

**Curriculum Vitae: Dr. Christian Schöneich**

*Takeru Higuchi Distinguished Professor and Chair,  
Department of Pharmaceutical Chemistry,  
The University of Kansas*

Title: Ph.D.  
Date of birth: 26.03.1962  
Place of birth: Berlin, FRG  
Nationality: Double Citizenship: German, US  
Visa status: U.S. Citizen

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Marital status: Married, 3 children.

School:  
1968-1974: Schweizerhof-Grundschule Zehlendorf, Berlin  
1974-1980: Arndt-Gymnasium Dahlem, Berlin  
1980: Abitur

University:  
1981-1982: Material Sciences, Technical University Berlin  
1982-1987: Chemistry, Free University Berlin  
October 1987: Diplom at the Free University Berlin  
January 1990: Ph.D. in chemistry with "honors", Technical University Berlin

Title of dissertation

"Quantitative kinetic investigations of the reversible H-atom transfer between radicals from thiols and biological relevant compounds".  
Research Director: Professor K.-D. Asmus

Professional employment:

11/1987 - 05/1991: Research Assistant at the Hahn-Meitner-Institut Berlin, Germany.  
05/1988 - 08/1988: Brunel University Uxbridge, London, England; Dept. of Biochemistry.  
05/1991 - 07/1992: Postdoctoral Fellow (DFG-fellowship): Department of Pharmaceutical Chemistry, University of Kansas, Lawrence, KS 66045, USA.  
08/1992-07/1998: Assistant Professor, Department of Pharmaceutical Chemistry, University of Kansas, Lawrence, KS 66047, USA.  
08/1998-07/2003 Associate Professor, Department of Pharmaceutical Chemistry, University of Kansas, Lawrence, KS 66047, USA.  
08/2003-present Courtesy Professor, Department of Chemistry University of Kansas, Lawrence, KS 66045, USA.  
08/2003-present Professor, Department of Pharmaceutical Chemistry  
01/2004-07/2004 Visiting Professor, Department of Inorganic Chemistry, ETH Zürich, Switzerland  
01/2005-present Professor and Chair, Department of Pharmaceutical Chemistry  
01/2010-present Member, Board of Trustees, KU Center for Research  
08/2011-present *Takeru Higuchi Distinguished Professor for Bioanalytical Chemistry*, Department of Pharmaceutical Chemistry

**Mylan Ex. 1023**  
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### ***Awards and Honors***

1989	"Young Investigator Travel Award" of the Baxendale Fund for attendance of Miller-Conference in England, 1989.
1990	"Young Investigator Award" of the <i>Society For Free Radical Research</i> (SFRR) (awarded in Pasadena, CA, USA).
1991	Schering-Award (for the dissertation).
1991	Tiburtius-Award (for the dissertation).
1991-1992	Postdoctoral fellowship of the Deutsche Forschungsgemeinschaft (DFG).
1991-1993	Postdoctoral Fellowship from Hoffmann-LaRoche, Nutley, NJ, USA.
1994	"Young Investigator Award" of the <i>Society For Free Radical Research</i> (SFRR) (awarded in Sydney, Australia).
1995	"Young Investigator Travel Award" of the Baxendale Fund for attendance of Miller-Conference in Italy, 1995.
1996, 1997	Eli Lilly New Investigator Award in Pharmaceuticals 1996 and 1997
2001	Pfizer Research Scholar Award
2002	Pfizer Research Scholar Award
2003	Pfizer Research Scholar Award
2003	Center for Teaching Excellence Award for Graduate Teaching
2003	Teacher of the Year, American Association of Colleges of Pharmacy
2004	Pfizer Research Scholar Award
2005	Elected Fellow of the <i>American Association of Pharmaceutical Scientists</i> (AAPS)
2010	Dolph Simons Award in Biomedical Sciences
2011	Named <i>Takeru Higuchi Distinguished Professor for Bioanalytical Chemistry</i>
2013-present	Assessor, Australian Research Council

### ***Editorial Positions***

1998-present	Editorial Board, <i>Experimental Gerontology</i>
2000-2004	Associate Editor, <i>AAPS PharmSci</i> , now: <i>The AAPS Journal</i>
2002-present	Editorial Advisory Board <i>J. Pharm. Sci.</i>
2006-present	Editorial Advisory Board, <i>Chemical Research in Toxicology</i>
2008-present	International Editorial Board, <i>Free Radical Biology &amp; Medicine</i>
2009-present	Review Editor, <i>Free Radical Research</i>

### ***Professional Organizations***

Society for Free Radical Biology and Medicine  
American Chemical Society  
Association of American Pharmaceutical Scientists (AAPS)

### ***Service***

2003-2006	American Heart Association, Heartland Affiliate, Research Committee
2005-present	Member, Miller Trust Committee (Miller Conference on Radiation Chemistry)

### ***Recent University-wide service:***

2010-present	Member, Work group on Driving Discovery and Innovation (DDI) of the University Strategic Planning Committee
2010-present	Member of the Stakeholder Group for the development of a university-wide faculty activity reporting system
2009-present	Member, Board of Trustees KU Center for Research
2009-2010	Member, Chancellor's Task Force on Faculty Research Engagement
2008-present:	Member, Advisory Board of the Higuchi Biosciences Center
2005-2006:	Chair, University Committee on Establishment of a Postdoctoral Association at KU

## Financial Support: Christian Schöneich

### Active support

- a) **NIH (3P01AG12993), Program Project, "Role of Reactive Oxygen Species in Aging"**
  - b) 16%, Project Leader of subproject #1 & Co-Director of the Core Facility (PI: E. Michaelis)
    - c) 04/01/08-03/31/2013
    - d) \$ 908,000 for subproject #1
  - e) This grant supports the investigation of the role of reactive oxygen species in aging in vivo and in vitro.
  - f) No overlap
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- a) **NIH (N01HV00239), "Modification of cardiovascular proteins by metabolic disease"**
  - b) National Proteomics Center; 5%, PI of subcontract
    - c) 08/01/10-07/31/2016
    - d) \$ 291,000 for subcontract
  - e) This grant supports the investigation of the role of reactive oxygen species in aging in vivo and in vitro.
  - f) No overlap
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- a) **NSF (CHE-0455575), New biologically relevant sulfur radical cation chemistry**
  - b) 8.33%, PI of subcontract
  - c) 08/01/10-07/31/13
  - d) \$ 240,000 direct for subcontract
  - e) This grant supported mechanistic studies on sulfur oxidation relevant to beta-amyloid and Alzheimer's Disease
  - f) No overlap
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- a) **Amgen Inc., Light-induced degradation of proteins: role of thiyl radicals**
  - b) 2%, PI
    - c) 12/16/06-12/17/2012
    - d) \$ 305,000
  - e) This grant supports mechanistic research on thiyl radical-dependent protein oxidation
  - f) No overlap
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- a) **Genentech, Mechanisms of protein oxidation**
  - b) 2%, PI
    - c) 05/01/10-04/30/2013
    - d) \$ 210,000
  - e) This grant supports mechanistic research on thiyl radical-dependent protein oxidation
  - f) No overlap
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- a) **OncImmune., Characyerization of recombinant proteins**
  - b) 2%, PI
    - c) 12/31/06-12/31/10
    - d) \$ 186,978
  - e) This contract supports investigations toward purity and stability of protein pharmaceuticals
  - f) No overlap
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- a) **Bristol Myers Squibb, Peptide and protein disulfide bonds as targets for oxidative damage**
  - b) PI; Graduate Student Fellowship
  - c) 05/01/10-04/30/13
  - d) \$ 120,000
  - f) This grant focuses on mechanism of oxidative damage of disulfide bonds
  - e) No overlap

### Pending Support

- a) **NIH, "Roles of protein aggregation and chemical degradation in therapeutic protein immunogenicity"**
- b) 20%, Multi-PI Grant between KU and the University of Colorado (PIs: T. Randolph, J. Carpenter, Ch. Schöneich)
  - c) 08/01/11-07/31/2016
  - d) \$ 2.5 million
- e) This grant focuses on the development of models to understand the role of chemical protein degradation in immunogenicity, including the characterization of novel epitopes and antibodies produced against these epitopes.
- f) No overlap

## **Completed projects in the last three years**

- a) **NIH (R01AG23551), Multifunctional reagents for proteomic analysis**
- b) 10%, PI c) 04/01/04-03/31/10 d) \$ 776,000 direct
- g) This grant supports the synthesis of novel reagents for enrichment and differential proteomic analysis of 3-nitrotyrosine-containing proteins
- f) No overlap
  
- a) **NIH (R01AG25350), Proteomic characterization of aging cerebellum**
- b) 7%, PI c) 09/30/04-09/29/010 d) \$ 1,000,000 direct
- e) This grant supports a detailed analysis of age-dependent post-translational modifications, expression levels, and protein-protein interactions of cerebellar proteins
- f) No overlap
  
- a) **NSF (CHE-0455575), New biologically relevant sulfur radical cation chemistry**
- b) 2%, PI of subcontract c) 06/15/05-05/31/08 d) \$ 300,000 direct for subcontract
- h) This grant supported mechanistic studies on sulfur oxidation relevant to beta-amyloid and Alzheimer's Disease
- f) No overlap
  
- a) **NIH (R01 HL031607), NO, SERCA and oxidative stress in atherosclerosis**
- b) 10%, PI of subcontract c) 07/01/04-06/30/08 d) \$90,000 direct for subcontract
- i) This grant supported bioanalytical characterization of NO-dependent modifications of SERCA isolated from tissue-models of atherosclerosis
- f) No overlap
  
- a) **NIH (R01AI063002), Targeting and internalization of LFA\_1**
- b) 2%, Co-PI (PI\_ T. Siahaan) c) 07/01/05-03/31/09 d) \$ 800,000 direct
- e) This grant was aimed understanding the mechanism of internalization of LFA-1 receptor on leukocytes and to utilize this receptor for targeting drugs to leukocytes
- f) No overlap
  
- a) **NIH (R01DK073594), Oxidative stress and the mitochondrial proteome in diabetic neuropathy**
- b) 10%, Co-PI (PI: R. Dobrowski) c) 07/01/05-03/31/09 d) \$ 1,000,000 direct
- e) This project identifies mitochondrial proteins that are susceptible to glucose-induced oxidative stress and improve understanding of how growth factor signaling may improve mitochondrial function in diabetic nerve.
- f) No overlap

### Invited Lectures (since 1992): Christian Schöneich

1. "Iron-thiolate induced oxidation of methionine to methionine sulfoxide in small and medium-sized model peptides. Intramolecular catalysis by histidine", AAPS Meeting, San Antonio, USA, November 1992.
2. "Methionine oxidation and methionine-catalyzed oxidation in peptides and proteins", Upjohn Company, Kalamazoo, MI, USA, October 18, 1993.
3. "Methionine oxidation and methionine-catalyzed oxidation in peptides and proteins", Department of Biochemistry, University of Kansas, November 1993.
4. "Neighboring effects in the oxidative modification of peptides and proteins", Department of Pharmaceutical Chemistry, University of Kentucky, Lexington, KY, USA, March 1, 1994.
5. "Oxidation of methionine in model peptides: catalytic effect of the N-terminal amino group", Higuchi Meeting, Lake of the Ozarks, MO, USA, March 13-16, 1994.
6. "Free Radicals and Calcium Regulation", 2<sup>nd</sup> SEP Symposium on Molecular Mechanisms of Aging, Kansas City, MO, USA, May 6-8, 1994.
7. "Metal-catalyzed oxidation of peptides and proteins: neighboring group effects and catalysis by methionine", 1<sup>st</sup> Protein Stability Conference, Breckenridge, CO, USA, July 16-21, 1994.
8. "Methionine oxidation and methionine-catalyzed oxidation in peptides and proteins", Amgen, Inc., Thousand Oaks, CA, USA, October 20, 1994.
9. "Calmodulin oxidation by ROS alters protein dynamics and function", 7<sup>th</sup> Biennial Scientific Meeting, Society For Free Radical Research, Sydney, Australia, November 6-10, 1994.
10. "Can we use sequence and secondary structure to predict the oxidative degradation of proteins", AAPS, KCDG, Kansas City, MO, USA, January 12, 1995.
11. "Mechanisms of protein oxidation: relation to aging", University of Kansas, Medical Center, Kansas City, MO, USA, February 14, 1995.
12. "Mechanisms of protein oxidation: relation to aging", University of Düsseldorf, Germany, March 16, 1995.
13. "Mechanisms of protein oxidation: relation to biological aging", University of Texas, Medical Branch (UTMB), Galveston, TX, March 30, 1995.
14. "Mechanisms of oxidation and strategies for stabilization of peptide drugs", Pfizer Central Research, Groton, CT, May 19, 1995.
15. "Mechanisms of protein oxidation: relation to aging", The Procter & Gamble Company, Miami Valley Laboratories, Cincinnati, OH, June 13, 1996.
16. "Oxidative stress, protein oxidation, and calcium regulation. Implications for apoptosis and biological aging", Istituto Dermatologico Dell'Immacolata, Rome, Italy, July 4, 1995.
17. "Effect of sequence and structure on radical reactions with peptides and proteins: radiation chemistry vs. metal-catalyzed oxidation", 10<sup>th</sup> International Congress on Radiation Research, Würzburg, Germany, August 27-September 1, 1995.
18. "Mechanisms of free radical reactions with peptides and proteins", 19<sup>th</sup> Miller Conference on Radiation Chemistry, Cervia/Milano Maritima, Italy, September 16-21, 1995.
19. "Redox reactions of methionine in peptides and proteins: mechanisms and implications for biological aging", University of Kansas, Analytical Colloquium, Department of Chemistry, October 23, 1995.
20. "Redox reactions of methionine in peptides and proteins: mechanisms and implications for biological aging", University of Kentucky, Department of Chemistry, Lexington, KY, USA, January 26, 1996.

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