

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed for Form Page 2.
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NAME		POSITION TITLE	
Keith D. Wilkinson, Ph.D.		Professor	
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
Albion College, Albion, MI	B.A.	1968-72	Chemistry
The University of Michigan, Ann Arbor, MI	Ph.D.	1972-77	Biochemistry
The Institute for Cancer Research, Phila., PA	Postdoc.	1977-79	Enzymology

NOTE: The Biographical Sketch may not exceed four pages. Items A and B may not exceed two of the four-page limit.

A. Positions and Honors.**Professional Experience:**

- 1972-1977 **Predoctoral Student** with Dr. Charles J. Williams, Jr., Department of Biological Chemistry, The University of Michigan
- 1977-1979 **Postdoctoral Fellow** with Dr. Irwin A. Rose, The Institute for Cancer Research
- 1979-1981 **Research Associate** with Dr. Irwin A. Rose, The Institute for Cancer Research
- 1981-1987 **Assistant Professor**, Department of Biochemistry, Emory University
- 1987-1992 **Associate Professor**, Department of Biochemistry, Emory University
- 1989-1995 **Director**, Graduate Program in Biochemistry and Molecular Biology, Division of Biological and Biomedical Sciences, Emory University
- 1992 **Professor**, Department of Biochemistry, Emory University School of Medicine
- 1995 **Member**, Winship Cancer Center, Emory University School of Medicine
- 2003-2006 **Acting Director**, Graduate Division of Biological and Biomedical Sciences, Emory University
- 2006- **Director**, Graduate Division of Biological and Biomedical Sciences, Emory University
- 2006- **Vice-Chair**, Department of Biochemistry, Emory University

Awards and Other Professional Activities:

- 1969-1972 Albion College Presidential Award
- 1968-1969 Alfred P. Sloan Memorial Scholarship
- 1968-1972 State of Michigan Competitive Scholarship
- 1971 NSF Undergraduate Research Participant, Hope College, Holland, MI
- 1977-1979 National Institutes of Health Postdoctoral Fellowship (NRSA)
- 1987-1992 NIH Research Career Development Award
- 1996-2000 Member, NIH Biochemistry Study Section
- 2005-2007 Member, Membrane Biology and Protein Processing Study Section

B. Selected peer-reviewed publications (Last five years only).

Borodovsky, A., Ovaa, H., Kolli, N., Gan-Erdene, T., Wilkinson, K.D., Ploegh, H.L., and Kessler, B.M. (2002) Chemistry-based functional proteomics reveals novel members of the deubiquitinating enzyme family. **Chem Biol.** 9, 1149-59.

Wilkinson, K.D. (2002) Cell biology: unchaining the condemned. **Nature.** 419, 351-3. Wu, K., Yamoah, K., Dolios, G., Gan-Erdene, T., Tan, P., Chen, A., Lee, C.G., Wei, N., Wilkinson, K.D., Wang, R., Pan, Z.Q., (2003) DEN1 is a dual function protease capable of processing the C-terminus of Nedd8 deconjugating hyper-neddylated CUL1. **J Biol Chem.** 278, 28882-28891.

Gan-Erdene, T., Kolli, N., Yin, L., Wu, K., Pan, Z.Q., Wilkinson, K.D., (2003) Identification and characterization of DEN1, a deneddylase of the ULP family. **J Biol Chem.** 278, 28892-28900.

Wilkinson, K.D. (2003) Signal Transduction, Aspirin, Ubiquitin and Cancer. **Nature**, 424, 738-9.

Chernova, T.A., Allen, K.D., Wesoloski, L.M., Shanks, J.R., Chernoff, Y.O., and Wilkinson, K.D., (2003) Pleiotropic effects of Ubp6 loss on drug sensitivities and yeast prion are due to depletion of free ubiquitin pool. **J Biol Chem.** 278, 52102-15

Hemelaar, J., Borodovsky, A., Kessler, B.M., Reverter, D., Cook, J., Kolli, N., Gan-Erdene, T., Wilkinson, K.D., Gill, G., Lima, C.D., Ploegh, H.L., Ovaa, H. (2004) Specific and Covalent Targeting of Conjugating and Deconjugating Enzymes of Ubiquitin-Like Proteins. **Mol Cell Biol.** 24, 84-95.

Olzmann, J.A., Brown, K., Wilkinson, K.D., Rees, H.D., Huai, Q., Ke, H., Levey, A.I., Li, L., and Chin, L.S. (2004) Familial Parkinson's disease-associated L166P mutation disrupts DJ-1 protein folding and function. **J Biol Chem.** 279, 8506-8515.

Wilkinson, K. D. (2004) Quantitative analysis of protein-protein interactions. **Methods Mol Biol.** 261:15-32.

Russell, N. S. and Wilkinson, K. D. (2004) Identification of a novel 29-linked polyubiquitin binding protein, Ufd3, using polyubiquitin chain analogs. **Biochemistry**, 43, 4844-54.

Kaytor, M.D., Wilkinson, K. D., and Warren, S. T. (2004) Modulating huntingtin half-life alters polyglutamine-dependent aggregate formation and cell toxicity. **J Neurochem.** 89, 962-73.

Reverter, D. H., Wu, Gan Erdene, T., K., Pan, Z-Q., Wilkinson, K.D. and Lima, C. (2005) Structure of a complex between Nedd8 and the Ulp/Senp protease family member Den1. **J. Mol. Biol.** 345, 141-51.

Baumeister, W., Bachmair, A., Chau, V., Cohen, R., Coffino, P., Demartino, G., Deshaies, R., Dohmen, Emr S., Finley, D., Hampton, R., Hill, C., Hochstrasser, M., Huber, R., Jackson, P., Jentsch, S., Johnson, E., Kwon, Y. T., Pagano, M., Pickart, C., Rechsteiner, M., Scheffner, M., Sommer, T., Tansey, W., Tyers, M., Vierstra, R., Weissman, A., Wilkinson, K. D, Wolf, D.. (2004) Varshavsky's Contributions, **Science** 306, 1290-2.

Wilkinson, K. D., (2004) Ubiquitin: a Nobel protein. **Cell** 119, 741-5.

Allen, K. D., Wegrzyn, R. D., Chernova, T. A., Muller, S., Newnam, G. P., Winslett, P. A., Wittich, K. B., Wilkinson, K. D., Chernoff, Y. O. (2004) Hsp70 chaperones as modulators of prion life cycle: novel effects of Ssa and Ssb on the *Saccharomyces cerevisiae* prion [PSI⁺]. **Genetics**, 169, 1227-42.

Russell, N. S. and Wilkinson, K. D. (2005) Deubiquitinating Enzyme Purification, Assay Inhibitors, and Characterization. **Methods Mol Biol.**, 301, 207-19

Russell, N. S. and Wilkinson, K. D. (2005), The Deubiquitinating Enzymes in **Protein Degradation: Ubiquitin and the Chemistry of Life**. (Mayer, R. J., Ciechanover, A. J. and Rechsteiner, M. eds.) pp 190-219, Wiley-VCH

Chen, C., Sun, X., Ran, Q., Wilkinson, K. D., Murphy, T. J., Simons, J. W., and Dong, J-T. (2005) Ubiquitin–proteasome degradation of KLF5 transcription factor in cancer and untransformed epithelial cells. **Oncogene**, 24, 3319-27

Wilkinson, K. D., Ventii, K. H., Friedrich, K. L. and Mullally, J. E. (2005) The Ubiquitin Signal; Assembly, Recognition and Termination. **EMBO Rep.** 6, 815-20.

Wilkinson, K. D. (2005) The Discovery of Ubiquitin-dependent proteolysis. **Proc. Natl. Acad. Sci. USA**, 102, 15280-15282.

Wilkinson, K. D., Gan-Erdene, T. and Kolli, N. (2005) Derivatization of the C-terminus of Ubiquitin and Ubiquitin-like Proteins Using Intein Chemistry: Methods and Uses. **Methods Enzymol.**, 399, 37-51.

Hu, M., Li, P., Song, L., Jeffrey, P.D., Chernova, T. A., Wilkinson, K. D., Cohen, R. E., and Shi, Y. (2005) Structure and Mechanisms of the Proteasome-associated Deubiquitinating Enzyme USP14. **EMBO J.** 24, 3747-56.

Mullally, J. E., Chernova, T., and Wilkinson, K. D. (2006) Doa1 Is a Cdc48 Adapter That Possesses a Novel Ubiquitin Binding Domain. **Mol Cell Biol**, 26, 822-30.

Reyes, F. E., Horton, J. R., Mullally, J.E, Heroux, A., Cheng, X., and Wilkinson, K. D. (2006) The ubiquitin-binding domain ZnF UBP recognizes the C-terminal di-glycine motif of unanchored ubiquitin. **Cell**, 124, 1197-208.

Yin, L., Russell, N.S., Cheng, C., Peng, J. and Wilkinson, K.D. (2006) Specificity of Ubiquitin Binding Proteins: Recognition of Different Faces of Ubiquitin. **Israel J Chem**, 46, 159-169

Mukhopadhyay, D., Ayaydin, F., Kolli, N., Tan, S-H., Anan, T., Wilkinson, K.D. and Dasso, M. (2006) SUSP1 antagonizes formation of highly SUMO2/3-conjugated species. **Mol Cell Biol**, 174, 939-949.

Allen, K.D., Chernova, T.A., Tennant, E.P., Wilkinson, K.D., Chernoff, Y.O. (2007) Effects of ubiquitin system alterations on the formation and loss of a yeast prion. **J Biol Chem**. 282, 3004-13.

Chen, Z., Wang, Y., Ratia, K., Mesecar, A.D., Wilkinson, K.D., Baker, S.C. (2007) Proteolytic processing and deubiquitinating activity of papain-like proteases of human coronavirus NL63 **J Virol.** 81, 6007-18

Balakirev, M.Y. and Wilkinson, K.D. (2008) OTU takes the chains OUT. **Nature Chemical Biology**, 4, 5-6.

Messick, T.E., Russell, N.S., Iwata, A.J., Sarachan, K.L., Shiekhatar, R., Shanks, J.R., Reyes-Turcu, F.E., Wilkinson, K.D., and Marmorstein, R. (2008) Structural basis for ubiquitin recognition by the OTU1 ovarian tumor domain protein. **J. Biol. Chem.** *In press.*

Nicholson, B., Leach, C.A., Goldenberg, S.J., Francis, D.M., Kodrasov, M.P., Tian, X., Shanks, J., Sterner, D.E., Bernal, A., Mattern, M.R., Wilkinson, K.D., and Butt, T.R. (2008) Characterization of Ubiquitin and Ubiquitin-like Protein Isopeptidase Activities. **Protein Science**, *in press*

C. Current Research Support.

“Ubiquitin Dependent Proteolysis: Specificity and Mechanism”

Principal Investigator: Keith D. Wilkinson, Ph.D.

Agency: National Institute of General Medicine

Type: ROI-GM30308 Period: 2/1/82 to 7/31/11

Objectives: The aims of this grant are to characterize the physiological roles of UCH enzymes, to crystallize and determine the structure of a UBP, to synthesize and characterize analogs of polyubiquitin chains and to identify enzymes that deconjugate ubiquitin-like proteins.

“Functions of Ub-like Proteins and Processing Proteases”

Principal Investigator: Keith D. Wilkinson, Ph.D.

Agency: National Institute of General Medicine

Type: R01-GM66355 Period: 8/1/02 to 7/31/10

Objectives: The aims of this grant are to characterize the enzymes that deconjugate ubiquitin-like proteins using substrates and active-site directed irreversible inhibitors of the ubiquitin-like protein processing proteases.

D. Past Research Support (selected, last 5 years only).

“HTS Assay for Inhibitors of BAP1, a BRCA1 Associated DUB”

Principal Investigator: Keith D. Wilkinson, Ph.D.

Agency: National Institute of Mental Health

Type: R03-MH076382-01 Period: 9/15/2005 to 9/14/2006

Objectives: This is a very small grant to validate the High Throughput assay for a deubiquitinating enzyme at the Emory MLSC.