

Curriculum Vitae



Dr. Alexandra Stolz

Education and academic background:

03/2018 – to date	Team Leader Autophagy Probes, SGC Frankfurt Buchmann Institute for Molecular Life Sciences
01/2017 – 02/2018	Visiting scientist; Genentech, South San Francisco, Dr. Vishva Dixit, Physiological Chemistry
09/2013 – 12/2016	Postdoctoral fellow; University of Frankfurt, Prof. Dr. Ivan Đikić and Dr. Andreas Ernst, Institute of Biochemistry II, School of Medicine
01/2012 – 07/2013	Postdoctoral fellow; University of Stuttgart, Prof. Dr. Dieter H. Wolf, Institute of Biochemistry
12/2011	PhD / Dr. rer. Nat. (summa cum laude)
10/2007 – 12/2011	Doctorate; University of Stuttgart, Prof. Dr. Dieter H. Wolf; Institute of Biochemistry
01/2007	Certified Biochemist Univ. (G.P.A. 1.2; highest to lowest grade: 1 - 6) (Dipl. Biochem. Univ.)
10/2002 – 01/2007	MSc (Diplom Biochemie) at the University of Regensburg
2002	Certificate for entry to higher education/university (G.P.A. 1.3; highest to lowest grade: 1 - 6)

Grants & awards:

01/2015 – 12/2016	Project grant on <i>Targeting the Autophagy System in Cancer and Neurodegenerative Diseases</i> ; 2 years funding (150 000 €) Thyssen foundation
08/2008 – 07/2011	PhD scholarship of the Landesgraduiertenförderung Baden-Württemberg
2010	Travel grant LgF to FASEB conference
2009	Travel grant LgF to EMBO conference
2009	Travel grant LgF to CSH conference

Invited and selected talks:

2017	Berkley University, Department of Cell Biology (Invited talk), San Francisco, USA
2017	Keystone: <i>Autophagy Network Integration in Health and Disease</i> (Selected talk), Copper Mountain, USA
2014	CSH Asia: <i>Protein Modification & Homeostasis</i> (Selected talk) Suzhou, China
2012	FASEB Meeting: <i>Ubiquitin & Cellular Regulation</i> (Selected talk), Saxtons River, USA
2011	Rubicon Plenary Meeting (Selected talk), Malta
2010	RUBICON Plenary Meeting (Selected talk), Sant Feliu de Guíxols, Spain

Attended conferences and courses:

- 8th International Symposium on Autophagy (Poster presentation, poster price), 2017, Nara, Japan
- Keystone: *Autophagy Network Integration in Health and Disease* (Selected talk), 2017, Copper Mountain, USA
- EMBO conference: *Structure and function of the endoplasmic reticulum* (Poster presentation), 2016, Girona, Spain
- *Frankfurt Conference on Ubiquitin and Autophagy* (Poster presentation, poster price), 2016, Frankfurt, Germany
- Keystone *Ubiquitin Signaling* (Poster presentation), 2016, Whistler, Canada
- *Autophagic Membrane Trafficking and Dynamics in Ageing and Disease* (Poster presentation), 2016, Freiburg, Germany

- Keystone *Autophagy Symposia* (Poster presentation), 2015, Breckenridge, USA
- CSH meeting: *The Ubiquitin Family* 2015, Cold Spring Harbor, USA
- Vallee Foundation Symposium: *Protein Homeostasis, Metabolism & Cancer* (Poster presentation), 2014, Boston, USA
- Cancercon: *Molecular Mechanisms and Novel Therapeutics* 2014, Chennai, India
- FEBS advanced lecture course: *Molecular Mechanisms in Signal Transduction and Cancer* (Poster presentation), 2013, Spetses, Greece
- EMBO conference: *The Physiology of the endoplasmic reticulum (ER): Function and Dysfunction* (Poster presentation), 2012, Caldes de Malavella; Spain
- EMBO conference: *Quality Control: From Molecules to Organelles* (Poster presentation), 2012, Heidelberg, Germany
- CSH Meeting: *The Ubiquitin Family* 2011, Cold Spring Harbor, USA
- Conference: *Biology of the Ubiquitin and the Ubiquitin-Like System* (Poster presentation), 2010, Jerusalem, Israel
- FASEB Meeting: *Ubiquitin & Cellular Regulation* (Poster presentation), 2010, Saxtons River, USA
- EMBO conference: *Ubiquitin and Ub-like Modifiers in Health and Disease* (Poster presentation), 2009, Riva del Garda, Italy
- RUBICON Plenary Meeting (Poster presentation), 2009; Sesimbra, Portugal
- CSH Meeting: *The Ubiquitin Family* 2009, Cold Spring Harbor, USA
- RUBICON Course: *Functions of Ubiquitin and Ubiquitin-related Protein-Protein Modifications in Cell Biology*, 2008; Lauterbad, Germany
- RUBICON Plenary Meeting 2008; Rome, Italy

Supervision and teaching:

I have supervised three diploma students, two bachelor students and several trainees. This included design of the respective project, design and supervision of experiments and correction of the thesis. I have also set up the screening platform for ATG binding assays in the institute and have trained a TA for several biochemical protocols in the IBC2.

In addition, I lectured the course "Hormone and Signaltransduction" in the years 2014-2016 and supervised students in numerous biochemical practical courses (2008-2016).

Managerial activities:

Conference manager for the EMBO conference on “Autophagy: From molecular principles to human disease” (2017, Cavtat, Croatia)

Conference manager for the EMBO conference on “Ubiquitin and ubiquitin-like modifiers: from molecular mechanisms to human diseases” (2015, Cavtat, Croatia)

Major scientific accomplishments:

- *Deciphering the molecular basis for vesicular secretory pathways in cancer cells:* Besides biochemical assays of protein complexes regulating the vesicular secretory pathways the study also includes a compound screen, *in vivo* tumorigenesis, AP and global proteomics, lipidomics, as well as structural analysis via crystallography and NMR.
- *Identification of a GABARAP interaction motif:* a small-scale peptide screen has been established to identify binding motifs selective for the LC3 and GABARAP subfamily, respectively. Results indicate functional consequences of disease relevant LIR (LC3 interacting region) mutations of p62 involved in ALS and paget's disease.
- *Development of fluorescence-based autophagy sensors:* phage display was utilized to engineer and subsequently optimize peptides for selective recognition of individual members of the LC3/GABARAP family. Microscopy-based analyses with engineered, fluorophore-coupled peptides revealed a previously unknown role of LC3C in mitophagy.
- *Unraveling an interplay between cytosolic and ER membrane quality control networks in the degradation of multi-transmembrane proteins:* yeast genetics in combination with biochemical assays showed involvement of the cytosolic quality control network in the ubiquitin-dependent degradation of a disease relevant mutant of CFTR (cystic fibrosis transmembrane conductance regulator).
- *Identification of novel components and distinct E3 ligase complexes involved in ER associated protein quality control and degradation (ERQD):* immunoprecipitation of ERQD components on endogenous level were performed to analyse the two arms of yeast ERQD defined by the E3 ligases DOA10 and Hrd1. *In vivo* analyses on ERQD substrates identified and itemized novel components.

List of publications:

1. Heterotypic Ubiquitin Chains – Seeing is Believing
Stolz A & Dikic I
Trends in Cell Biology, 2017 in press (spotlight review)
2. Structural and Functional analysis of the GABARAP Interaction Motif (GIM)
Rogov VV*, **Stolz A***, Ravichandran AC*, Rios-Szweg DO, Suzuki H, Kniss A, Löhr F, Wakatsuki S, Dötsch V, Dikic I, Dobson RCJ & McEwan DG
EMBO Rep., 2017 (research article)
3. Fluorescence-based autophagy sensors monitor localization and function of LC3/GABARAP modifiers
Stolz A, Putyrski M, Kutle I, Wang C, Dötsch V, Sidhu SS, Youle R, Ernst A & Dikic I
EMBO J, 2017 (research article)
4. Phosphorylation of OPTN by TBK1 enhances its binding to Ub chains and promotes selective autophagy of damaged mitochondria.
Richter B, Sliter DA, Herhaus L, **Stolz A**, Wang C, Beli P, Zaffagnini G, Wild P, Martens S, Wagner SA, Youle RJ & Dikic I
PNAS USA, 2016 (research article)
5. Regulation of endoplasmic reticulum turnover by selective autophagy
Khaminets A*, Heinrich T*, Mari M, Grumati P, Huebner AK, Akutsu M, Liebmann L, **Stolz A**, Nietzsche S, Koch N, Mauthe M, Katona I, Qualmann B, Weiss J, Reggiori F, Kurth I, Hübner CA & Dikic I
Nature, 2015 (research article)
6. Selective Autophagy: From Cargo Selection to Intracellular Transport and Secretion
Stolz A, Ernst A & Dikic I
Nat Cell Biol., 2014 (review)
7. PINK1-PARKIN Interplay: Down to Ubiquitin Phosphorylation
Stolz A & Dikic I
Mol Cell, 2014 (preview)
8. ERAD without canonical ubiquitin ligases: a novel role for Ubr1
Stolz A, Besser S, Hottmann & H, Wolf DH.
PNAS USA, 2013 (research article)
9. Use of CPY and its derivatives to study protein quality control in various cell compartments.
Stolz A & Wolf DH.
Methods Mol Biol., 2012 (method paper)
10. The Cdc48 machine in endoplasmic reticulum associated protein degradation.
Wolf DH & **Stolz A**.
Biochim Biophys Acta., 2012 (review)
11. Mnl2, a novel component of the ER associated protein degradation pathway.
Martinez Benitez E, **Stolz A**, Becher A & Wolf DH.
Biochem Biophys Res Commun., 2011 (research article)

12. Yos9, a control protein for misfolded glycosylated and non-glycosylated proteins in ERAD.

Benitez EM, **Stolz A** & Wolf DH.
FEBS Lett., 2011 (research article)

13. Cdc48: a power machine in protein degradation.

Stolz A, Hilt W, Buchberger A & Wolf DH.
Trends Biochem Sci., 2011 (review)

14. Dfm1 forms distinct complexes with Cdc48 and the ER ubiquitin ligases and is required for ERAD.

Stolz A, Schweizer RS, Schäfer A & Wolf DH.
Traffic, 2010 (research article)

15. Endoplasmic reticulum associated protein degradation: a chaperone assisted journey to hell.

Stolz A & Wolf DH.
Biochim Biophys Acta, 2010 (review)