Joshua L. Price, Ph.D.

Department of Chemistry and Biochemistry
Brigham Young University
C406 BNSN
Provo, UT 84602
(801) 422-3689
jlprice@scripps.edu

PROFESSIONAL APPOINMENTS

Brigham Young University − Provo, Utah

June 2011-present — Assistant Professor, Department of Chemistry and Biochemistry

The Scripps Research Institute − La Jolla, California

2008-2011 — NIH Postdoctoral Research Fellow (Professor Jeffery W. Kelly)
Stabilizing protein native states by N-glycosylation of enhanced aromatic sequons in reverse turns

EDUCATION

University of Wisconsin − Madison, Wisconsin

2003-2008 — Ph.D., Chemistry (Professor Samuel H. Gellman)
Dissertation: "Development of α/β-Peptide Foldamer Tertiary and Quaternary Structure"

Argonne National Laboratory − Argonne, Illinois

2005 — NIH Chemistry-Biology Interface Training Grant Internship (Professor Brian K. Kay)
Phage display of peptide libraries for probing coiled-coil pairing specificity

Brigham Young University − Provo, Utah

1997-2003 — B.S., Biochemistry, *summa cum laude*, with University Honors
Undergraduate research
2001-2003 — Honors Thesis: "Thermodynamics of L-valine and L-2-amino-n-butanoic acid" (Professor Earl M. Woolley)
2003 — Synthesis of amino retinoid compounds (Professor Heidi R. Vollmer-Snarr)

AWARDS AND HONORS

2008-2011	NIH Ruth L. Kirschstein NRSA Postdoctoral Fellowship
2008	Hirschmann/Rich Graduate Award in Bioorganic Chemistry, University of Wisconsin
2004-2007	NIH Chemistry-Biology Interface Training Grant Fellowship
2003	Samuel L. McElvain Fellowship, University of Wisconsin
2003	Keith P. Anderson Outstanding Senior Student in Chemistry, Brigham Young University
2003	Cancer Research Fellowship, Brigham Young University
2002-2003	Barry M. Goldwater Scholarship
2002	Office of Research and Creative Activities Fellowship, Brigham Young University
1997-2003	Kimberly Clark Bright Futures Scholarship
1997-2003	National Merit Scholarship, Brigham Young University

PUBLICATIONS (Corresponding author denoted by asterisk)

27. Lawrence, P. B.; Gavrilov, Y.; Matthews, S. S.; Langlois, M. I.; Shental-Bechor, D.; Greenblatt, H. M.; Pandey, B. K.; Smith, M. S.; Paxman, R.; Torgerson, C. B.; Merrell, J. P.; Ritz, C.; Prigozhin, M. B.; Levy, Y.*; **Price, J. L.*** *J. Am. Chem. Soc.* in press.

26. Pandey, B. K.; Smith, M. S.; Price, J. L.* "Cys_i–Lys_{i+3}–Lys_{i+4} Triad: A General Approach for PEG-Based Stabilization of α-Helical Proteins." *Biomacromolecules* **2014**, ASAP article.

25. Chao, S. -H.; Matthews, S. S.; Paxman, R.; Aksimentiev, A.; Gruebele, M.*; **Price, J. L.*** "Two Structural Scenarios for Protein Stabilization by PEG." *J. Phys. Chem. B.* **2014**, 118, 8388–8395.

24. Pandey, B. K.; Enck, S.; **Price, J. L.*** "Stabilizing Impact of N-Glycosylation on the WW Domain Depends Strongly on the Asn-GlcNAc Linkage." *ACS Chem. Biol.* **2013**, *8*, 2140–2144.

23. Pandey, B. K.; Smith, M. S.; Torgerson, C.; Lawrence, P.B.; Matthews, S. S.; Watkins, E.; Groves, M. L.; Prigozhin, M. B.; **Price, J. L.*** "Impact of site-specific PEGylation on the conformational stability and folding rate of the Pin WW domain depends strongly on PEG oligomer length." *Bioconjugate Chem.* **2013**, *24*, 796–802.

Publications from postdoctoral research at The Scripps Research Institute

22. Chen, W.; Enck, S.; **Price**, **J. L.**; Powers, D. L.; Powers, E. T.; Wong, C. –H.*; Dyson, H. J.*; Kelly, J. W.* "Structural and energetic basis of carbohydrate-aromatic packing interactions in proteins." *J. Am. Chem. Soc.* **2013**, *135*, 9877–9884.

21. **Price, J. L.**; Culyba, E. K.; Chen, W.; Murray, A. N.; Hanson, S. R.; Wong, C. –H.; Powers, E. T.*; Kelly, J. W.* "N-glycosylation of enhanced aromatic sequons to increase glycoprotein stability." *Peptide Sci.* **2012**, *98*, 195−211.

20. **Price, J. L.**; Powers, E. T.*; Kelly, J. W.* "N-PEGylation of a Reverse Turn is Stabilizing in Multiple Sequence Contexts unlike N-GlcNAcylation." *ACS Chem. Biol.* **2011**, *6*, 1188–1192.

19. **Price, J. L**.; Powers, D. L.; Powers, E. T.*; Kelly, J. W.* "Glycosylation of the enhanced aromatic sequon is similarly stabilizing in three distinct reverse turn contexts." *Proc. Natl. Acad. Sci. USA* **2011**, *108*, 14127–14132.

18. Bourgault, S.; Choi, S.; Buxbaum, J. N.; Kelly, J. W.; **Price, J. L.**; Reixach, N.* "Mechanisms of transthyretin cardiomyocyte toxicity inhibition by resveratrol analogs." *Biochem. Biophys. Res. Commun.* **2011**, *410*, 707–713

17. Culyba, E. K.; **Price, J. L.**; Hanson, S. R.; Dhar, A.; Wong, C. –H.; Gruebele, M.; Powers, E. T.*; Kelly, J. W.* "Protein Native State Stabilization by Placing Aromatic Side Chains in N-Glycosylated Reverse Turns." *Science* **2011**, *331*, 571–575. (EKC and **JLP** share equal authorship)

    featured in *Chemical & Engineering News*, February 7, 2011, Vol. 89, pg. 26; and in *Science-Business eXchange*, February 17, 2011, Vol. 4, doi:10.1038/scibx.2011.184

16. **Price, J. L.**; Shental-Bechor, D.; Dhar, A.; Turner, M. J.; Powers, E. T.; Gruebele, M.; Levy; Y.*; Kelly, J. W.* "Context-Dependent Effects of Asparagine Glycosylation on Pin WW Folding Kinetics and Thermodynamics." *J. Am. Chem. Soc.* **2010**, *132*, 15239–15367.

15. Wiseman, R. L.; Zhang, Y.; Lee, K. P. K.; Harding, H. P.; Haynes, C. M.; **Price, J.**; Sicheri, F.*; Ron, D.* "Flavonol Activation Defines an Unanticipated Ligand-Binding Site in the Kinase-RNase domain of IRE1." *Mol. Cell.* **2010**, *38*, 291–304.

14. Solomon, J. P.; Yonemoto, I. T.; Murray, A. N.; **Price, J. L.**; Powers, E. T.; Balch, W. E.; Kelly, J. W.* "The 8 and 5 kDa Fragments of Plasma Gelsolin Form Amyloid Fibrils by a Nucleated Polymerization Mechanism, while the 68 kDa Fragment is Not Amyloidogenic." *Biochemistry* **2009**, *48*, 11370–11380.

Publications from graduate research at the University of Wisconsin

13. **Price, J. L**.; Horne, W. S.; Gellman, S. H.* "Structural Consequences of β-Amino Acid Preorganization in a Self-Assembling α/β-Peptide: Fundamental Studies of Foldameric Helix Bundles." *J. Am. Chem. Soc*. **2010**, *132*, 12378–12387.

12. **Price, J. L.**; Hadley, E. B.; Steinkruger, J. D.; Gellman, S. H.* "Detection and Analysis of Chimeric Tertiary Structure via Backbone Thioester Exchange: Packing of an α Helix against an α/β-Peptide Helix." *Angew. Chem. Int. Ed.* **2010**, *49*, 368–371.

11. Horne, W. S.; **Price, J. L.**; Gellman, S. H.* "Interplay among side chain sequence, backbone composition, and residue rigidification in polypeptide folding and assembly." *Proc. Nat. Acad. Sci., USA* **2008**, *105*, 9151–9156.

10. **Price, J. L**.; Horne, W. S.; Gellman, S. H.* "Discrete Heterogeneous Quaternary Structure Formed by α/β-Peptide Foldamers and α-Peptides." *J. Am. Chem. Soc.* **2007**, *129*, 6376–6377.

9. Horne, W. S.; **Price, J. L.**; Keck, J. L.; Gellman, S. H.* "Helix Bundle Quaternary Structure from α/β-Peptide Foldamers." *J. Am. Chem. Soc.* **2007**, *129*, 4178–4180.

Publications from undergraduate research at Brigham Young University

8. Vollmer-Snarr, H. R.*; Pew, M. R.; Alvarez, M. L.; Cameron, D. J.; Chen, Z.; Walker, G. L.; **Price, J. L.**; Swallow, J. L. "Amino-Retinoid Compounds in the Human Retinal Pigment Epithelium." Adv. Exp. Med. Biol. **2006**, 572, 69–74.

7. Ziemer, S. P.; Niederhauser, T. L.; **Price, J. L**.; Woolley, E. M.* "Thermodynamics of proton dissociations from aqueous alanine at temperatures from (278.15 to 393.15) K, molalities from (0.0075 to 1.0) mol · kg^{-1}, and at the pressure 0.35 MPa: Apparent molar heat capacities and apparent molar volumes of alanine, alaninium chloride, and sodium alaninate." *J. Chem. Thermodyn.* **2006**, *38*, 939–951.

6. Ziemer, S. P.; Niederhauser, T. L.; Merkley, E. D.; **Price, J. L.**; Sorenson, E. C.; McRae, B. R.; Patterson, B. A.; Woolley, E. M.* "Thermodynamics of proton dissociations from aqueous serine at temperatures from (278.15 to 393.15) K, molalities from (0.01 up to 1.0) mol · kg^{-1}, and at the pressure 0.35 MPa: Apparent molar heat capacities and apparent molar volumes of serine, serinium chloride, and sodium serinate." *J. Chem. Thermodyn.* **2006**, *38*, 634–648.

5. Ziemer, S. P.; Niederhauser, T. L.; Merkley, E. D.; **Price, J. L.**; Sorenson, E. C.; McRae, B. R.; Patterson, B. A.; Origlia-Luster, M. L.; Woolley, E. M.* "Thermodynamics of proton dissociations from aqueous glycine at temperatures from 278.15 to 393.15 K, molalities from 0 to 1.0 mol · kg^{-1}, and at the pressure 0.35 MPa: Apparent molar heat capacities and apparent molar volumes of glycine, glycinium chloride, and sodium glycinate." *J. Chem. Thermodyn.* **2006**, *38*, 467–483.

4. **Price, J. L.**; Sorenson, E. C.; Merkley, E. D.; McRae, B. R.; Woolley, E. M.* "Thermodynamics of proton dissociations from aqueous L-valine and L-2-amino-n-butanoic acid: apparent molar volumes and apparent molar heat capacities of the protonated cationic, neutral zwitterionic, and deprotonated anionic species at temperatures from $278.15 \leq T/K \leq 393.15$, at molalities $0.015 \leq m/mol \cdot kg^{-1} \leq 0.67$, and pressure p = 0.35 MPa." *J. Chem. Thermodyn.* **2003**, *35*, 1425–1467.

3. Sorenson, E. C.; **Price, J. L.**; McRae, B. R.; Woolley, E. M.* "Thermodynamics of proton dissociations from aqueous L-proline: apparent molar volumes and apparent molar heat capacities of the protonated cationic, zwitterionic, and deprotonated anionic forms at temperatures from 278.15 K to 393.15 K and at the pressure 0.35 MPa." *J. Chem. Thermodyn.* **2003**, *35*, 529–553.

2. Origlia-Luster, M. L.; Ballerat-Busserolles, K.; Merkley, E. D.; **Price, J. L.**; McRae, B. R.; Woolley, E. M.* "Apparent molar volumes and apparent molar heat capacities of aqueous phenol and sodium phenolate at temperatures from 278.15 to 393.15 K and at the pressure 0.35 MPa." *J. Chem. Thermodyn.* **2003**, *35*, 331–347.

1. **Price, J. L**.; Jardine, J. J.; Call, T. G.; Patterson, B. A.; Origlia-Luster, M. L.; Woolley, E. M.* "Thermodynamics for proton dissociations from aqueous L-histidine at temperatures from 278.15 to 393.15 K and at the pressure 0.35 MPa: apparent molar volumes and apparent molar heat capacities of the protonated cationic, neutral zwitterionic, and deprotonated anionic forms." *J. Chem. Thermodyn.* **2003**, *35*, 195–198.

PRESENTATIONS AND TALKS

12. 10/10/13 Dept. of Chemistry, Southern Utah University – Cedar City, UT (Talk)
11. 9/25/13 Dept. of Chemistry, Utah State University – Logan, UT (Talk)
10. 3/28/13 Dept. of Chemical Engineering, Brigham Young University – Provo, UT (Talk)
9. 1/24/13 Dept. of Chemistry, Brigham Young University Idaho – Rexburg, ID (Talk
8. 2/28/10 Peptides Gordon Research Conference − Ventura, CA (Poster)
7. 12/08/10 Brigham Young University − Provo, UT (Talk)
6. 9/28/07 University of Wisconsin, Lincoln Seminar − Madison, WI (Talk)
5. 6/26/07 20th American Peptide Symposium − Montreal, Canada (Poster)
4. 3/22/07 University of Wisconsin, Chemistry Dept. Poster Session − Madison, WI (Poster)
3. 3/10/05 University of Wisconsin, Literature Seminar − Madison, WI (Talk)
2. 4/24/03 Brigham Young University Commencement address − Provo, UT
1. 6/20/02 ACS Northwest Regional Meeting − Spokane, WA (Talk)

PROFESSIONAL SERVICE

Ad hoc manuscript reviewer for *J. Am. Chem. Soc.*; *J. Phys. Chem.*; *Bioconjugate Chem.*; *Nature Comm.*; *Carbohydrate Research*; *PLOS One*; *BBA General Subjects*

Ad hoc proposal reviewer for ETH Zürich; Research Corporation for Scientific Advancement

2011-present ORCA proposal reviewer for BYU CPMS College Review Committee

2014-present Member of BYU pre-health advising committee

November 2011 Abstract Reviewer for the 2012 National Conference for Undergraduate Research

2011–present Presenter at National Chemistry Week Magic Show at BYU