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CURRICULUM VITAE

DAVID P. GOLDENBERG

Contact Information

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Areas of Research Interest

Protein folding, structure, dynamics and function

Intrinsically disordered proteins

Macromolecular crowding

Protease - protease inhibitor interactions and function

Effects of mutations on protein folding, dynamics and function

Solution NMR spectroscopy of proteins

Small-angle X-ray and neutron scattering

Thiol-disulfide chemistry

Academic Appointments

1976–1981	Pre-doctoral Institute National Research Service Award (NIH). Department of Biology, Massachusetts Institute of Technology.
1981–1984	NIH Post-doctoral Research Fellow, Medical Research Council Laboratory of Molecular Biology. Supervisor: Dr. Thomas E. Creighton
1984–1985	Member of the Scientific Staff, Medical Research Council Laboratory of Molecular Biology.
1985–1990	Assistant Professor, Department of Biology, University of Utah
1986–1991	Adjunct Assistant Professor, Department of Biochemistry, University of Utah
1990–1996	Associate Professor, Department of Biology, University of Utah
1991–1998	Adjunct Associate Professor, Department of Biochemistry, University of Utah
1996–1997	Visiting Professor, Department of Biological Chemistry and Molecular Pharmacology, Harvard University Medical School
1997–1999	Director, Interdepartmental Graduate Program in Biological Chemistry, University of Utah
1998–present	Adjunct Professor, Department of Biochemistry, University of Utah

2001–present	Adjunct Professor, Department of Chemistry, University of Utah
1996–present	Professor, Department of Biology/School of Biological Sciences, University of Utah
2020–present	Associate Director for Undergraduate Programs, School of Biological Sciences, University of Utah

Education

1972–1976	Whitman College, Walla Walla, WA Majors in Chemistry and Mathematics A.B. *summa cum laude* May 1976
1976–1981	Massachusetts Institute of Technology, Cambridge, MA Department: Biology Thesis Supervisor: Jonathan A. King Thesis title: Genetic and biochemical analysis of the folding and subunit assembly of the bacteriophage P22 tail spike protein Ph.D. June 1981
1981–1985	Medical Research Council Laboratory of Molecular Biology, Cambridge England Post-doctoral training Supervisor: Thomas E. Creighton Research topic: Disulfide-coupled protein folding

Research Support

Current

University of Utah Seed Grant: "Cargo Recognition In Type-III Protein Secretion"
Principle Investigator: David F. Blair
Co-principle Investigators: David P. Goldenberg and Kelly Hughes
Total budget: $20,000

Past

NSF Grant No. DMB-8606449 "Mutational study of the mechanism of protein folding"
July 1986–December 1989

NIH Grant No. 1R01 GM42494 "Mutational study of the mechanism of protein folding"
September 1989–August 1994

NIH Grant No. 2R01 GM42494 "Mutational study of the mechanism of protein folding"
September 1994–May 1999

NSF Grant No. MCB-9316065 "Folding mechanism of a Conus toxin"
September 1994- August 1998

NIH Grant No. 2R01 GM42494 "Mutational study of protein folding and dynamics"
June 1999–May 2003 (1 year no-cost extension through May 2004)

NIH Grant No. 2R01 GM42494 "Energetics and dynamics in protease inhibitor function"
April 2004–March 2010 (with two-year no-cost extension)

NSF Collaborative Research in Chemistry Grant No. 0628257
"CRC - Connecting biology with chemistry through multiscale theory and computer simulation"
Principal Investigator - Gregory A. Voth
Co-principal Investigators - Hans Anderson, David P. Goldenberg and Valeria Molinero,
September 2006–August 2011

NSF Grant No. 0749464
"Solvation and crowding effects on unfolded proteins" 1 May 2008–30 April 2013
(with 2 year no-cost extension)

Awards and Fellowships

John Simon Guggenheim Memorial Foundation Fellow, 1996–1997

University of Sydney Visiting Research Fellowship, 2009

University of Utah College of Science Professorship, 2009–2010

Teaching

- Principles of Cell Biology (Biology 240)
  Each year, 1988–1993 and 1998
  Responsible for approximately 1/2 of the course, shared with Prof. Wolstenholme
- Biochemical Basis of Cellular Function (Biology 321/Chemistry 321)
  1988 and 1989
  Responsible for approximately 1/3 of the course, shared with Prof. Olivera
- Physical Chemical Principles of Biochemistry (Biology 322/Chemistry 322)
  1986 and 1987
  Responsible for approximately 1/3 of the course, shared with Profs. Poulter, Edmundson and Alber (in different years)
- Biological Chemistry Laboratory (Biology 323/Chemistry 323)
  Each year, 1991–1996
  Responsible for 50–100% of the course, shared, in some years, with Prof. Grissom or Dr. Renfranz.
- Biological Chemistry I (Biology 3510/Chemistry 3510)
  1999
  Responsible for approximately 1/2 of the course, shared with Prof. Olivera.

- Biological Chemistry Laboratory (Biology 3515/Chemistry 3515)
  http://goldenberg.biology.utah.edu/courses/biol3515/index.shtml
  Each year, 1999–2004, 2006, 2012-2023
- Physical Principles in Biology (Biology 3820/3550/3551)
  http://goldenberg.biology.utah.edu/courses/biol3550/index.shtml
  2010, 2011, 2015–2024
- Nanoscience: Where Biology, Chemistry and Physics Intersect (Biology 5810/Chemistry 5810/Physics 5810)
  2007–2009
  Shared with Profs. Shumaker-Parry (Chemistry) and Gerton (Physics)
- Protein Biochemistry (Molecular Biology 641)
  Each year, 1985–1993
  Responsible for approximately 1/3 of the course, shared with various faculty from other departments.
- Biopolymers (Biology 604)
  1995, 1996 and 1998
  Responsible for approximately 1/2 of the course, shared with Prof. Blair.
- Structural Methods (Biological Chemistry 6430)
  Each year, 2000–2013, 2015, 2017
  Through 2006, responsible for approximately 1/3 of the semester-long course, shared with Profs. McCloskey and Hill.
  Since 2007, this has been a 1/2 semester course, which I shared equally with Prof. Hill.
- Computing with Python (Biology 6120)
  2019–2023
- Graduate Seminars
  1986,1992,1993,1995,1998,2003, 2008
  Shared, in some instances, with other faculty in Biology and other departments

ResearchTrainees

Graduate students

Jianxin Zhang, 1990–1995, Ph.D. December 1995

Marian Price-Carter, 1990–1996, Ph.D. December 1996

Scott Beeser, 1993–1999, Ph.D. May 1999

Emily M. Kimmell, 1999–2003, M.S. August 2003

Jeffrey V. Miller, 2002–2003, Non-thesis M.S. (Chemistry Dept.)

W. Miachel Hanson, 1999-2005, Ph.D. November 2005

Yuanyuan Wang, 2004-2006, Non-thesis M.S. (Chemistry Dept.)

Tammy Busche, 2007–2008

Gourab Bhattacharje, 2011–2014, M.S. August 2014

Postdoctoral Trainees

Jose A. Mendoza, 1992–1993

Grzegorz Bulaj, 1994–2000

Marian Price-Carter, 1997

Gary Daughdrill, 1997–1998

Tapan Chaudhuri, 2002–2003

Christopher Hopkins, 2003

Elena Zakharova, 2004–2009

Undergraduate students

Approximately 35 between 1986 and 2014.

Department and University Service

Department of Biology/School of Biological Sciences

- Graduate Admissions Committee
  1985–1987
- Search Committees
  1989–1990, Biochemistry, Chair
  1990–1991 and 1991-92, Math-Biology
  1998-1999, Biochemistry, Chair
  2000-2001, Biochemistry
  2001–2002, Molecular and Cellular Biology
  2018–2019, Molecular Biology/Biochemistry
- Executive Committee
  1989–1991, 1992–93, 2000-01, 2003–04, 2007–08, 2020-2024
- HHMI Undergraduate Program Steering Committee
  1989–1991
- Undergraduate Advising Committee (chair)
  1991–1992
- Planning Committee for Aline Skaggs Building
  1994–1998
- Director of Graduate Studies
  1997-2004
- Undergraduate Scholarship Committee
  2002–2003
- Computer Advisory Committee
  1989–present
  2014–present, Committee chair and Director of Computer Facilities

- Curriculum Committee
  1992–1996, (chair 1993-1996)
  2005–2016 (chair, 2005–2009)
  2019–2023 (chair, 2020–2024)
- Web-site Committee
  2019-2020
- ASB 220 Remodel Committee
  2020
- Visiting, Adjunct and Career-lin Faculty Review Committee
  2020-2024

Department of Biochemistry

- Search Committee
  2005-2006

Department of Chemistry

- Search Committees
  2000–2001, Biological NMR
  2001–2002, Biological Chemistry

Interdepartmental Graduate Programs

- Curriculum Committee, Molecular Biology Program
  1986–1991, Chair 1988-89
- Steering Committee, Molecular Biology Program
  1988–1989
- Organizing Committee for Biological Chemistry Program
  1989–1990
- Curriculum and Advising Committee, Biological Chemistry Program
  1990–1995, Chair 1992-95
- Joint Executive Committee for Molecular Biology and Biological Chemistry Programs
  1991–1994
- Admissions Committee, Molecular Biology Program
  1994–1996
- Executive Committee, Biological Chemistry Program
  1995–2009
- Director, Biological Chemistry Program
  1997–1999
- Advising Committee, Biological Chemistry Program
  1999–2001
- Curriculum Committee, Molecular Biology and Biological Chemistry Programs (co-chair)
  2001–2003
- Academic Standards Committee (chair)
  2001–2003

College of Science Committees

- College of Science Council
  1989–1991, 2015-2017
- College of Science Academic Appeals and Misconduct Committee
  2014–2017
- College of Science Curriculum Committee
  2015–2019, 2020–2024 (chair, 2017-2018)
- Science Initiative Task Force
  2007-2008
- Curriculum Committee for the Crocker Science Center
  2009–2014, 2016 (chair, 2011-2014)
- Planning Committee for the Integrated Science Core Curriculum
  2017-2018 (chair)

University Committees

- Academic Senate
  1991–1993, 2015–2018
- Recombinant DNA Biosafety Committee
  1995–2001
- Bioinformatics Advisory Committee
  2001–2002
- University Promotion and Tenure Advisory Committee (UPTAC)
  2003–2006
- NMR Facility (Gauss House) Planning Committee
  2003–2007
- Undergraduate Council
  2005–2008
- Internal Review Committee for Graduate Council Review of the Department of Medicinal Chemistry
  2005
- Academic Freedom and Faculty Rights Committee
  2006–2009, (chair 2008–09)
- University Committee for the Tanner Lectures on Human Values
  2006–2010
- Advisory Committee for the David M. Grant NMR Center (Gauss Haus)
  2008–2011 (chair)
- *ad hoc* Committee on Criminal Background Checks
  2008–2009
- Steering Committee for the Utah Center for Science and Math Education
  2010–2011

- Research Misconduct Investigation Committee (case #02-2011)
  2012–2013
- University Teaching Committee
  2013–2016
- Internal Review Committee for Graduate Council Review of the Department of Linguistics
  2015
- Academic Senate Executive Committee
  2017-2018
- Senate Advisory Committee on Information Technology
  2017–2024 (chair, 2018–2019 and 2020–2021)
- Software Anywhere Task Force
  2018-2019

Professional Service

- Peer grant review
  - Biochemistry Program Advisory Panel, National Science Foundation, 1990–1994
  - Molecular and Cellular Biophysics Study Section (BBCA), NIH, June 1996, *ad hoc*
  - Molecular and Cellular Biophysics Study Section (BBCA), NIH, 1998–2002
  - Program Project Grant Review Panel, NIH, November 2004
  - Special Emphasis Grant Review Panel, NIH, October 2005
  - Special Emphasis Grant Review Panel, NIH, June 2009
- Editorial boards
  - Editorial Advisory Board, Protein Science
    1997–2005
  - Editorial Board, FASEB Journal
    2005–present
  - Editorial Board, FASEB BioAdvances
    2019–present
- Protein Society
  - Executive Council, 2003–2006 and 2010–2013
  - Chair, Program Committee for the 2010 Symposium
- Telluride Science Research Center
  - Co-organizer, June 2013 Workshop on Macromolecular Crowding
  - Co-organizer, June 2015 Workshop on Macromolecular Crowding
- Federation of American Societies of Experimental Biology (FASEB)
  - Board of Directors (Protein Society representative), 2013–2017, 2017–2019
  - Executive Director Search Committee, Spring 2017
  - Executive Committee, 2017–2019
  - Membership Strategy Task Force, 2018–2019

Publications

Goldenberg, D. P. (1981). *Genetic and biochemical analysis of the folding and subunit assembly of the bacteriophage P22 tail spike protein.*. Ph.D. thesis, Mass. Inst. of Technology.

Goldenberg, D. P. & King, J. (1981). Temperature-sensitive mutants blocked in the folding or subunit assembly of the bacteriophage P22 tail spike protein. II. Active mutant protein matured at 30 degrees C. *J. Mol. Biol.*, 145, 633–651.
http://dx.doi.org/10.1016/0022-2836(81)90307-7

Goldenberg, D. P., Berget, P. B. & King, J. (1982). Maturation of the tail spike endorhamnosidase of Salmonella phage P22. *J. Biol. Chem.*, 257, 7864–7871.
http://www.jbc.org/cgi/content/abstract/257/13/7864

Goldenberg, D. & King, J. (1982). Trimeric intermediate in the in vivo folding and subunit assembly of the tail spike endorhamnosidase of bacteriophage P22. *Proc. Natl. Acad. Sci., USA*, 79, 3403–3407.
http://dx.doi.org/10.1073/pnas.79.11.3403

Goldenberg, D. P., Smith, D. H. & King, J. (1983). Genetic analysis of the folding pathway for the tail spike protein of phage P22. *Proc. Natl. Acad. Sci., USA*, 80, 7060–7064.
http://dx.doi.org/10.1073/pnas.80.3.760

Goldenberg, D. P., Smith, D. H. & King, J. (1983). Genetic and biochemical analysis of in vivo protein folding and subunit assembly. *Biopolymers*, 22, 125–129.
http://dx.doi.org/10.1002/bip.360220120

Goldenberg, D. P. & Creighton, T. E. (1983). Circular and circularly permuted forms of bovine pancreatic trypsin inhibitor. *J. Mol. Biol.*, 165, 407–413.
http://dx.doi.org/10.1016/S0022-2836(83)80265-4

Goldenberg, D. P. & Creighton, T. E. (1984). Gel Electrophoresis in Studies of Protein Conformation and Folding. *Anal. Biochem.*, 138, 1–18.
http://dx.doi.org/10.1016/0003-2697%2884%2990761-9

Smith, D. H., Goldenberg, D. P. & King, J. (1984). Use of temperature sensitive mutations to dissect pathways of protein folding and subunit interaction. In *The Protein Folding Problem, Am. Assoc. Adv. Sci. Symposium Vol. 89* (Wetlaufer, D., ed.), pp. 115–143. Westview Press, Boulder.

Creighton, T. E. & Goldenberg, D. P. (1984). Kinetic role of a meta-stable native-like two-disulphide species in the folding transition of bovine pancreatic trypsin inhibitor. *J. Mol. Biol.*, 179, 497–526.
http://dx.doi.org/10.1016/0022-2836(84)90077-9

Goldenberg, D. P. & Creighton, T. E. (1984). Folding pathway of a circular form of bovine pancreatic trypsin inhibitor. *J. Mol. Biol.*, 179, 527–545.
http://dx.doi.org/10.1016/0022-2836(84)90078-0

Goldenberg, D. P. & Creighton, T. E. (1985). The energetics of protein structure and folding. *Biopolymers*, 24, 167–182.
http://dx.doi.org/10.1002/bip.360240114

Chazin, W. J., Goldenberg, D. P., Creighton, T. E. & Wüthrich, K. (1985). Comparative studies of conformation and internal mobility in native and circular basic pancreatic trypsin inhibitor by ^{1}H nuclear magnetic resonance in solution. *Eur. J. Biochem.*, 152, 429–437.
http://dx.doi.org/10.1111/j.1432-1033.1985.tb09215.x

Goldenberg, D. P. (1985). Dissecting the roles of individual interactions in protein stability: Lessons from a circularized protein. *J. Cell. Biochem.*, 29, 321–335.
http://dx.doi.org/10.1002/jcb.240290406

Goldenberg, D. P. (1988). Genetic studies of protein stability and mechanisms of folding. *Annu. Rev. Biophys. Biophys. Chem.*, 17, 481–507.
http://dx.doi.org/10.1146/annurev.bb.17.060188.002405

Goldenberg, D. P. (1988). Kinetic analysis of the folding and unfolding of a mutant form of bovine pancreatic trypsin inhibitor lacking the cysteine-14 and -38 thiols. *Biochemistry*, 27, 2481–2489.
http://dx.doi.org/10.1021/bi00407a034

Goldenberg, D. P. (1989). Analysis of protein conformation by gel electrophoresis. In *Protein Structure: A practical approach* (Creighton, T., ed.), pp. 225–250. IRL Press, Oxford.

Goldenberg, D. P. (1989). Circularly permuted proteins (Commentary). *Prot. Eng.*, 2, 493–495.
http://dx.doi.org/10.1093/protein/2.7.493

Goldenberg, D. P., Frieden, R. W., Haack, J. A. & Morrison, T. B. (1989). Mutational analysis of a protein folding pathway. *Nature*, 338, 127–132.
http:/dx.doi.org/10.1038/338127a0

Rote, K. V., Hough, R., Goldenberg, D. & Rechsteiner, M. C. (1989). Circular pancreatic trypsin inhibitor: a novel substrate for studies on intracellular proteolysis. *J. Biol. Chem.*, 264, 1156–1162.
http://www.jbc.org/content/264/2/1156.abstract

Coplen, L. J., Frieden, R. W. & Goldenberg, D. P. (1990). A genetic screen to identify variants of bovine pancreatic trypsin inhibitor with altered folding energetics. *Proteins*, 7, 16–31.
http://dx.doi.org/10.1002/prot.340070103

Klemm, J. D., Wozniak, J. A., Alber, T. & Goldenberg, D. P. (1991). Correlation between mutational destabilization of phage T4 lysozyme and increased unfolding rates. *Biochemistry*, 30, 589–594.
http://dx.doi.org/10.1021/bi00216a038

Goldenberg, D. P. (1992). Mutational analysis of protein folding and stability. In *Protein Folding* (Creighton, T., ed.), pp. 353–403. W.H. Freeman, New York.

Goldenberg, D. P. (1992). Native and non-native intermediates in the BPTI folding pathway. *Trends Biochem. Sci.*, 17, 257–261.
http://dx.doi.org/10.1016/0968-0004(92)90405-X

Goldenberg, D. P., Berger, J. M., Laheru, D. A., Wooden, S. & Zhang, J.-X. (1992). Genetic dissection of pancreatic trypsin inhibitor. *Proc. Natl. Acad. Sci., USA*, 89, 5083–5087.
http://dx.doi.org/10.1073/pnas.89.11.5083

Jascur, T., Goldenberg, D. P., Vestweber, D. & Schatz, G. (1992). Sequential translocation of an artificial precursor protein across the two mitochondrial membranes. *J. Biol. Chem.*, 267, 13636–13641.
http://www.jbc.org/content/267/19/13636.abstract

Goldenberg, D. P. & Zhang, J. X. (1993). Small effects of amino acid replacements on the reduced and unfolded state of pancreatic trypsin inhibitor. *Proteins: Struct. Funct. Gen.*, 15, 322–329.
http://dx.doi.org/10.1002/prot.340150309

Zhang, J.-X. & Goldenberg, D. P. (1993). Amino acid replacement that eliminates kinetic traps in the BPTI folding pathway. *Biochemistry*, 32, 14075–14081.
http://dx.doi.org/10.1021/bi00214a001

Goldenberg, D. P., Bekeart, L. S., Laheru, D. A. & Zhou, J. D. (1993). Probing the determinants of disulfide stability in native pancreatic trypsin inhibitor. *Biochemistry*, 32, 2835–44.
http://dx.doi.org/10.1021/bi00062a015

Goldenberg, D. P. & Creighton, T. E. (1994). A fishy tale of protein folding (commentary). *Curr. Biol.*, 4, 1026–1029.
http://dx.doi.org/10.1016/S0960-9822(00)00234-7

Mendoza, J. A., Jarstfer, M. B. & Goldenberg, D. P. (1994). Effects of amino acid replacements on the reductive unfolding kinetics of pancreatic trypsin inhibitor. *Biochemistry*, 33, 1143–1148.
http://dx.doi.org/10.1021/bi00171a013

Goldenberg, D. P., Mendoza, J. A. & Zhang, J.-X. (1995). Mutational analysis of the BPTI folding pathway. In *Methods in Protein Structure Analysis* (Appella, M. A. . E., ed.), pp. 483–492. Plenum, New York.

Goldenberg, D. P. (1996). Transverse urea-gradient gel electrophoresis. In *Current Protocols in Protein Science* (Coligan, J., Dunn, B., Ploegh, H., Speicher, D. & Wingfield, P., eds.), pp. 7.4.1–7.4.13. Wiley, New York.
http://dx.doi.org/10.1002/0471140864.ps0704s03

Goldenberg, D. P. (1996). How to go from U to N (book review). *Nature Struct. Biol.*, 3, 314–316.

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Price-Carter, M., Gray, W. R. & Goldenberg, D. P. (1996). Folding of ω-conotoxins. 2. Influence of precursor sequences and protein disulfide isomerase. *Biochemistry*, 35, 15547–15557.
http://dx.doi.org/10.1021/bi9615755

Beeser, S. A., Goldenberg, D. P. & Oas, T. G. (1997). Enhanced protein flexibility caused by a destabilizing amino acid replacement in BPTI. *J. Mol. Biol.*, 269, 154–164.
http://dx.doi.org/10.1006/jmbi.1997.1031

Goldenberg, D. P. (1997). Analysis of protein conformation by gel electrophoresis. In *Protein Structure: A Practical Approach* (Creighton, T., ed.), pp. 187–218. IRL Press, Oxford, 2nd edition.

Zhang, J.-X. & Goldenberg, D. P. (1997). Mutational analysis of the BPTI folding pathway: I. Effects of aromatic → Leu substitutions on the distribution of folding intermediates. *Protein Sci.*, 6, 1549–1562.
http://dx.doi.org/10.1002/pro.5560060719

Zhang, J.-X. & Goldenberg, D. P. (1997). Mutational analysis of the BPTI folding pathway: II. Effects of aromatic → Leu substitutions on folding kinetics and thermodynamics. *Protein Sci.*, 6, 1563–1576.
http://dx.doi.org/10.1002/pro.5560060719

Beeser, S. A., Oas, T. G. & Goldenberg, D. P. (1998). Determinants of backbone dynamics in native BPTI: Cooperative influence of the 14-38 disulfide and the Tyr 35 side chain. *J. Mol. Biol.*, 284, 1581–1596.
http://dx.doi.org/10.1006/jmbi.1998.2240

Bulaj, G., Kortemme, T. & Goldenberg, D. P. (1998). Ionization-reactivity relationships for cysteine thiols in polypeptides. *Biochemistry*, 37, 8965–8972.
http://dx.doi.org/10.1021/bi973101r

Poulter, D. & Goldenberg, D. (1998). Structure: Organic biological molecules. In *Principles of Chemistry in Biology* (Theil, E., ed.), pp. 1–49. Am. Chem. Soc., Washington, DC.

Price-Carter, M., Hull, M. S. & Goldenberg, D. P. (1998). Roles of individual disulfide bonds in the stability and folding of an ω-conotoxin. *Biochemistry*, 37, 9851–9861.
http://dx.doi.org/10.1021/bi9803978

Bulaj, G. & Goldenberg, D. P. (1999). Early events in the disulfide-coupled folding of BPTI. *Protein Sci.*, 8, 1825–1842.
http://www.proteinscience.org/cgi/content/abstract/8/9/1825

Goldenberg, D. P. (1999). Finding the right fold. *Nature Struct. Biol.*, 6, 987–990.
http://dx.doi.org/10.1038/14866

Sreerama, N., Manning, M. C., Powers, M. E., Zhang, J.-X., Goldenberg, D. P. & Woody, R. W. (1999). Tyrosine, phenylalanine and disulfide contributions to the circular dichroism of proteins: CD spectra of wild-type and mutant bovine pancreatic trypsin inhibitor. *Biochemistry*, 38, 10814 –10822.
http://dx.doi.org/10.1021/bi990516z

Favre, I., Moss, G. W. J., Goldenberg, D. P., Otlewski, E. & Moczydlowski, E. (2000). Structure-Activity Relationships for the Interaction of Bovine Pancreatic Trypsin Inhibitor with an Intracellular Site on a Large Conductance Ca^{2+}-Activated K^+ Channel. *Biochemistry*, 39, 2001–2012.
http://dx.doi.org/10.1021/bi992140v

Bulaj, G. & Goldenberg, D. P. (2001). Mutational analysis of hydrogen bonding residues in the BPTI folding pathway. *J. Mol. Biol.*, 313, 639–656.
http://dx.doi.org/10.1006/jmbi.2001.5046

Goldenberg, D. P., Koehn, R. E., Gilbert, D. E. & Wagner, G. (2001). Solution structure and backbone dynamics of an ω-conotoxin precursor. *Protein Sci.*, 10, 538–550.
http://www.proteinscience.org/cgi/content/abstract/10/3/538

Bulaj, G. & Goldenberg, D. P. (2001). ϕ-Values for BPTI folding intermediates and implications for transition states. *Nature Struct. Biol.*, 8, 326–330.
http://dx.doi.org/10.1038/86200

Price-Carter, M., Bulaj, G. & Goldenberg, D. P. (2002). Initial disulfide formation steps in the folding of an ω-conotoxin. *Biochemistry*, 41, 3507–3519.
http://dx.doi.org/10.1021/bi012033c

Goldenberg, D. P. (2003). Computational simulation of the statistical properties of unfolded proteins. *J. Mol. Biol.*, 326, 1615–1633.
http://dx.doi.org/10.1016/S0022-2836(03)00033-0

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http://dx.doi.org/10.1016/j.jmb.2003.08.023

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http://dx.doi.org/10.1007/s00775-003-0454-7

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http://dx.doi.org/10.1110/ps.03563704

Goldenberg, D. P. (2004). Protein folding and assembly. In *Encyclopedia of Biological Chemistry* (Lennarz, W. J. & Lane, M., eds.), volume 3, pp. 493–499. Academic Press/Elsevier Science, San Diego.
http://dx.doi.org/10.1016/B0-12-443710-9/00541-X

Hanson, W. M., Domek, G. J., Horvath, M. P. & Goldenberg, D. P. (2007). Rigidification of a flexible protease inhibitor variant upon binding to trypsin. *J. Mol. Biol.*, 366, 230–243.
http://dx.doi.org/10.1016/j.jmb.2006.11.003

Wang, Y., Trewhella, J. & Goldenberg, D. P. (2008). Small-angle x-ray scattering of reduced ribonuclease A: Effects of solution conditions and comparisons with a computational model of unfolded proteins. *J. Mol. Biol.*, 377, 1576–1592.
http://dx.doi.org/10.1016/j.jmb.2008.02.009

Zakharova, E., Horvath, M. P. & Goldenberg, D. P. (2008). Functional and structural roles of the Cys14-Cys38 Disulfide of Bovine Pancreatic Trypsin Inhibitor. *J. Mol. Biol.*, 382, 998–1013.
http://dx.doi.org/10.1016/j.jmb.2008.07.063

Zakharova, E., Horvath, M. P. & Goldenberg, D. P. (2009). Structure of a serine protease poised to resynthesize a peptide bond. *Proc. Natl. Acad. Sci., USA*, 106, 11034–11039.
http://dx.doi.org/10.1073/pnas.0902463106

Goldenberg, D. P. (2010). The product operator formalism: A physical and graphical interpretation. *Concepts Magn. Reson. Part A.*, 36A, 49–83.
http://dx.doi.org/10.1002/cmr.a.20156

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Computer Software

Goldenberg, B. P. & Goldenberg, D. P. (2000). MacSpec II.
A Macintosh program for controlling and collecting data from UV-visible spectrophotometers via a serial port connection.
http://goldenberg.biology.utah.edu/software.shtml

Goldenberg, D. P. (2012). Utah SAXS Tools.
A package of macros for the ImageJ program and Python scripts for analyzing small-angle X-ray scattering data, with facilities for processing data from slit-collimated instruments and direct fitting to model scattering profiles.
http://goldenberg.biology.utah.edu/software.shtml

Books

Goldenberg, D. P. (2016). *Principles of NMR spectroscopy: An illustrated guide*. University Science Books, Mill Valley, California.
http://www.uscibooks.com/goldenberg.htm

Invited Presentations

UCLA Symposium on Protein Structure, Function and Design, March 1985

Gordon Research Conference on Proteins, June 1985

Rocky Mountain Regional Biochemistry Conference, September 1986

Departmental Seminar, Department of Microbiology and Biochemistry, University of Wyoming, September 1986

Departmental Seminar, Department of Chemistry, Brigham Young University, October 1987

American Association for the Advancement of Science Symposium, February 1988

Departmental Seminar, Department of Biology, Boston University, February 1988

Gordon Research Conference on Biopolymers, June 1988

Seminar, Eli Lilly Corporation, September 1988

American Association for the Advancement of Science Symposium, January 1989 Seminar, Synergen, Inc., March 1989

Departmental Seminar, Department of Biochemistry and Biophysics, Texas A&M University, March 1989

Canadian Chemical Society Symposium, June 1989

Biophysical Society Symposium, February 1990

Departmental Seminar, Department of Biochemistry, Colorado State University, April 1990

Departmental Seminar, Department of Chemistry and Biochemistry, Southern Illinois University, May 1990

Symposium, Biochemische Analytik 90 (Munich), May 1990

Seminar, Gen-Zentrum, Max Planck Institute, Martinsried, May 1990

Seminar, Institute for Biophysics and Physical Biochemistry, University of Regensburg, May 1990

Seminar, Medical Research Council, Laboratory of Molecular Biology, May 1990

FASEB Summer Research Conference on Protein Folding and Assembly in the Cell, June 1990

American Society for Biochemistry and Molecular Biology Symposium, FASEB Annual Meeting, April 1991

Cold Spring Harbor Laboratory conference on Stress Proteins and the Heat Shock Response, April 1991

Departmental Seminar, Department of Cell Biology, University of New Mexico, October 1992

Departmental Seminar, Department of Biochemistry, Duke University, December 1992

International Congress on Design of Biomolecular Function, March 1994

International Conference on Methods in Protein Structure Analysis, September 1994

Departmental Seminar, Department of Chemistry, University of Massachusetts, March 1995

Austin Spring Meeting (University of Texas), March 1995

Seminar, Department of Biochemistry, Brandeis University, November 1996

Seminar, Department of Biology, Massachusetts Institute of Technology, May 1997

Seminar, Rowland Institute of Science, May 1997

Departmental Seminar, Departments of Biology and Chemistry, Boston University, December 1997

Departmental Seminar, Department of Chemistry, Pennsylvania State University, October 1998

Departmental Seminar, Department of Biochemistry and Molecular Biology, Colorado State University, December 2000

Departmental Seminar, Department of Chemistry and Biochemistry, University of Maryland, October 2001

NMR2 Conference (University of Utah), November 2005

Departmental Seminar, Department of Biochemistry and Molecular Biology, University of Arizona, November 2005

Seminar, Department of Biochemistry, Brandeis University, September 2006

Structural Biology and Biophysics Seminar, Duke University, November 2006

Biophysics Graduate Program Seminar, University of North Carolina, Chapel Hill, November 2006

Seminar, Laboratory of Biochemistry and Genetics, National Institute of Diabetes and Digestive and Kidney Disorders, November 2010

Telluride Workshop on Macromolecular Crowding, Telluride, CO, June 2011

2011 Symposium of the Protein Society, Boston, MA, July 2011

Telluride Workshop on Macromolecular Crowding, Telluride, CO, June 2013

Telluride Workshop on Macromolecular Crowding, Telluride, CO, June 2015