Curriculum Vitae
Allyn Schoeffler, Ph.D.

Education

2009: Ph.D. in Molecular and Cell Biology, from the University of California, Berkeley, CA (GPA = 3.99)

2002: B.S. in biochemistry with minors in chemistry, English and French, from Louisiana State University, Baton Rouge, LA (GPA = 4.00, summa cum laude, with college honors)

1998: High School Diploma, Ponchatoula High School, Ponchatoula, LA (GPA = 4.00, valedictorian)

Grants & Funding

- 2018: NSF-CHE 1828078, MRI: Acquisition of a Single Crystal X-Ray Diffractometer for Structure Determination and Diffuse Scattering on Small Molecules, Macromolecules, and Materials
    - Collaborator
    - Principle Investigator: Dr. Elizabeth Papish, University of Alabama, Tuscaloosa

- 2018: NIH-AREA 1R15AI131159-01A1, Structure and Mechanism of Erythromycin Resistance Methyltransferases
    - Subcontract to Spring Hill College/Loyola of $52,826 over 3 years
    - Principle investigator Dr. Jack Dunkle, University of Alabama, Tuscaloosa
    - Funding provides for travel, salary, and undergraduate research at UA

- 2016: Spring Hill College Faculty Development Grant, Structure and Function of Cold-Tolerant Proteins
    - $1000 (supplies)

- 2016: Spring Hill College Department of Chemistry Summer Research Grant, Structure and Function of Cold-Tolerant Proteins
    - $2250 (salary)

Selected Honors

2018: St. John Berchmans Award, Spring Hill College
(for excellence in teaching; one awarded each year college-wide)

2017: Teacher of the Year, Spring Hill College
(one awarded each year college-wide)

2012: Key Researcher Award, Genentech
(for significant contributions toward company research goals)

2007: Outstanding Graduate Student Instructor, Department of Molecular and Cell Biology, UC Berkeley

2003: National Science Foundation Graduate Research Fellowship recipient

2003: Outstanding Undergraduate Thesis in the Natural Sciences Award, Louisiana State University
2003: Outstanding Senior in Biochemistry, Louisiana State University
2002: Outstanding Senior in the Honors College, Louisiana State University
2002: Phi Beta Kappa, Louisiana State University
2001: Goldwater Fellowship
2001: Phi Kappa Phi, Louisiana State University
1999: Honorable Mention in Poetry Division of the Louisiana Association for College Composition
1999: 1st place in Personal Essay Division of the Louisiana Association for College Composition
1998: National Merit Scholar

Employment

August 2019 – present: Assistant Professor, Loyola University New Orleans, Gertrude and Earl Vicknair Distinguished Professorship in Chemistry

August 2015 – May 2019: Assistant Professor, Spring Hill College

- Director of the Biochemistry Program

May 2010 - May 2015: Senior Research Associate, full time, working under Dr. Erin Dueber at Genentech, Department of Early Discovery Biochemistry

January 2003 - May 2003: Undergraduate Research Associate, full time, working under Dr. Vince LiCata at Louisiana State University

August 1998 - December 2002: Undergraduate Lab Assistant, part time, working under Dr. Vince LiCata at Louisiana State University

Teaching Experience

Loyola University New Orleans (August 2019 – present)

- **Physical Chemistry I Lecture** (CHEM 306)
- **General Chemistry I Laboratory** (CHEM A107)

University of South Alabama (Summer 2019)

- **DREAM/SMPS program** (CHM 422 & 424)
    - MCAT preparation course (focus on chemical and biochemical foundations)
    - Taught multiple sessions to a group of select students in the Diversity Recruitment and Enrichment for Admission into Medicine (DREAM) and South Med Prep Scholars (SMPS) programs

Spring Hill College (August 2015 – May 2019)

- **Biophysical Chemistry Lecture & Lab** (CHM 422 & 424)
    - Developed and taught in conjunction with the University of South Alabama
- **Biochemistry I & II Lectures & Lab** (CHM 461, 462, & 464)

- **Drug Discovery** (CHM 466)
    - Developed as an upper level elective for science majors
    - Received the first *Integrations* designation of any science course at Spring Hill College, a designation indicating substantial incorporation of interdisciplinary topics in philosophy and ethics.
- **Introduction to General Chemistry** (CHM 110)
    - Developed for non-majors and majors with a weak high school chemistry background
- **General Chemistry Lab I & II** (CHM 113 & 114)
- **Senior Seminar** (CHM 492)
    - Semester-long, mentored, literature-based student research project
    - Culminates in a 20-page paper and a 30-minute presentation
- **Terrorism** (IDS 394)
    - Member of an interdisciplinary teaching team
- **Ethics in the Anthropocene** (THL 390)
    - Frequent guest lecturer for Dr. Matthew Bagot, Department of Philosophy
    - Assisted in course design & text selection
- **Data Techniques for the Sciences** (MTH 220)
    - Taught in collaboration with Dr. Jonathan Dunbar, Dept. of Mathematics
    - Combines python coding with data science techniques
    - Includes a service-learning component in which undergraduates mentor local high school students through game coding projects

The Prison University Project at San Quentin Prison, California

- **Introduction to the Natural Sciences: Biology**, Head Instructor (May 2006 - July 2006)
    - Developed a new introductory biology curriculum with a co-teacher
    - Taught approximately 30 student inmates
- **Remedial Math,** Instructor (April 2005 – April 2006)
    - Tutored a fluctuating class of student inmates in basic math skills

University of California, Berkeley

- **Biochemistry & Molecular Biology** (MCB 110), Teaching assistant (January 2005-May 2006)
- **Biochemistry & Molecular Biology Lab** (MCB 110L), Teaching assistant (August 2004-December 2004)

Mentorship of Undergraduate Student Research Projects

Fall 2018-Summer 2019

- SHC research project: Assessment of mesophilic and thermophilic gyrase activity
  Georgette Munezero, Ferdinand Amanor, and Athina Amanor
- SHC research project: Purification of relaxed plasmid DNA
  Nicolas Weirath, Ashton Eymard, and Alexandra Thomas

Fall 2017-Summer 2018

- External research project: Mutagenesis of erythromycin resistance methyltransferases
  Georgette Munezero and Athina Amnor; Summer 2018 (summer-long paid internship funded by NIH-AREA 1R15AI131159-01A1, directly mentored by Dr. Jack Dunkle)
  Location: University of Alabama, Tuscaloosa
  * Product: poster at the American Chemical Society National Meeting 2019 in Orlando, FL; poster at the Spring Hill Undergraduate Research Symposium, Spring 2019
- Collaborative research project: Purification of topoisomerase I from wheat germ
  Ferdinand Amanor and Nicholas Weirath; Spring 2018 (short-term)
  Location: Louisiana State University, Collaboration with Dr. Vince LiCata
- SHC research project: Development of an in-house purification strategy for topoisomerase I
  Cullyn Mayes; Spring 2018
  Product: In-house protocol paper

Fall 2016-Summer 2017

- Collaborative research project: Purification of *T. maritima* DNA Gyrase
  Victoria Shepherd; Summer 2017 (short-term)
  Location: University of Alabama, Tuscaloosa (lab of Dr. Jack Dunkle)
- SHC research project: Expression and purification of bacterial topoisomerases
  Ferdinand Amanor; Fall 2016-Spring 2017
  * Product: Poster presentation at Spring Hill College Undergraduate Research Symposium 2017
- SHC research project: Expression and purification of bacterial topoisomerases
  Jennifer Bonsutto, Lillian DeSousa, and Rae Koch; Summer 2016-Spring 2017
  * Product: Poster presentation at the Southeastern Regional Meeting of the American Chemical Society (SERMACS) 2017 (Columbia, SC)

Fall 2015-Summer 2016

- SHC research project: Expression and purification of thermophilic bacterial topoisomerases
  Alexander Mestre; Spring 2016
  * Product: Presentation at Spring Hill College Undergraduate Research Symposium 2016
- SHC research project: Optimization of error prone PCR of green fluorescent protein
  Rebecca Weiss; Spring 2016
  * Product: Presentation at Spring Hill College Undergraduate Research Symposium 2016

Community Outreach

Public Lectures

- Invited talk: Dome Head Science at the Gulf Coast Exploreum (3/9/17)
- Invited talks: CRISPR-Cas9 and the Genetic Editing Revolution, at the Thursday Evening Chemistry seminar series for high school students, sponsored by the University of South Alabama Chemistry Department.
    - 3/17/16, 2/9/17

Demonstrations

- GEMS (Girls Engaging in Math & Science) demonstration (11/10/18) (DNA extraction from strawberries & building a magnetic DNA model with middle school girls)
- Chemistry demonstrations brought to Mary B. Austin elementary school (2/1/17)
- Chemistry demonstrations brought to Azalea City Montessori elementary school (3/3/17)
- Science Olympiad Protein Folding event (organization & judging with undergraduate student participation) (3/5/16)

Professional Service

- Paid reviewer: Physical Chemistry for the Life Sciences, 2nd ed., by Peter Atkins and Julio de Paula, Oxford University Press.

Committee Service

- Educational Technology Committee (Summer 2016 – Spring 2019)
    - Participated in the selection and deployment of a new college-wide learning management system
    - Served as chair (2017-2018)
    - Served as Secretary (2018-2019)
- Interdisciplinary Studies Committee (Fall 2015 – Spring 2019)
    - Developed a new interdisciplinary studies program integrating the sciences and the humanities
- Academic Standards Committee (Fall 2017 – Spring 2019)
    - Initiated a project to study the feasibility of test-optional admissions policies
- Upward Bound Grant Committee (Fall 2016)
    - Participated in grant-writing and data analysis
    - Served as secretary
- Mission Priorities Examen Steering Committee (Fall 2017 – Spring 2019)
    - Participated in a college-wide reflection on institutional priorities and effectiveness in the context of the college's Jesuit mission.
    - Contributed to the writing and editing of committee documents

Professional Training & Development

2018: Writing Across the Curriculum (WAC) Faculty Workshop, University of South Alabama

- Certificate based on online course completion

2017: Ignatian Seminar, Spring Hill College

- A yearlong seminar on Ignatian identity, led by Fr. Greg Lucey, S.J., Chancellor
- Participant (in 2016-2017), guest speaker (in 2018)

2011: EMBL Practical Course on Solution Scattering from Biological Macromolecules. Oct. 25-Nov. 1, 2010, Hamburg, Germany.

- A professional training course on small-angle X-ray scattering

2007: Elective graduate coursework, MCB290i: Inquiry-Driven Course Design, University of California, Berkeley, CA

- A teaching methods course on curriculum development, taught by Dr. Martin Covington

2007: Elective graduate coursework, IB304: Science Communication (audited), University of California, Berkeley, CA

- A course on best practices and techniques for communicating science to the public, taught by Dr. Mimi R. Koehl

Publications

♦ indicates mentorship of the first author

✚ indicates undergraduate research

⊕ indicates multi-institution collaborative work

Wertz, I.E.; Newton, K.; Seshasayee, D.; Saritha, K.; Lam, C.; Zhang, J.; Popovych, N.; Helgason, E.; **Schoeffler, A.J.**; Jeet, S.; Ramamoorthi, N.; Kategaya, L.; Newman, R.J.; Horikawa, K.; Dugger, D.; Sandoval, W.; Mukund, S.; Zindal, A.; Martin, F.; Quan, C.; Tom, J.; Fairbrother, W.J.; Townsend, M.; Warming, S.; DeVoss, J.; Liu, J.; Dueber, E.C.; Capalzi, P.; Lee, W.P.; Goodnow, C.C.; Balazs, M.; Yu, K.; Koluman, G.; Dixit, V.M. Phosphorylation and Linear Ubiquitin Direct A20 Inhibition of Inflammation. (2016) *Nature* **528**: 370-375.

Yin, J.; **Schoeffler, A.J.**; Wickliffe, K.; Newton, K.; Starovasnik, M.; Dueber, E.C.; Harris, S.F. Structural Insights into WD-Repeat 48 Activation of Ubiquitin-Specific Protease 46. (2015) *Structure* **23**: 2043-2054.

⊕ Phillips, A.H.; **Schoeffler, A.J.**; Matsui, T.; Weiss, T.M.; Blankenship, J.W.; Zobel, K.; Giannetti, A.M.; Dueber, E.C. Internal motions prime cIAP1 for rapid activation. (2014) *Nature Structural and Molecular Biology* **21**: 1068-1074.
***co-first authorship**

⊕ Vos, S.M.; Lyubimov, A.Y.; Hershey, D.M.; **Schoeffler, A.J.**; Sengupta, S.; Nagaraja, V.; Berger, J.M. Direct control of type IIA topoisomerase activity by a chromosomally encoded regulatory protein. (2014) *Genes & Development* **28**: 1485-1497.

Fouts, A.E.; Comps-Agrar, L.; Stengel, K.F.; Ellermen, D.; **Schoeffler, A.J.**; Warming, S.; Eaton, D.L.; Feierbach, B. Mechanism for neutralizing activity by the anti-CMV gH/gL monoclonal antibody MSL-109. (2014) *Proceedings of the National Academy of Sciences* **111** 8209-8214.

⊕ Basu, A.; **Schoeffler, A.J.**; Berger, J.M.; Bryant, Z. ATP binding controls distinct transitions of *Escherichia coli* DNA gyrase in complex with DNA. (2012) *Nature Structural and Molecular Biology* **19**: 538-546.

Dueber, E.C.; **Schoeffler, A.J.**; Lingel, A.; Elliott, J.M.; Fedorova, A.V.; Giannetti, A.M.; Zobel, K.; Maurer, B.; Varfolomeev, E.; Wu, P.; Wallweber, H.J.; Hymowitz, S.G.; Deshayes, K.; Vucic, D.; Fairbrother, W.J. Antagonists induce a conformational change in cIAP1 that promotes autoubiquitination. (2011) *Science* **334**: 376-380.

Leonelli, L.; Pelton, J.; **Schoeffler, A.J.**; Dahlbeck, D.; Berger, J.; Wemmer, D.E.; Stakawicz, B. Structural and functional characterization of the *Hyaloperonospora arabidopsidis* effector protein ATR13. (2011) *PLoS Pathogens* **7**: e1002428-e1002428.

⊕ Li, Y.; Stewart, N.K.; Berger, A.J.; Vos, S.; **Schoeffler, A.J.**; Berger, J.M.; Chait, B.T.; Oakley, M.G. *Escherichia coli* condensin MukB stimulates topoisomerase IV activity by a direct physical interaction. (2010) *Proceedings of the National Academy of Sciences* **107**: 18832-18837.

Schoeffler, A.J.; May, A.P.; Berger, J.M. A domain insertion in *Escherichia coli* GyrB adopts a novel fold that plays a critical role in gyrase function. (2010) *Nucleic Acids Research* **38**: 7830-7844.

⊕ Li, Y.; **Schoeffler, A.J.***; Berger, J.M.; Oakley, M.G. The crystal structure of the hinge domain of the *Escherichia coli* structural maintenance of chromosomes protein MukB. (2010) *Journal of Molecular Biology* **395**: 11-19.
***co-first authorship**

♦ Tretter, E.M.; **Schoeffler, A.J.**; Weisfield, S.R.; Berger, J.M. Crystal structure of the DNA gyrase GyrA N-terminal domain from *Mycobacterium tuberculosis*. (2009) *Proteins* **78**: 492-495.

⊕ Stuchinskaya, T.; Michenall, L.A.; **Schoeffler, A.J.**; Corbett, K.D.; Berger, J.M.; Bates, A.D.; Maxwell, A. How do type II topoisomerases use ATP hydrolysis to simplify DNA topology beyond equilibrium? Investigating the relaxation reaction of nonsupercoiling type II topoisomerases. (2009) *Journal of Molecular Biology* **385**: 1397-1408.

Schoeffler, A.J.; Berger, J.M. DNA topoisomerases: harnessing and constraining energy to govern chromosome topology. (2008) *Quarterly Reviews of Biophysics* **41**: 41-101.

Barth, P.; **Schoeffler, A.J.**; Alber, T. Targeting metastable coiled-coil domains by computational design. (2008) *Journal of the American Chemical Society* **130**: 12038-44.

Schoeffler, A.J.; Berger, J.M. Recent advances in understanding structure-function relationships in type II topoisomerases. (2005) *Biochemical Society Transactions* **33**: 1465-1470.

Corbett, K.D.; **Schoeffler, A.J.**; Thomsen, N.D.; Berger, J.M. (2005) The structural basis for substrate specificity in DNA topoisomerase IV. *Journal of Molecular Biology* **351**: 545-561.

✚ **Schoeffler, A.J.;** Joubert, A.M.; Peng, F.G.; Khan, F.H.; Liu, C.C.; LiCata, V.J. Extreme free energy stabilization of Taq DNA polymerase. (2004) *Proteins: Structure, Function and Bioinformatics* **54**: 616-621.

✚ **Schoeffler, A.J.**; Ruiz, C.R.; Joubert, A.M.; Yang, X.; LiCata, V.J. Salt modulates the stability and lipid binding affinity of the adipocyte lipid binding protein. (2003) *Journal of Biological Chemistry* **278**: 33268-33275.

Oral Presentations

★ indicates invited speaker status

✚ indicates undergraduate research

Schoeffler, A.J. and Dunkle, J.A. Substrate Specificity of Erythromycin Resistance Methyltransferases. *Southeast Regional Biophysical Consortium*, June 3-4, 2019.

Schoeffler, A.J. Structure-function studies of bacterial thermophilic, mesophilic and psychrophilic type IIA topoisomerases. *Mississippi Regional Biophysical Consortium*, May 24-25, 2017.

Schoeffler, A.J.; Phillips, A.H.; Matsui, T.; Weiss, T.M.; Blankenship, J.; Zobel, K.; Giannetti, T.; Dueber, E.C.; Fairbrother, W.J. Internal motions prime cIAP1 for rapid activation. *Mississippi Regional Biophysical Consortium,* May 23-25, 2016.

★ **Schoeffler, A.J.;** Phillips, A.H.; Matsui, T.; Weiss, T.M.; Dueber, E.C.; Fairbrother, W.J. SAXS reveals the activation mechanism of a critical cell death switch. *Stanford Synchrotron Radiation Lightsource Workshop on Small-Angle X-ray Scattering and Diffraction Studies in Structural Biology,* March 29, 2015.
Invited Speaker

Schoeffler, A.J.; Phillips, A.H.; Matsui, T.; Weiss, T.M.; Dueber, E.C.; Fairbrother, W.J. The dynamics of cIAP1 are precisely tuned for rapid activation. *Keystone Symposium: Frontiers of Structural Biology,* March-April 2014.

★ **Schoeffler, A.J.**; Helgason, E.; Wertz, I.; Dueber, E. Bridging Artifacts in Octet Measurements: Detecting Them, Avoiding Them, and Compensating for Them. *ForteBio Workshop: Label-Free Assays for Protein Characterization, Biopharmaceutical Development and Bioprocessing.*
Multiple presentations: April 2013 (South San Francisco, CA), June 2013 (South San Francisco, CA), March 2014 (Houston, TX)
Invited Speaker

★ **Schoeffler, A.J.** Dueber, E.C.; Lingel, A.; Elliott, J.M.; Fedorova, A.V.; Giannetti, A.M.; Zobel, K.; Maurer, B.; Varfolomeev, E.; Wu, P.; Wallweber, H.J.; Hymowitz, S.G.; Deshayes, K.; Vucic, D.; Fairbrother, W.J. cIAP Ubiquitin Ligase Activation via IAP Antagonist-Induced Dimerization. *25th Anniversary Symposium of the Protein Society*, July 2011
Invited Speaker

Schoeffler, A.J.; Corbett, K.D.; Thomsen, N.D.; Berger, J.M. The structural basis for substrate specificity in DNA topoisomerase IV. *Keystone Symposium: Nucleic Acids Enzymes*, February 2006.

✚ **Schoeffler, A.J.**; Joubert, A.M.; Solhjoo, L.; Yang, X.; LiCata, V.J. Salt Effects on the lipid binding and stability of adipocyte lipid binding protein. *Biophysical Journal* **84** (2), 333A-333A Part 2, February 2003.

✚ **Schoeffler, A.J.**; Karentzeni, I.; Yang, X.; Datta, K.; LiCata, V.J. Thermodynamic Basis of the Thermal Stability of Taq DNA polymerase. *15th Annual Gibbs Conference on Biothermodynamics*, October 2001.

✚ Yang, X.; **Schoeffler, A.J.** Ionic Effects on Lipid Binding and Stability of Adipocyte Lipid Binding Protein, *14th Annual Gibbs Conference on Biothermodynamics*, October 2000.

Poster Presentations

✚ indicates undergraduate research
♦ indicates mentorship of the presenter(s)

♦ Bonsutto, J.; DeSousa, L., Koch, R. and **Schoeffler, A.J.** Structure-function relationships in psychrophilic, mesophilic and thermophilic topoisomerases. *68th Southeastern Regional meeting of the American Chemical Society,* October 2016.
(student poster)

Schoeffler, A.J.; Phillips, A.H.; Matsui, T.; Weiss, T.M.; Dueber, E.C.; Fairbrother, W.J. The dynamics of cIAP1 are precisely tuned for rapid activation. *Keystone Symposium: Frontiers of Structural Biology,* March-April 2014.

Schoeffler, A.J.; Helgason, E.; Wertz, I.; Dueber, E.C. Bridging Artifacts in Octet Measurements: Detecting Them, Avoiding Them, and Compensating for Them. *Cold Spring Harbor, The Ubiquitin Family* May 2013.

Schoeffler, A.J. cIAP Ubiquitin Ligase Activation via IAP Antagonist-Induced Dimerization. *20th West Coast Protein Crystallography Workshop*, March 2011

Schoeffler, A.J.; Berger, J.M. Structure of the *E. coli* gyrase DNA binding and cleavage core reveals a unique domain. *Biophysical Society 54th Annual Meeting* **1288-Pos** February 2010.

Schoeffler, A.J.; Corbett, K.D.; Thomsen, N.D.; Berger, J.M. The structural basis for substrate specificity in DNA topoisomerase IV. *Keystone Symposium: Nucleic Acids Enzymes*, February 2006.

✚ Yang, X.; **Schoeffler, A.J.**; LiCata, V.J. Binding and Stability Studies of Adipocyte Lipid Binding Protein: Linkage to Ions and Solution Conditions. *Biophysical Journal* **78** (1), 226Pos Part 2, January 2000.

✚ Yang, X.; **Schoeffler, A.J.**; LiCata, V.J. Ionic Effects on Lipid Binding and Stability of Adipocyte Lipid Binding Protein. *Protein Science* **9** (1), 523-S, August 2000.

✚ **Schoeffler, A.J.**; Karantzeni, I.; Yang, X.; Datta, K.; LiCata, V.J. Thermodynamic Basis of the Thermal Stability of Taq DNA polymerase. *FASEB Journal* **16** (5), A1188-A1188 Part 2, March 2002.

✚ Joubert, A.M.; **Schoeffler, A.J.**; Yang, X.; LiCata, V.J. Salt Stabilization of Adipocyte Lipid Binding Protein in the Presence and Absence of Bound Lipid. *FASEB Journal* ***16*** (5), A1188-A1188 Part 2, March 2002

✚ **Schoeffler. A.J.**; Karentzeni, I.; Yang, X.; Datta, K.; LiCata, V.J. Thermodynamic Basis of the Thermal Stability of Taq DNA polymerase. *Abstracts of the American Chemical Society* **223**, 392-CHED Part 1, April 7, 2002.

✚ **Schoeffler, A.J.**; Griggs, M.; Bailey, J.; Sayes, J.; Sutton, S.; Breaux, J. The Art of Encouragement: Fostering Interest in Chemistry from Kindergarten to College. *Abstracts of the American Chemical Society* **223**, 1045-CHED Part 1, April 2002.

✚ **Schoeffler, A.J.**; Joubert, A; Yang, X.; LiCata, V.J. Salt Stabilization of Adipocyte Lipid Binding Protein in the Presence and Absence of Bound Lipid. *16th Annual Gibbs Conference on Biothermodynamics*, October 2002.

Other Publications

Undergraduate Honors Thesis: *Protein Folding Studies of Adipocyte Lipid Binding Protein and Homologous Mesophilic and Thermophilic Type I DNA Polymerases*

Other Experiences

2002: Study Abroad in Paris, France, summer semester

References

Available upon request