biol Chem* 278, 37998-38003.
- Römisch K**, Collie N, Soto N, Logue J, Lindsay M, Scheper W, Cheng CHC (2003). Protein translocation across the endoplasmic reticulum membrane in cold-adapted organisms. *J Cell Sci* 116, 2875-2283.
- Wang T., Waters CT, Rothman AMK, Jakins TJ, **Römisch K**, Trump D (2002). Intracellular retention of mutant retinoschisin is the pathological mechanism underlying X-linked retinoschisis. *Hum Mol Genet* 11, 3097-105.
- Harty C, Strahl S, **Römisch K** (2001). O-mannosylation protects mutant alpha-factor precursor from ER-associated degradation. *Mol Biol Cell* 12, 1093-1101.
- Gillece P, Pilon M, **Römisch K** (2000). The protein translocation channel mediates glycopeptide export across the endoplasmic reticulum membrane. *Proc Natl Acad Sci USA* 97, 4609-4614.
- Simpson JC, Roberts LM, **Römisch K**, Davey J, Wolf DH, Lord JM (1999). RicinA chain utilises the endoplasmic reticulum-associated degradation pathway to enter the cytosol. *FEBS Lett* 459, 80-84.
- Gillece P, Luz JM, Lennarz WJ, de la Cruz FJ, **Römisch K** (1999). Export of a cysteine-free misfolded secretory protein from the ER for degradation requires interaction with protein disulfide isomerase. *J Cell Biol* 147, 1443-1456.
- Pilon M, **Römisch K**, Quach D, Schekman R (1998). Cold-sensitive mutations in SEC61 cause defects in initiation of protein translocation into the yeast endoplasmic reticulum. *Mol Biol Cell* 9, 3455-3473.
- Pilon M, Schekman R, **Römisch K** (1997). Sec61p mediates export of a misfolded secretory protein from the endoplasmic reticulum to the cytosol for degradation. *EMBO J* 16, 4540-4548.
- Römisch K** & Ali BRS (1997). Similar processes mediate glycopeptide export from the endoplasmic reticulum in mammalian cells and *Saccharomyces cerevisiae*. *Proc Natl Acad Sci USA* 94, 6730-6734.
- Römisch K** & Schekman R (1992). Distinct processes mediate glycoprotein and glycopeptide export from the endoplasmic reticulum in *S. cerevisiae*. *Proc Natl Acad Sci USA* 89, 7227-7231.
- Killisch I., Steinlein P, **Römisch K**, Hollinshead R, Beug H, Griffiths G (1992). Characterization of early and late endocytic compartments of the transferrin cycle. Transferrin receptor antibody blocks erythroid differentiation by trapping the receptor in the early endosome. *J Cell Sci* 103, 211-232.
- Lütke H, High S, **Römisch K**, Ashford AJ, Dobberstein B (1992). The methionine-rich domain of the 54 kDa protein of signal recognition particle is sufficient for the interaction with signal sequences. *EMBO J* 11, 1543-1551.
- Römisch K**, Webb J, Lingelbach K., Gausepohl H, Dobberstein B (1990). The 54 kD protein of signal recognition particle contains a methionine-rich RNA binding domain. *J Cell Biol* 111, 1793-1802.
- Ribes V, **Römisch K**, Giner A, Dobberstein B, Tollervy D (1990). *E. coli* 4.5S RNA is part of a ribonucleoprotein particle that has properties related to signal recognition particle. *Cell* 63, 591-600.
- Prehn S, Herz J, Hartmann E, Kurzchalia TV, Frank R, **Römisch K**, Dobberstein B, Rapoport TA (1990). Structure and biosynthesis of the signal sequence receptor. *Eur J Biochem* 188, 439-445.
- Reidl J, **Römisch K**, Ehrmann M, Boos W (1989). Mall, a novel protein involved in the regulation of the maltose system of Escherichia coli is highly homologous to the repressor proteins GalR, CytR and LacI. *J Bacteriol* 171, 4888-4899.

- McDowall A, Gruenberg J, **Römisch K**, Griffiths G (1989). The structure of organelles of the endocytic pathway in hydrated cryosections of cultured cells. *Eur J Cell Biol* **49**, 281-294.
- Römisch K**, Webb J, Herz J, Prehn S, Frank R, Vingron M, Dobberstein B (1989). Homology of 54K protein of signal recognition particle, docking protein and two *E. coli* proteins with putative GTP-binding domains. *Nature* **340**, 478-482.

Reviews and Book Chapters

- Alvira S, Corey RA, Collinson I, **Römisch K** (2020) Membrane protein biogenesis by the EMC. *EMBO J* **40**:e107407.
- Allen WJ, Collinson I, **Römisch K** (2019) Post-translational protein translocation by the Sec complex. *Trends Biochem Sci* April 5. doi: 10. 1016/j.tibs.2019.03.003.
- Römisch K** (2017). A case for Sec61 channel involvement in ER-associated degradation. *Trends Biochem Sci* **42**:171-79.
- Kalies KU & **Römisch K** (2015). Inhibitors of protein translocation across the ER membrane. *Traffic* **16**, 1027-38.
- Römisch K** (2012). Diversion at the ER: how *Plasmodium falciparum* exports proteins into host erythrocytes.[v1: ref status:2, <http://f1000res/>] F1000Research **1**.
- Römisch K** (2006). The role of Ubx2p in ER-associated degradation. *Trends Biochem Sci* **31**, 24-25.
- Römisch K** (2005). ER-associated degradation. *Annu Rev Cell & Dev Biol* **21**, 435-456.
- Römisch K** (2005). Targeting signals in proteins involved in malaria. *Traffic* **6**, 706-9.
- Peck LS, Clark MS, Clarke A, Cockell CS, Convey P, Detrich III HW, Fraser KPP, Johnston IA, Methe BA, Murray AE, **Römisch K**, Rogers AD (2004). Genomics: Applications to Antarctic ecosystems. *Polar Biology* **28**, 351-365.
- Clark MS, Clarke A, Cockell CS, Convey P, Detrich III HW, Fraser KPP, Johnston IA, Methe BA, Murray AE, Peck LS, **Römisch K**, Rogers AD (2004). Antarctic Genomics. *Comp Func Genomics* **5**, 230-238.
- Römisch K** (2004). A cure for traffic jams: small molecule chaperones in the endoplasmic reticulum. *Traffic* **5**, 815-820.
- Römisch K** & Matheson T (2003). Cell biology in the Antarctic: studying life in the freezer. *Nature Cell Biol* **5**, 3-6.
- Römisch K** (2003). Protein transport across the membrane of the endoplasmic reticulum. In *Cell Biology: A Practical Approach*, Davey J & Lord M (eds.), OUP, 151-163.
- Römisch K** (2002). Surviving extreme cold. *BIF Futura* **17**, 216-221.

Commentaries for TiBS:

- Römisch K** (2002). Viral subversion of protein trafficking pathways. *TiBS* **27**, 335; *TCB* **12**, 360.
- Römisch K** (2002). Some like it hot. *TiBS* **27**, 174.
- Römisch K** (2002). Garbage separation in the endoplasmic reticulum. *TiBS* **27**, 7.
- Römisch K** (2001). Antibacterial defense relies on ER chaperone gp96. *TiBS* **26**, 644.
- Römisch K** (2001). How antigenic peptides are made to fit their groove. *TiBS* **26**, 531; *Trends Biotechnol.* **19**, 378.
- Römisch K** (2001). Bumps switch the points in the Golgi complex. *TiBS* **26**, 353.
- Römisch K** (2001). Microtubules: fast tracks to secretion? *TiBS* **26**, 281.
- Römisch K** (2001). Contact: Interactions between ribosomes and protein translocation channels in the ER membrane. *TiBS* **26**, 13.

Römisch K (2001). Contact: Interactions between ribosomes and protein translocation channels in the ER membrane. *TiBS* 26, 13.

Römisch K (2000). Ways to rein in wayward proteins: a novel mechanism for ER retention. *TiBS* 25, 541.

Römisch K (2000). Sugars pave the road to destruction. *TiBS* 25, 428.

Römisch K (2001). Molecular trafficking: are some organelles more important than others? *J Cell Sci* 114, 2359.

Lehner P, Hewitt EW, **Römisch K** (2000). MHC class I mediated antigen presentation: Proteins and peptides scramble for the exit. *Curr Biol* 10, R839-842.

Römisch K (1999) Surfing the Sec61 channel: Bidirectional protein translocation across the ER membrane. *J. Cell Sci* 112, 4185-4191.

Römisch K & Corsi A (1996). Protein translocation into the endoplasmic reticulum. In *Protein Targeting*, Hurtley S (ed), Oxford University Press, 101-122.

Römisch K (1994). Peptide traffic across the endoplasmic reticulum membrane - TAPs and other conduits. *Trends Cell Biol* 4, 311-314.

Römisch K, Ribes V, High S, Lütcke H, Tollervy D, Dobberstein B (1990). Structure and function of signal recognition particle (SRP). *Mol Biol Reports* 14, 71-72.

314 short evaluations of published papers for Faculty of 1000 (since 2001).