

Curriculum Vitae

Gary J. Pielak

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Venable & Kenan Laboratories
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Research Interests:

Protein chemistry and biophysics, especially in living cells.

Employment:

January 2000-

Professor of Chemistry, UNC
Professor of Biochemistry & Biophysics, UNC
Member, UNC Lineberger Comprehensive Cancer Center

July 2000 - June 2005 & July 2007 - June 2008

Vice Chair of Undergraduate Studies in Chemistry

January 2000-June 2006

Faculty Director, UNC Macromolecular Interactions Facility

January 1995-Dec. 1999

Associate Professor of Chemistry, UNC

July 1998 - July 1999

Sabbatical Visitor: Professor Christopher M. Dobson, FRS
Oxford Centre for Molecular Sciences
University of Oxford, England

January 1989 - December 1994

Assistant Professor, UNC

January 1989-

Member UNC Program in Molecular Biology and Biotechnology
Co-director UNC Biomolecular NMR Facility, UNC

June 1986 - January 1989

N.I.H. Postdoctoral Fellow: R.J.P. Williams, F.R.S.
Inorganic Chemistry Laboratory, University of Oxford, England

March 1983 - June 1986

N.I.H., Postdoctoral Fellow: Professor M. Smith, F.R.S., deceased
Department of Biochemistry University of British Columbia
Vancouver, B.C. Canada

Education:

January 1983

Ph.D. in Biochemistry
Laboratory of Professor J. Ivan Legg
Department of Chemistry
Washington State University, Pullman, Washington
Dissertation: Characterization of Arsanilazo & Sulfanilazo Proteins

June 1977

B.A. in Chemistry, Magna cum Laude
Bradley University, Peoria, Illinois

Teaching:

Current Postdocs

Dr. Guifang Wang
Dr. Conggang Li

Current Graduate Students

Mr. Andrew Miklos
Ms. Imola-Gabriela Zigoneanu
Mr. Alex Schlesinger
Mr. Yaqiang Wang
Mr. Christopher Barnes
Ms. Jillian Tyrrell
Ms. Mohona Sarkar

Former Graduate Students and Their Current Employer

Dr. Rebecca Ruf (MRSA Research Center, U. Chicago)
Mr. Matthew Hrabak (Naval Surface Warfare Center)
Dr. Kristin Slade (Claremont McKenna College)
Dr. Lisa Charlton (Pitt)
Dr. Brian McNulty (Athenix)
Dr. Julie Bryant (Merck)
Dr. Alina Olteanu (Tulane)
Dr. Dana Albon (Moses Cone Mem. Hosp.)
Dr. Fang Yi (Centocor)
Dr. Chetan Patel (Lilly)
Dr. Artemiza Morar (GlaxoSmithKline)
Mr. Xuming Wang
Dr. Gresham Weatherly (Abbot Labs)
Dr. Paula Davis-Searles (Diosynth)
Dr. Jennifer Waldner
Ms. Devon Allen, M.S. (Diosynth)
Dr. David Cohen
Dr. Aleister Saunders (Drexel)

Former Graduate Students and Their Current Employer, cont'd

Dr. Jennifer Marmorino
Dr. Donald Doyle (Georgia Tech.)
Dr. James Beasley, (Pharmacopeia)
Dr. Lixin Chen (New Engl. Biolabs)
Dr. Zoey Fredericks (Amgen)
Dr. Douglas S. Auld (NIH)
Dr. Stephen F. Betz (Neurocrine Biosciences)
Dr. Sharon Hilgen-Willis (Integral Molecular)
Ms. Xuhong Wang, M.A (Aventis)

Current Undergraduate Students

Mr. Alexander Krois
Ms. Yuri Yang
Ms. Kristen Black

Former Undergraduates and Where They Went Next

Mr. Emmanuel Chan (Technician, UNC)
Ms. Heidi Scronce (Technician, Duke)
Ms. Niama Sharaf (Grad. School, Pitt)
Mr. Christopher Barnes (Grad. School, UNC)
Mr. Evan Lutz (Med. School, ECU)
Ms. Sandy An (MD/PhD program, Wake Forest, U.)
Mr. Hao Wu
Ms. Hayley Fischer (Med. School, ECU)
Ms. Michelle Mian (Dental School, Harvard)
Ms. Essraa Bayoumi
Mr. Michael Minder (Med. School, Duke)
Mr. Chris Kragel (Med. School, ECU)
Mr. Devin Barrett (Grad. School, UNC)
Mr. Joseph Batchelor (University of California, Berkeley)
Mr. Matthew Dedmon (University of Cambridge, UK)
Mr. Scott Kennedy (Grad. School, UNC)
Ms. Maria Lind (Grad. School, UGA)
Mr. Ikey Kakouras (Duke)
Ms. Kimberly Clay (Med. School, UNC)
Ms. Amret Thompson (Med. School, Wake Forest)
Mr. Daniel Hostetter (Grad. School Biochem. Stanford)
Ms. Melisa Lehti (Grad. School, Botany, Wisconsin)
Mr. Phil Hardwidge (Grad. School, Immunology, Mayo Clinic)
Mr. Sherif Ghobrial (Grad. School, Env. Sci. & Eng., UNC)
Mr. Chetan Patel (Grad. School, Chemistry, UNC)
Ms. Sonja Trojak (Med. School, UNC)
Mr. Bryan Fine (Med. School, U South Florida)
Ms. Xecerla Littles (Med. School, Tulane)
Ms. Shelly Finger (Vet. School, Texas A&M)
Mr. Luiz Alcazar-Roman (Grad. School, Chemistry)
Mr. Harvey Chui (Med. School, UNC)
Ms. Kara Bortone (Grad. School, Chemistry, U. Texas)
Mr. Sudip Parikh (Grad. School, Biochem., Scripps)
Mr. Richard Bruick (Grad. School, Biochem., Scripps)
Ms. Andrea Lee (Grad. School, Biochem., Scripps)
Mr. Mark Dransfield (Med. School, UNC)
Ms. Jennifer Fencl (Grad. School, Chemistry, UNC)
Ms. Tori Williams (Grad. School, Yale)

Courses:

UNC

Macromolecular Structure and Metabolism
Macromolecular Interactions
Practical Protein NMR
First Semester General Chemistry
First Year Seminar: You don't have to be a rocket scientist.
General Biochemistry
Protein Chemistry
Enzyme Mechanisms
Molecular Biology Laboratory
Practical Oligonucleotide-Directed Mutagenesis

Oxford

Biophysics Tutor. New College, 1988

Cold Spring Harbor

Advanced Cloning Course, 1984, 1987
Advanced Techniques in Molecular Biology

University of British Columbia

Site-specific Mutagenesis Directed by Oligodeoxyribonucleotides, 1985

Service:

Current Committee Assignments in Chemistry

Inorganic Search Committee
Undergraduate Studies Committee
Approximately 10 Ph.D. Committees
NMR Committee
Approximately 5 Undergraduate Honors Committees

Past Committee Assignments in Biochemistry & Biophysics

Biophysics Search Committees; Campbell, Lee, and Kuhlman

Past Committee Assignments in Chemistry

Vice Chair of Undergraduate Studies, 2007- 2008
Chair Selection Committee, 2007
Vice Chair of Undergraduate Studies, 2000-2005
Graduate Studies Committee
Ad hoc member Parking Committee
Search Committees; Forbes, Thorp, Erie, Morken, and Weeks
Genomics Search Committee, 2001
Head of Three Promotion/Tenure Committees

University Service

Chair, Admissions Committee, Biological & Biomedical Sciences Program, 2008-
Administrative Boards of the General College, 2003-
Mock interviews for the Gates-Cambridge and Churchill Fellowships through the
Office of Distinguished Scholarships, 2007
Reviewer, Smallwood Undergraduate Summer Research Grants, 2006
Reviewer, Summer Undergraduate Research Fellowships, 2007, 2008

University Service, cont'd

Mock interviews for the Gates-Cambridge and Churchill Fellowships through the Office of Distinguished Scholarships, 2007
Undergraduate Orientation (CTOPS) Professor's Perspective sessions, 2006, 2007, 2008
Financial Exigency and Program Change Committee, 2006-2008
Reviewer, Postdoctoral Awards for Research Excellence, Office of Postdoctoral Services, 2005
Division of Natural Sciences Curriculum Committee
General Education Implementation Committee for the New Undergraduate Curriculum
UNC Curriculum Review, Committee N
Faculty Council
Rhodes Scholarship Mock Interview Committee
Churchill Scholarship Selection Committee
Admissions Committee, Program in Molecular & Cellular Biophysics
Advisory Committee, Curriculum in Applied Sciences
Biomolecular NMR Facility Committee
Macromolecular Interactions Facility Committee
Summer Undergraduate Research Program Selection Committee
Graduate Student Committees:
Environmental Sciences
Engineering, Biochemistry & Biophysics,
Immunology/Microbiology
Cell & Developmental Biology
Presenter, Project Uplift
Presenter, NC Renaissance Program

Regional/National Service; Faculty Search Committee

Biochemistry, Washington State University, 2003

Ph.D. Committees

Duke, Georgia Tech.

Manuscript Referee

Archives of Biochemistry and Biophysics
Biochemistry
Biochimica et Biophysica Acta
Biomacromolecules
Biophysical Chemistry
Biophysical Journal
Biopolymers
BioTechniques
Biotechnology
FEBS Letters
Folding and Design
Inorganica Chimica Acta
Inorganic Biochemistry
Journal of the American Chemical Society
Journal of Biological Chemistry
Journal of Biological Inorganic Chemistry
Journal of Biomolecular NMR
Journal of Chromatography
Journal of Inorganic Biochemistry
Journal of Chromatography

Manuscript Referee, cont'd

Journal of Magnetic Resonance
Journal of Molecular Biology
Journal of Proteome Research
Journal of Physical Chemistry
Macromolecules
Nature
Nature Methods
Nature Structural Biology
Nucleic Acids Research
Protein Science
Proteins: Structure, Function, Genetics/Bioinformatics
Proceedings of the National Academy of Sciences, U.S.A.

Proposal Review:

Panels

University Cancer Research Fund, 2009
NIH New Innovators Award, 2008, 2009
NSF Molecular Biochemistry Review Panel, 2007-
NIH Special Emphasis Panel to review proposals in response to RFQ NIH
ES2007006, entitled "Scientific Research Analysis," 2007
NIH NIH-NIDDK, Kidney, Urologic and Hematologic Diseases D Sub-
Committee, 2007
Gordon Research Foundation, 2005
NIH Physical Biochemistry Study Section, Ad hoc (1996)
NIH Metallobiochemistry Study Section, Ad hoc (2001)
NIH Special Emphasis Panel: Technology Development for Biomedical
Applications, 2001

Ad Hoc, Mail/Email Reviews

NSF
PRF
Research Corporation
Canada: NSERC
UK: BBSRC, MRC, Wellcome,

Meetings Organized/Convened:

Chemistry Spectrum: recruiting high school students interested in science to
UNC, 2008
Co-chair Proteins Gordon Research Conference, 2007
Vice Co-chair Proteins Gordon Research Conference, 2005
Triangle Biophysics Symposium, 1998
Glaxo-Wellcome UNC Symposium, 1989, 1998
Protein Structure Minisymposium, 1993
Southeastern Magnetic Resonance Conference, 1993
Second Carolina Conference on Protein Engineering, 1989

Research:

Current Grants

In-Cell NMR of Disease-Related Proteins
NIH Pioneer Award 5DP1OD783
Total award amount: \$3,750,000
Total period covered: 10/01/2006 – 09/31/2011

Recent Grants

Protein Biophysics in Cells Source: NSF MCB 0516547
Total award amount: \$592,931
Total period covered: 03/01/2006 – 02/28/2009

Electron Transfer Proteins
Source: NIH R01GM020488 (Francis Millett, PI)
Total award amount: \$87,300 (to my laboratory)
Total period covered: 08/01/03 – 07/31/08
This was a subcontract to Professor Francis Millett's NIH grant. Prof. Millett is at the University of Arkansas. Our laboratories have collaborated on protein electron transfer for over 10 years. The funds support our work to produce cytochrome c variant proteins.

Perturbation Calorimetry & Protein Surface Area
Source: PRF 42748-AC4
Total award amount: \$80,000
Total period covered: 05/01/05-08/31/07

Protein Biophysics in Cells
Source: NSF MCB 0212939
Total award amount: \$446,735
Total period covered: 09/01/02 – 08/31/05

Patterned Library Analysis
Source: NIH R01GM058665 (Marshall Edgell, PI)
Total award amount: \$ 873,000
Total period covered: 07/01/00 – 06/30/04
co-PI with Marshall Edgell on this grant.

Free Radicals, Proteins Aggregates & Parkinson's Disease
Source: NIH R21 ES 10774
Total award amount: \$290,000
Total period covered: 10/01/00 – 9/30/02

Cytochrome c & Apoptosis
Source: NSF MCB0109366
Total award amount: \$145,000
Total period covered: 9/01/01-8/31/02

Expansion of the UNC Macromolecular Interactions Facility
Source: North Carolina Biotechnology Center
Total award amount: \$88,895
Total period covered: 7/01/2001-6/30/2003

Recent Grants, cont'd

Protein Hydrogen Bonding and NMR Redox Shifts of Cytochrome c

Source: PRF

Total award amount: \$60,000

Total period covered: 6/01/00-5/31/02

Replacement of a Failed Centrifuge Rotor

Source: University Research Council

Total award amount: \$4,000

Total period covered: 6/01/00-5/31/02

Bringing State-of-the-art NMR to UNC

Source: University Research Council

Total award amount: \$2,500

Total period covered: 1/01/00-12/31/01

Honors:

DuPont Young Faculty Award

Morrow Young Faculty Award

Folding & Binding Paper Alert selector for Current Opinions in Structural Biology, 1997-1998

Underwood Fund Award (BBSRC, U.K.)

Invited Speaker, Proteins Gordon Conference, 2001

Invited Speaker, Biopolymers Gordon Conference, 2002

Invited Speaker, RASMB Gordon Conference, 2002

Invited Speaker FASEB Meeting: Protein Folding in the Cell, 2002

Invited Speaker 13th Conversation in Biomol. Stereodynamics, 2003

Invited Speakers, 18th Annual Gibbs Conference on Biothermodynamics, 2004

Invited Speaker, Eighth Johns Hopkins Folding Meeting, 2005

Invited Speaker, Colorado Protein Stability Conference, 2005

Invited Speaker, Cellular Osmoregulation: Sensors, Transducers and Regulators GRC, 2005

Invited Speaker Trends in Microcalorimetry 2005

Session Chair, Proteins GRC, 2005

Vice co-chair Proteins Gordon Research Conference, 2005

NIH Pioneer Award, 2006

Co-chair Proteins Gordon Research Conference, 2007

Invited Speaker, Southeast Magnetic Resonance Conference, 2007

Invited Speaker, Ions & Osmolytes Symposium, Salt Lake City ACS meeting, 2008

Research Seminars:

May 1, 2010-April 20, 2011

Biopolymers Gordon Conference, June 6-11

U. Toronto, May 27

May 1, 2009 – April 30, 2010

University of Richmond, September 4

UCLA, March 11

Kansas State, January 20

Davidson, January 29

May 1, 2008 – April 30, 2009

Biophysical Society Workshop on Protein Folding, Stability, and Aggregation,
Boston, March 3
Symposium on the Influence of Ions & Osmolytes on Aqueous Macromolecules,
ACS Meeting, Salt Lake City, March 23
UNC Wilmington, September 28
Appalachian State University, November 21

May 1, 2007– April 30, 2008

UNC Chemistry, September 12
NIH Pioneer Symposium, September 19
University of Kansas, October 5
Southeastern Magnetic Resonance Conference, U. Alabama November 10
Honors Chemistry, UNC, November 19

May 1, 2006– April 30, 2007

UNC, Chemistry, September 6
Duke, Biochemistry, October 2
University of Pennsylvania, Biophysics, October 18
Drexel University, Bioscience and Biotechnology, October 19
Virginia Tech, Chemistry, January 26
Biophysical Society, Intrinsically Disordered Proteins Subgroup, Baltimore,
March 3
Seeing is Believing: The Future of Molecular and Biomolecular Imaging Meeting,
Duke, March 11
UNC, Biochemistry & Biophysics, April 17

May 1, 2005 – April 30, 2006

Colorado Protein Stability Conference, Breckenridge, CO
Trends in Microcalorimetry, Boston, MA
Cellular Osmoregulation: Sensors,
Transducers & Regulators GRC, Newport, RI
UNC Chemistry, Chapel Hill, NC
UNC Biochemistry & Biophysics, Chapel Hill, NC
Cold Spring Harbor Meeting on the Intracellular Molecular Environment,
Cold Spring Harbor, NY
University of Pittsburgh, Pittsburgh, PA
University of Denver, Denver, CO
University of Colorado, Health Sciences, Denver, CO
U. Massachusetts, Amherst, MA
NIH, Bethesda, MD

May 1, 2004 – April 30, 2005

Northern Illinois University, DeKalb, IL
Rutgers University, New Jersey
Johns Hopkins Folding Meeting, St. Michaels, MD
Duke University, Durham
University of Richmond, Chemistry
Gibbs Conference, Carbondale, IL

May 1, 2003 – April 30, 2004

Microcalorimetry Conference, Atlanta
Yale University, Molecular Biophys. & Biochemistry
Emory University, Chemistry
University of Kentucky, Biochemistry
Wake Forest University, Physics
UNC-Chapel Hill, Chemistry
13th Conversation in Biomolecular Stereodynamics, SUNY Albany

May 1, 2002 – April 30, 2003

Biopolymers Gordon Conference
FASEB Protein Folding in the Cell Meeting
Toronto Biophysics Symposium
Rensselaer Polytechnic, Chemistry
Penn. State, Chemistry
Washington University, Biochemistry

May 1, 2002 – April 30, 2003, cont'd

UNC-Chapel Hill, Biochemistry & Biophysics
NC State University, Biochemistry
UNC-Chapel Hill, Chemistry
Drexel University, Biology
University of Pennsylvania, Biophysics

May 1, 2001 – April 30, 2002

Proteins Gordon Conference
Reversible Assoc. in Structural Molecular Biology Gordon Conference
Boston ACI Proteomics Symposium
University of Virginia, Biophysics
Washington State University, Chemistry
Sunesis, Inc., South San Francisco
Stanford University, Biochemistry
Georgia Tech., School of Chemistry and Biochemistry.
Georgia State University, Chemistry

Patents:

Provisional application, filed 4/1/2009
Device for particulate NMR samples in fluid
Pielak GJ, Barnes C, Sharaf N, Young G, Pinero F, Charlton L, Seagle C

Publications:

Li C, Wang G-F, Wang Y, Creager-Allen R, Lutz E A, Scronce, H, Slade K M, Ruf RA, Mehl RA Pielak, G. J. 2009. Protein ^{19}F NMR in *Escherichia coli*. *Journal of the American Chemical Society*: in press.

Sharaf NG, Barnes CO, Charlton LM, Young GB, Pielak GJ. 2009. A bioreactor for in cell protein NMR. *Journal of Magnetic Resonance*: in press.

Miklos AC, Li C, Pielak GJ. 2009. Using NMR-detected backbone amide ^1H exchange to assess macromolecular crowding effects on globular-protein stability. *Methods in Enzymology*: 466: 1-18.

- Li C, Wang Y, Pielak GJ. 2009. Translational and rotational diffusion of a small globular protein under crowded conditions. *Journal of Physical Chemistry B*: 113: 13390–13392.
- Li C, Lutz EA, Slade KM, Ruf RA, Wang G, Pielak GJ. 2009. ^{19}F -NMR studies of α -synuclein conformation and fibrillation. *Biochemistry* 48: 8578–8584.
- Slade KM, Baker R, Chua M, Thompson NL, Pielak GJ. 2009. Effects of recombinant protein expression on green fluorescent protein diffusion in *Escherichia coli*. *Biochemistry*, 48: 5083–5089.
- Slade KM, Steele BL, Pielak GJ, Thompson NL. 2009. Quantifying GFP diffusion in *Escherichia coli* by using continuous photobleaching with evanescent illumination. *Journal of Physical Chemistry*, 113: 4837-4845.
- Li C, Pielak GJ 2009. Using NMR to distinguish viscosity effects from nonspecific protein binding under crowded conditions, *Journal of the American Chemical Society* 131: 1368-1369.
- Pielak GJ, Li C, Miklos AC, Schlesinger AP, Slade, K M, Wang G., Zigoneanu IG. 2009. Protein NMR under physiological conditions, *Biochemistry* 48: 226–234.
- Ruf RA, Lutz EA, Zigoneanu IG, Pielak G J. 2008. α -Synuclein conformation affects its tyrosine-dependant oxidative aggregation, *Biochemistry* 47: 13604–13609.
- Li C, Charlton LM, Lakkavaram A, Seagle C, Wang G, Young GB, Macdonald JM, Pielak GJ. 2008. Differential dynamical effects of macromolecular crowding on an intrinsically disordered protein and a globular protein: implications for in-cell NMR. *Journal of the American Chemical Society* 130: 6310-6311.
- Charlton LM, Barnes CO, Li C, Orans J, Young GB, Pielak GJ. 2008. Residue-level interrogation of macromolecular crowding effects on protein stability. *Journal of the American Chemical Society* 130: 6826-6830.
- Pielak GJ, Patel CN, Winzor DJ. 2007. Reconsideration of sedimentation equilibrium distributions reflecting the effects of small inert cosolutes on the dimerization of alpha-chymotrypsin. *Biophysical Chemistry* 130: 89-92.
- Charlton, LM, Pielak, GJ 2006. Peeking into living eukaryotic cells with high-resolution NMR, *Proceedings of the National Academy of Sciences of the United States of America* 103: 11817-11818.
- Bryant, JE, Lecomte, JTJ, Lee, AL, Young, GB, Pielak, GJ 2006. Cytosol has a small effect on protein backbone dynamics, *Biochemistry*, 45: 10085-10091.
Retracted: *ibid.* 2007. *Biochemistry* 46: 8206. **Retracted:** *ibid.* 2007. *Biochemistry* 46: 8206.
- McCall, S J, Nassar, R, Malouf, NN, Saunders, AJ, Oakeley, AE, Henderson, PM, Solaro, RJ, Pielak, GJ, Alexander, KA, and Anderson, PAW 2006. Development and cardiac contractility: cardiac troponin T isoforms and cytosolic calcium. *Pediatric Research*, 60: 276-281.
- Pielak, GJ. 2006. Woes of proline: a cautionary kinetic tale. *Protein Science*, 15: 393-394.

- McNulty, BC, Young, GB, & Pielak, GJ. 2006. Macromolecular crowding in the *Escherichia coli* periplasm maintains α -synuclein disorder. *Journal of Molecular Biology*, 355: 893-897.
- McNulty BC, Tripathy A, Young GB, Orans J, Pielak GJ. 2006. Temperature-induced reversible conformational change in the first 100 residues of α -synuclein. *Protein Science*, 15: 602-608.
- Barrett, DG, Minder, CM, Mian, MU, Whittington, SJ, Cooper, J, Fuchs, KM, Tripathy, A, Waters, ML, Creamer, TP, & Pielak, GJ. 2006. Pressure perturbation calorimetry of helical peptides. *Proteins: Structure Function and Bioinformatics*. 63: 322-326.
- Bryant JE, Lecomte JTJ, Lee AL, Young GB, Pielak GJ. 2005. Protein dynamics in living cells. *Biochemistry*, 44: 9275-9279. Retracted: *ibid.* 2007. *Biochemistry* 46: 8206.
- Pielak, GJ 2005. A model of cellular organization. *Proceedings of the National Academy of Sciences of the United States of America* 102: 5901-5902.
- Yi, F, Sims, D, Pielak, GJ, Edgell, MH. 2005. The impact of robotics and instrument automation on protein stability measurements. *Journal of the Association for Laboratory Automation* 10: 98-101.
- Olteanu, A, Pielak, GJ. 2004. Peroxidative aggregation of α -synuclein requires tyrosines. *Protein Science* 13: 2852-2856.
- Batchelor, JD, Olteanu, A, Tripathy, A, Pielak, GJ 2004. Impact of protein denaturants and stabilizers on water structure. *Journal of the American Chemical Society* 126: 1958-1961.
- Olteanu, A, Patel, CN, Dedmon, MM, Kennedy S, Linhoff, MW, Minder, CM, Potts, PR, Deshmukh, M, Pielak, GJ 2003. Stability and apoptotic activity of recombinant human cytochrome *c*. *Biochemical and Biophysical Research Communications* 312/3: 733-740.
- Yi, F, Sims, DA, Pielak, GJ, Edgell, MH. 2003. Testing hypotheses about determinants of protein structure with high-precision, high-throughput stability measurements and statistical modeling. *Biochemistry* 42: 7594-7603.
- Edgell, MH, Sims, DA, Pielak, GJ, Yi, F. 2003. High-precision, high-throughput stability determinations facilitated by robotics and a semi-automated titrating fluorometer. *Biochemistry* 42: 7587-7593.
- Engstrom, G, Rajagukguk, R, Saunders, AJ, Patel, CN, Rajagukguk, S, Merbitz-Zahradnik, T, Xiao, K, Pielak, GJ, Trumppower, B, Yu, C-A, Yu, L, Durham, B, Millett, F. 2003. Design of a ruthenium-labeled cytochrome *c* derivative to study electron transfer with the cytochrome *bc1* complex. *Biochemistry* 42: 2816-2824.
- Dedmon, MM, Patel, CN, Young, GB, Pielak GJ. 2002. FlgM gains structure in living cells. *Proceedings of the National Academy of Sciences of the United States of America* 99: 12861-12864.
- Beasley, JR, Doyle DF, Chen L, Cohen DS, Fine BR, Pielak GJ. 2002. Searching for quantitative entropy-enthalpy compensation among protein variants. *Proteins: Structure, Function, and Genetics* 49: 398-402.

- Patel, CN, Noble, S., Weatherly, GT, Tripathy, A, Winzor, DJ, Pielak, GJ. 2002. Effects of molecular crowding by saccharides on alpha-chymotrypsin dimerization. *Protein Science* 11: 997-1003.
- Morar, AS, Pielak GJ. 2002. Crowding by trisaccharides and the 2:1 cytochrome *c*/cytochrome *c* peroxidase complex. *Biochemistry* 41: 547-551.
- Morar, AS, Olteanu A, Young GB, Pielak GJ. 2001. Solvent-induced collapse of alpha-synuclein and acid denatured cytochrome *c*. *Protein Science* 10: 195-199.
- Patel, C, Lind, M, Pielak, GJ. 2001. Characterization of horse cytochrome *c* expressed in *Escherichia coli*. *Protein Expression and Purification*: 22: 220-224.
- Davis-Searles, PR, Saunders, AJ, Erie, DA, Winzor, DJ, Pielak, GJ. 2001. Interpreting the effects of small uncharged solutes on protein-folding equilibria. *Annual Review of Biophysics and Bioengineering* 30: 271-306.
- Morar, AS, Wang, X, Pielak, GJ. 2001. Effects of crowding by mono-, di-, and tetrasaccharides on cytochrome *c* / cytochrome *c* peroxidase binding: comparing theory to experiment. *Biochemistry* 40: 281-285.
- Pielak, GJ, Wang, X. 2001. Interactions between yeast iso-1-cytochrome *c* and its peroxidase. *Biochemistry* 40: 422-428.
- Weatherly, GT, Pielak, GJ. 2001. Second virial coefficients as a measure of protein-osmolyte interactions. *Protein Science* 10: 12-16.
- Saunders, AJ, Davis-Searles, PR, Allen, DL, Pielak, GJ, Erie, DA. 2000. Osmolyte-induced changes in protein conformational equilibria. *Biopolymers* 53: 293-307.
- Boyd, J, Dobson, CM, Morar, AS, Williams, RJP, Pielak, GJ. 1999. 1H and 15 N hyperfine shifts of cytochrome *c*. *Journal of the American Chemical Society* 121: 9247-9248.
- Chen, L, Pielak, GJ, Thompson, NL. 1999. The cytoplasmic region of Fc(γ)RIIb1, but not Fc(γ)RIIb2, binds phospholipid membranes. *Biochemistry* 38: 2102-2109.
- Hostetter, DR, Weatherly, GT, Beasley, JR, Bortone, K, Cohen, DS, Finger, SA, Hardwidge, P, Kakouras, D, Saunders, AJ, Trojak, SK, Waldner, JL, Pielak, GJ. 1999. Partially formed native tertiary interactions in the A-state of cytochrome *c*. *Journal of Molecular Biology* 289: 639-644.
- Lahr, SJ, Broadwater, A, Carter, CW, Jr., Collier, ML, Hensley, L, Waldner, JL, Pielak, GJ, Edgell, MH. 1999. Patterned library analysis: a method for the quantitative assessment of hypotheses concerning the determinants of protein structure. *Proceedings of the National Academy of Sciences of the United States of America* 96: 14860-14865.
- Mei, H, Wang, K, Peffer, N, Weatherly, GT, Cohen, DS, Pielak, GJ, Durham, B, Millett, F. 1999. Role of configurational gating in intramolecular electron transfer from cytochrome *c* to the radical cation in cytochrome *c* peroxidase. *Biochemistry* 39: 6846-6854.
- Morar, AS, Kakouras, D, Young, GB, Boyd, J, Pielak, GJ. 1999. Expression of 15 N-labeled eukaryotic cytochrome *c* in *Escherichia coli*. *Journal of Biological Inorganic Chemistry* 4: 220-222.
- Waldner, JL, Lahr, SJ, Edgell, MH, Pielak, GJ. 1999. Nonideality and protein thermal denaturation. *Biopolymers* 49: 471-479.

- Wang, X, Pielak, GJ. 1999. Equilibrium thermodynamics of a physiologically-relevant heme-protein complex. *Biochemistry* 38: 16876-16881.
- Allen, DL, Pielak, GJ. 1998. Baseline length and automated fitting of denaturation data. *Protein Science* 7: 1262-1263.
- Davis-Searles, PR, Morar, AS, Saunders, AJ, Erie, DA, Pielak, GJ. 1998. Sugar-induced molten-globule model. *Biochemistry* 37: 17048-17053.
- Fairris JL, Wang K, Geren L, Pielak GJ, Durham B, Millett F. 1998. Intramolecular electron transfer in yeast cytochrome *c* covalently bonded to ruthenium(II) polypyridine complexes at cys39. In: *Photochemistry and Radiation Chemistry: American Chemical Society Advances in Chemistry Series 254*. American Chemical Society: Washington, D.C. pp. 99-110.
- Marmorino, JL, Lehti, M, Pielak, GJ. 1998. Native tertiary structure in an A-state. *Journal of Molecular Biology* 275: 379-388.
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