

Theodore J. Gries, Ph.D.

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Education:

- 2010 Ph.D., Biochemistry, University of Wisconsin-Madison
Dissertation: Characterizing Transient Intermediates during Stable, Open Complex Formation by *E. coli* RNA Polymerase.
- 2004 B.S., Biochemistry, Indiana University
Thesis: Towards the Characterization of the Rad50 Coiled Coil Domain

Experience:

- 2017 – present Associate Professor of Chemistry, Beloit College
- 2015 – 2017 Health Professions Advisory Committee Chair, Beloit College
- 2014 – 2016 Biomedical Summer Research Scholars Faculty Coordinator, Beloit College
- 2013 – 2017 Biochemistry Program Chair, Beloit College
- 2011 – 2017 Assistant Professor of Chemistry, Beloit College
Courses: (**Indicates courses with full class and lab components*)
DNA and Protein Biochemistry*, 2011- 2016
General Chemistry*, 2012 - 2016
Nutrition and Metabolism: Biochemical Mechanisms*, 2013 – 2017
Thermodynamics and Kinetics*, 2015 – 2017
Biochemistry of Metabolism*, 2012
UP: A Natural History of Flying, 2013
What is Sex For? 2015
Social, Environmental, and Scientific Entrepreneurship, 2014
From Crime Scene to Courtroom: The CSI Effect*, 2012
- 2010 – present Honorary Fellow, University of Wisconsin-Madison
Department of Biochemistry, Dr. M. T. Record, Jr. Laboratory
- 2010 – 2011 Visiting Assistant Professor of Chemistry, Beloit College
Courses: (**Indicates courses with full class and lab components*)
General Chemistry*, 2010, 2011
Biochemistry of Macromolecules*, 2010
Biochemistry of Metabolism*, 2011
- 2005 – 2010 Graduate Research Assistant, University of Wisconsin-Madison
Advisor: Dr. M. Thomas Record, Jr.
- 2007 – 2009 Graduate Teaching Assistant, University of Wisconsin-Madison
Courses: Introduction to Biochemistry, 2008
Biophysical Thermodynamics and Kinetics, 2007 – 2009

2006 – 2008	Peer-Mentor-Tutor Graduate Director, University of Wisconsin-Madison Course: Introduction to Biochemistry
2004 – 2005	Research Associate, Indiana University Advisor: Dr. Thomas Tolbert
2004	Associate Instructor, Indiana University Course: Biochemistry Laboratory, 2004
2003 – 2004	Undergraduate Researcher, Indiana University Advisor: Dr. Martha Oakley

Publications:

Underlined authors are undergraduate co-authors.

McCombs, K.; Gray, G. H.; Saba, J.J.; Wieseman, L.J.; and Gries, T.J. Conformational Changes in 6-Phosphogluconate Dehydrogenase Are Associated with Substrate and Cofactor Binding. (in preparation).

Roschdi, S. and **Gries, T.J.** (2017). Investigating Enzyme Active-Site Geometry and Stereoselectivity in an Undergraduate Biochemistry Lab. *Journal of Chemical Education* **94**(8): 1098-1101.

Grososky, A.; Spencer, C.; Stoller, J.; and **Gries, T.J.** (2016). Perceptual and Chemical Analysis of Methods to Remove Fish Odor. *International Journal of Applied Research and Studies* **5**(7): 1-7.

Young, K.M. and **Gries T.J.** (2015). Studying Cooperative Ligand Binding in the Undergraduate Biochemistry Laboratory: Oxygen-Hemoglobin Dissociation Revisited. *Journal of Chemical Education* **92**(12): 2173-2175.

Drennan, A.C.; Kraemer, M.; Capp, M.W.; **Gries, T.J.**; Ruff, E.; Sheppard, C.; Wigneshweraraj, S.R.; Artsimovitch, I.; Saecker, R.M.; and Record, M.T., Jr. (2012). Key Roles of the Downstream Mobile Jaw of Escherichia coli RNA Polymerase in Transcription Initiation. *Biochemistry* **51**: 9447-59.

Activities in Mernitz, H.; Anthony, S.; and Braun K. (2012). *ChemConnection Activity Workbook (the Textbook)*. New York: W. W. Norton and Company, Inc.:

Gries, T.J. How does oxygen get to my muscles? pp. 11-12.

Gries, T.J. What is in my blood? pp. 39-42.

Gries, T.J and Mernitz, H. What are the building blocks of life? pp. 277-288.

Gries, T.J. How does a nuclear reactor work? pp. 289-291.

Gries, T.J. When did you live? pp. 293-295.

Gries, T.J.; Kontur, W.S.; Capp, M.W.; Saecker, R.M.; and Record, M.T., Jr. (2010). One-step DNA melting in the RNA polymerase cleft opens the initiation bubble to form an unstable open complex. *Proceedings of National Academy of Sciences (USA)* **107**: 10418-23.

*Kontur, W.S.; *Capp, M.W.; *Gries, T.J.; Saecker, R.M.; and Record, M.T., Jr. (2010). Probing DNA binding, DNA opening and assembly of a downstream clamp/jaw in *E. coli* RNA polymerase- λ P_R promoter complexes using salt and the physiological anion glutamate. *Biochemistry* **49**: 4361-73. (*These authors contributed equally to this work.)

Schroeder, L.A.; Gries, T.J.; Saecker, R.M.; Record, M.T., Jr.; Harris, M.E.; and DeHaseth, P.L. (2009). Evidence for a tyrosine-adenine stacking interaction and for a short-lived open intermediate subsequent to initial binding of *Escherichia coli* RNA polymerase to promoter DNA. *Journal of Molecular Biology* **385**: 339-49.

Presentations:

Underlined authors are undergraduate co-authors.

Gries, T.J. (2017). Careers in Teaching. Professional Development Seminar presented at the University of Wisconsin – Madison.

Gries, T.J. (2017). Extending ¹H-NMR Analysis into an Upper-Division Biochemistry Course to Investigate Enzyme Stereoselectivity and Active-Site Architecture. Talk presented at the 253rd American Chemical Society National Meeting in San Francisco, CA.

Roschdi, S. and **Gries, T.J.** (2017). Investigating Enzyme Active-Site Geometry and Stereoselectivity in an Undergraduate Biochemistry Lab. Talk presented at the 253rd American Chemical Society National Meeting in San Francisco, CA.

Roschdi, S. and **Gries, T.J.** (2016). Investigating Enzyme Active-Site Geometry and Stereoselectivity in an Undergraduate Biochemistry Lab. Talk presented at the Midstates Science and Math Consortium Undergraduate Research Symposium in the Biological Sciences and Psychology at the Washington University, St. Louis, MO.

Roschdi, S. and **Gries, T.J.** (2016). Investigating Enzyme Active-Site Geometry and Stereoselectivity in an Undergraduate Biochemistry Lab. Talk presented at the 25th Annual National Ronald E. McNair Research Conference at the University of Wisconsin - Milwaukee.

Gries, T.J. (2016). Sleeping Sickness and Protein Shape. Talk presented at the University of Wisconsin - Whitewater's Biology Colloquium.

Gries, T.J. (2016). Sleeping Sickness, Protein Shape, and Student Research. Talk presented at Beloit College Faculty Forum.

Gries, T.J. (2016). Building Nonlinear Fitting of Student Data into an Undergraduate Biochemistry Lab-based Course. Talk presented at the 251st American Chemical Society National Meeting and Exposition at San Diego, CA.

Gries, T.J. (2014). Heat Engines. Talk presented during the Science of Climate Change Series as part of the Miller Upton Forum at Beloit College.

Young, M.K.M. and **Gries, T.J.** (2014). A Method to Study Cooperative Binding of Oxygen to Purified Hemoglobin Protein. Poster presented at the Midstates Science and Math Consortium Undergraduate Research Symposium in the Biological Sciences and Psychology at the University of Chicago.

Gries, T.J. (2014). Urea as a Probe of Protein Conformation during Enzyme-Catalyzed Mechanisms. Talk presented during the Beloit Science Fridays Series at Beloit College.

Wieseman, L. and **Gries, T.J.** (2013). Urea as a Probe for Conformational Changes during the Reaction Catalyzed by 6-Phosphogluconate Dehydrogenase. Poster presented at the Midstates Science and Math Consortium Undergraduate Research Symposium in the Physical Sciences, Math, and Computer Science at the University of Chicago.

Gries, T.J.; Carner, Z.J.; Gandara-Barron, O.A.; Garcia, M.R.; Grimmelbein, L.J.; Harding, N.; Hauptfleisch, M.R.; Herendeen, S.M.; Kirsch, A.M.; Kraemer, S.M.; Manthe, J.M.; Murray, M.S.; Ndoci, X.G.; Pratt, L.N.; Waddle, E.J.; Wallace, M.S.; and Xie, Z. (2013). Wings of the Worlds. Exhibit curated and presented in the Logan Museum of Anthropology at Beloit College.

Lownik, J.C. and **Gries, T.J.** (2013). Solute Studies on *E. coli* Alkaline Phosphatase. Poster presented at the Experimental Biology 2013 Conference.

Gries, T.J. (2012). Is my soil poisoned with lead? Talk presented at the SENCER Midwest Symposium at Beloit College.

Lownik, J.C. and **Gries, T.J.** (2012). Solute Studies on *E. coli* Alkaline Phosphatase. Poster presented at the Midstates Science and Math Consortium Undergraduate Research Symposium in the Biological Sciences and Psychology at the University of Chicago.

Gries, T.J.; Drennan, AC; Heitkamp, S.; Bellissimo, D; Capp, MW; Saecker, RM; and Record, MT, Jr. (2012). Fast Hydroxyl-radical and Permanganate DNA Footprinting of Transcription Initiation Intermediates at the λP_R Promoter. Poster presented at the 56th Annual Biophysical Society Meeting.

Moderated Session on Astronomical Science at the 2011 Undergraduate Research Symposium at the University of Chicago (November 2011).

Facilitated Session entitled *How to build a raspberry nanocrystalline solar cell* at the Midwestern Association of Chemistry Teachers at Liberal Arts Colleges (October 2011).

Gries, T.J. (2011). Is the White Whale's Mouth Open? A how-to guide for trapping and characterizing transient intermediates of transcription initiation using solutes. Talk presented at Beloit College.

Gries, T.J.; Kontur, WS; Capp, MW; Saecker, RM; and Record, MT, Jr. (2010). DNA Opening During Bacterial Transcription Initiation. Poster presented at the 54th Annual Biophysical Society Meeting.

Gries, T.J. (2010). Using Kinetics and Solutes to Study an Enzyme Mechanism: *E. coli* RNA Polymerase Transcription Bubble Formation. Talk presented at Beloit College

Gries, T.J.; Kontur, WS; Capp, MW; Davis, CA; Drennan, AC; Saecker, RM; and Record, MT, Jr. (2009). Rapid-Quench Mixing and Use of Fast Footprinting to Characterize Late Steps during Open Complex Formation at λP_R by *E. coli* RNA Polymerase. Talk presented at the Molecular Genetics of Bacteria & Phages Conference.

Gries, T.J.; Kontur, WS; Capp, MW; Davis, CA; Drennan, AC; Saecker, RM; and Record, MT, Jr. (2009). Rapid-Quench Mixing and Use of Fast Footprinting to Characterize Late Steps during Open Complex Formation at λP_R by *E. coli* RNA Polymerase. Poster presented at the Mechanisms and Regulation of Prokaryotic Transcription FASEB Summer Research Conference.

Gries, TJ; Kontur, WS; Capp, MW; Saecker, RM; and Record, MT, Jr. (2009). Rapid-Quench Mixing and Use of Fast Footprinting to Characterize Late Steps during Open Complex Formation at λP_R by *E. coli* RNA Polymerase. Poster presented at the 53rd Annual Biophysical Society Meeting.

Gries, TJ; Kontur, WS; Capp, MW; Davis, CA; Drennan, AC; Saecker, RM; and Record, MT, Jr. (2008). Characterization of Late Steps during Open Complex Formation at λP_R by *E. coli* RNA Polymerase. Poster presented at the 22nd Annual Gibbs Conference on Biothermodynamics.

Gries, TJ; Kontur, WS; Capp, MW; Davis, CA; Drennan, AC; Saecker, RM; and Record, MT, Jr. (2008). Characterization of Late Steps during Open Complex Formation at λP_R by *E. coli* RNA Polymerase. Poster presented at the Michigan State University Summer Symposium on Transcriptional Regulation & Systems Biology.

Gries, TJ; Kontur, WS; Capp, MW; Davis, CA; Saecker, RM; and Record, MT, Jr. (2007). Probing Transcription Initiation by Investigating the Effects of Small Solutes on the Kinetics of Open Complex Formation. Poster presented at the Mechanisms and Regulation of Prokaryotic Transcription FASEB Summer Research Conference.

Science Outreach:

Faculty co-organizer of Family Discovery Night, Beloit College (2015; 2016)
Being Nosey at Beloit. Interactive research station at Family Discovery Night, Beloit College (2014)
Plant Detectives. Summer Science Library Activity, Eager Free Public Library (2014)
Kitchen Scientists. Summer Science Library Activity, Eager Free Public Library (2014)
Rock's Rock. Summer Science Library Activity, Eager Free Public Library (2014)
Kids in the Test Kitchen. Interactive station at Family Discovery Night, Beloit College (2013)
The Great Flight Diagram! Interactive station at Family Discovery Night, Beloit College (2013)
Molecular Spit Machines! Interactive station at Family Discovery Night, Beloit College (2012)

Honors, Awards, Fellowships, and Service:

Reviewer for the NSF Graduate Research Fellowship Program (2015; 2016)
Reviewer for *The Undergraduate Mathematics and Its Applications Journal*
Beta of Wisconsin, Beloit College $\Phi B K$, President (2016 – present)
Beta of Wisconsin, Beloit College $\Phi B K$, Vice President (2012 – 2016)
William R. and Dorothy E. Sullivan Distinguished Graduate Fellowship (2008-2010)
Graduated with Indiana University Chemistry Department Honors (2004)
Graduated with Indiana University College of Arts and Sciences Distinction (2004)
Phi Beta Kappa (2003)
Howard Hughes Medical Institute Capstone Award (2003)

Professional Development Workshops:

Participated in the Mellon Foundation Inclusive Pedagogies Series at Beloit College (Spring 2016).

Attended Wisconsin Pre-Med/Pre-Health Advisor Conference at St. Norbert's College (May 2016).

Attended Chemistry Collaborations, Workshops & Communities of Scholars (cCWCS) Faculty Workshop on Mitochondrial Biochemistry at the University of Puerto Rico, San Juan, PR (July 2015)

Attended Chemistry Collaborations, Workshops & Communities of Scholars (cCWCS) Faculty Workshop on Food Chemistry at Clarke University, Dubuque, IA (July 2013)

Attended the Council on Undergraduate Research (CUR) Dialogues at Hamilton Crown Plaza, Washington, DC (February 2013).

Attended Wisconsin Pre-Med/Pre-Health Advisor Conference at Marquette University (May 2012).

Attended Process Oriented Guided Inquiry Learning (POGIL) Workshop at Northwestern University (September 2011).

Attended New Faculty Workshop for Midstates Consortium for Math and Science at Hope College (July 2011).