

## MONICA CHANDER

Bryn Mawr College  
Department of Biology  
101 N. Merion Avenue  
Bryn Mawr, PA 19010

Email: mchander@brynmawr.edu  
Office: 610-526-5096  
Fax: 610-526-5086

### EDUCATION

**Ph.D., February 2000, University of Connecticut, Farmington, CT**

Biomedical Sciences with a concentration in Molecular Biology and Biochemistry

**B.A., May 1993, Mount Holyoke College, South Hadley, MA**

*Cum laude* with high honors in Biochemistry

### PROFESSIONAL EXPERIENCE

**Assistant Professor** (July 2007 – present)

Bryn Mawr College, Department of Biology, Bryn Mawr, PA.

**Visiting Assistant Professor** (January – May 2006)

Mount Holyoke College, Program in Biochemistry, South Hadley, MA.

**Research Associate** (September 2004 – December 2005; June 2006 – August 2007)

Mount Holyoke College, Program in Biochemistry, South Hadley, MA.

Advisor: Dr. Lilian Hsu

Research focus: Mechanism of abortive initiation and promoter escape by *Escherichia coli* RNA polymerase.

**Research Fellow** (September 2000-August 2004)

Harvard School of Public Health, Dept. of Genetics and Complex Diseases, Boston, MA.

Advisor: Dr. Bruce Dimple

Research focus: Oxidative stress response in *Escherichia coli*: molecular details underlying the regulation and mechanism of action of the redox-active [2Fe-2S]-containing SoxR transcription factor.

**Postdoctoral Fellow** (February – July, 2000).

University of Connecticut Health Center, Department of Biochemistry, Farmington, CT.

Advisor: Dr. Peter Setlow

Research focus: Regulation of dormancy and heat resistance in *Bacillus subtilis* spores.

**Graduate Student** (August 1993-February 2000)

University of Connecticut Health Center, Department of Biochemistry, Farmington, CT.

Advisor: Dr. Peter Setlow

Thesis: Regulation of *Bacillus stearothermophilus* phosphoglycerate mutase by pH and Mn<sup>2+</sup>.

**Undergraduate Research** (September 1992 – May 1993)

Mount Holyoke College, Department of Biology, South Hadley, MA.

Advisor: Dr. Marilyn Pryor

Thesis: The effect of thyroid blocks on beta-adrenergic receptor levels in brown adipose tissue (BAT) of cold-exposed *Mus musculus*.

**Chemistry intern** (Summer 1992)

Mount Holyoke College, Department of Chemistry, South Hadley, MA.

Advisor: Dr. Mary Campbell

Developed new experiments for general and inorganic college laboratory classes.

**GRANTS, HONORS, AWARDS****National Institute of Health AREA grant 1R15GM093366-01** (April 2010 – March 2013)Project title: Regulation of *Streptomyces* differentiation and antibiotic production by SoxR**Edward G. Henderson Memorial Prize** (2000) for outstanding Ph.D. thesis research in

Biomedical Sciences, University of Connecticut Health Center

**Cum Laude with High Honors in Biochemistry** (1993) Mount Holyoke College**Louisa Stevenson Prize** (1992) for excellence in Chemistry, Mount Holyoke College**Sarah Williston Scholar** (1991), top 15 percent of class, Mount Holyoke College**Bernice MacLean Award** (1990) for excellence in Biology, Mount Holyoke College**PUBLICATIONS** (\* indicates undergraduate author)

Dela Cruz, R.\*, Gao, Y.\*, Penumetcha, S.\*, Sheplock, R.\*, Weng, K.\*, and **Chander, M.** 2010. Expression of the *Streptomyces coelicolor* SoxR regulon is intimately linked with actinorhodin production. *J. Bacteriol.* 192: 6428-6438.

**Chander, M.**, Austin, K. M.\*, Aye-Han, N.-N.\*, Sircar, P.\*, and Hsu, L. M. 2007. An alternate mechanism of abortive release marked by the formation of very long abortive transcripts. *Biochemistry* 46: 12687-12699.

**Chander, M.**, and Demple, B. 2004. Functional analysis of SoxR residues affecting transduction of oxidative stress signals into gene expression. *J. Biol. Chem.* 279: 41603-10.

**Chander, M.**, Raducha-Grace\*, L., and Demple, B. 2003. Transcription-defective *soxR* mutants of *Escherichia coli*: Isolation and *in vivo* characterization. *J. Bacteriol.* 185: 2441-50.

Tovar-Rojo, F., **Chander, M.**, Setlow, B., and Setlow, P. 2002. The products of the *spoVA* operon are involved in dipicolinic acid uptake into developing spores of *Bacillus subtilis*. *J. Bacteriol.* 184: 584-7.

Jedrzejewski, M.J., **Chander, M.**, Setlow, P., and Krishnasamy, G. 2000. Mechanism of catalysis of the cofactor independent phosphoglycerate mutase from *Bacillus stearothermophilus*: crystal structure of the complex with 2-phosphoglycerate. *J. Biol. Chem.* 275: 23146-53.

Jedrzejewski, M.J., **Chander, M.**, Setlow, P., and Krishnasamy, G. 2000. Structure and mechanism of action of a novel phosphoglycerate mutase from *Bacillus stearothermophilus*. *EMBO J.* 19: 1419-31.

**Chander, M.**, Setlow, P., Lamani, E., and Jedrzejewski, M.J. 1999. Structural studies on a 2,3-diphosphoglycerate independent phosphoglycerate mutase from *Bacillus stearothermophilus*. *J. Struct. Biol.* 126: 156-65.

**Chander, M.**, Setlow, B., and Setlow, P. **1998**. The enzymatic activity of phosphoglycerate mutase from gram-positive endospore-forming bacteria requires  $Mn^{2+}$  and is pH sensitive. *Can. J. Microbiol.* 44: 759-67.

Loshon, C.A., Beary, K.E.\*, **Chander, M.**, and Setlow, P. **1994**. Cloning and sequencing of the *sspF* (originally 0.3 kb) genes from *Bacillus cereus* and *Bacillus megaterium*. *Gene*.150: 203-4.

### **ABSTRACTS AND INVITED LECTURES (\* indicates undergraduate author)**

**Chander, M.** (2010) Invited talk  
Biology Department, Hofstra University, NY

**Chander, M., Dela Cruz, R.\*, Gao, Y.\*, and Penumetcha, S.\*** (2010) Abstract and poster  
Gordon Research Conference on Microbial Stress Responses, South Hadley, MA  
"Expression of the *Streptomyces coelicolor* SoxR regulon parallels actinorhodin production"

**Chander, M.** (2009) Invited talk  
Chemistry Department, Bryn Mawr College, PA  
"Redox sensing by SoxR: alerting the cell to oxidative stress (and more?)"

**Chander, M., Dela Cruz, R\*., Gao, Y.\*, Penumetcha, S.\*, and Weng, K\*.** (2009) Abstract and poster  
American Society for Microbiology, General Meeting, Philadelphia, PA  
"Analyzing the role of SoxR in *Streptomyces coelicolor*"

**Chander, M. and Hsu, L.M.** (2006) Abstract and poster  
Molecular Genetics of Bacteria and Phages, Cold Spring Harbor, NY  
"Deducing the mechanisms of formation of very long abortive transcripts during transcription initiation"

**Chander, M. and Hsu, L.M.** (2005) Abstract and poster  
FASEB Summer Research Conferences, Saxton Rivers, VT  
"Probing the origin of very long abortive transcripts (16-19 nucleotides) during transcription initiation"

**Chander, M. and Demple, B.** (2004) Abstract and poster  
Gordon Research Conference on Microbial Stress Responses, South Hadley, MA  
"Functional analysis of SoxR residues affecting transduction of oxidative stress signals into gene expression"

**Chander, M., Murray, C., and Demple, B.** (2003) Abstract and poster  
Boston Bacterial Meeting, Boston, MA  
"Probing the signal transduction mechanism of SoxR."

**Chander, M. and Demple, B.** (2003) Abstract and lecture  
Wind River Conference on Prokaryotic Biology, Estes Park, CO  
"Probing the redox signal transduction mechanism of SoxR."

**Chander, M. and Setlow, P.** (1997) Abstract and lecture  
New England Spore Conference, Cambridge, MA  
"Regulation of phosphoglycerate mutase activity from endospore-forming bacteria by  $Mn^{2+}$  and pH."

**Chander, M. and Setlow, P.** (1996) Abstract and poster  
Biotechnology Symposium, Storrs, CT  
“Characterization of the DPG-independent phosphoglycerate mutase from *Bacillus subtilis*.”

### ***EXTRAMURAL PROFESSIONAL ACTIVITIES***

June 2011: Attended New York *Bacillus* Interest Group Annual Meeting – New York University, NY

March 2011: Scientific reviewer for American Society for Microbiology – Undergraduate Research Fellowships

March 2010: Scientific reviewer for National Science Foundation, Division of Cellular and Molecular Biosciences

June 2009: Attended Regional Microbiology Educators’ Network 6<sup>th</sup> Annual Teaching Conference, Swarthmore, PA

July 2008: Attended Gordon Research conference on Microbial Stress Responses, S. Hadley, MA

June 2008: Attended Regional Microbiology Educators’ Network 5<sup>th</sup> Annual Teaching Conference, Swarthmore, PA

July 2006: Attended Gordon Research conference on Microbial Stress Responses, S. Hadley, MA

March 2008 – present: Ad-hoc reviewer for Cellular and Molecular Biochemistry

January 2008 – present: Ad-hoc reviewer for Archives of Microbiology

May 2002: Attended American Society for Microbiology General Meeting, Salt Lake City, UT

June 1996: Attended International Spores Conference, Madison, WI

### ***PROFESSIONAL AFFILIATIONS***

American Society for Microbiology (2002 – present)

### ***TEACHING EXPERIENCE***

Fall 2007-present, assistant professor, Bryn Mawr College

Biology 101: Introductory Biology

Biology 255: Microbiology (lecture and lab course)

Biology 375: Integrated Biochemistry and Molecular Biology I (lecture and lab course)

Biology 376: Integrated Biochemistry and Molecular Biology II (lecture and lab course)

Biology 391: Senior Seminar in Biochemistry

Biology 399: Senior Seminar in Laboratory Investigations

Biology 403: Supervised Research

Spring 2006, visiting assistant professor, Mount Holyoke College

Taught an upper level Biochemistry course on “Nucleic Acids Biochemistry and Molecular Biology”; served on 5 thesis committees; supervised undergraduate students in the laboratory.

Fall 2005, guest lecturer, Mount Holyoke College

Lectured on cellular metabolism, thermodynamics and bioenergetics in an upper-level biochemistry class on “Protein Biochemistry and Cellular Metabolism”

Fall 1997, facilitator, University of Connecticut Medical School

Co-taught a Comprehensive Medical Problem Solving class to first year medical students; evaluated and graded students.

Fall 1990 – Spring 1993, Mount Holyoke College

Teaching assistant in undergraduate introductory and advanced Organic Chemistry laboratories

### **RESEARCH STUDENTS SUPERVISED AT BRYN MAWR COLLEGE**

Rica Dela Cruz '10: Spring 2009-Spring 2010 (including Summer 2009)

Heather Fetting '09: Fall 2008-Spring 2009

Jillian Galloway '13: Summer 2011, Fall 2011-Spring 2012

Yang Gao, '10: Summer 2008-Spring 2010

Natalie Mackow '12: Fall 2011-Spring 2012

Sahitya Penumetcha '10: Spring 2009-Spring 2010 (including Summer 2009)

Rebecca Sheplock '12: Summers 2010, 2011, Fall 2011-Spring 2012

Holly Stewart, '08: Fall 2007-Spring 2008

Jessica Watkins '13: Summer 2011

Katherine Weng, '09: Spring 2008-Spring 2009 (including Summer 2008)

Nicki Zelenski, '08: Fall 2007-Spring 2008

### **EXTRAMURAL POSTER PRESENTATIONS BY UNDERGRADUATE RESEARCH STUDENTS (\* indicates undergraduate author)**

Jillian Galloway\* and Monica Chander (July 2011)

“Roses are red, Violets are blue, *Streptomyces* makes these colors too! (Using Microarrays to Determine Additional SoxR Targets in *Streptomyces coelicolor*)”  
8<sup>th</sup> Annual Regional Microbiology Educators Student Research Symposium, Swarthmore College

Rebecca Sheplock\* and Monica Chander (July 2011)

“SoxR Response to Exogenous Redox-Cycling Drugs in *Streptomyces coelicolor*”  
8<sup>th</sup> Annual Regional Microbiology Educators Student Research Symposium, Swarthmore College

Jessica Watkins\* and Monica Chander (July 2011)

“*Pseudomonas aeruginosa* SoxR sensitivity to redox-cycling agents”  
8<sup>th</sup> Annual Regional Microbiology Educators Student Research Symposium, Swarthmore College

Rica Dela Cruz\* and Monica Chander (July 2009)

“Identification of the SoxR regulon in *Streptomyces coelicolor*”

6<sup>th</sup> Annual Regional Microbiology Educators Student Research Symposium, Swarthmore College

Sahitya Penumetcha\* and Monica Chander (July 2009)

“Phenotypic characterization of a *soxR* null *Streptomyces coelicolor* mutant”

6<sup>th</sup> Annual Regional Microbiology Educators Student Research Symposium, Swarthmore College

Yang Gao\* and Monica Chander (July 2008)

“Understanding the function of SoxR in *Streptomyces coelicolor* by mutational analysis”

5<sup>th</sup> Annual Regional Microbiology Educators Student Research Symposium, Swarthmore College

Katherine Weng\* and Monica Chander (July 2008)

“Analyzing the regulation of *Streptomyces coelicolor* SoxR by actinorhodin”

5<sup>th</sup> Annual Regional Microbiology Educators Student Research Symposium, Swarthmore College

## **COMMITTEES AND SERVICE TO THE COLLEGE**

Fall 2011: Member of Bryn Mawr College Biology Search Committee, Ecologist search

Summer 2011: Member of Bryn Mawr College Biology Search Committee, Genomics Search

September 2009-2013: Council on Undergraduate Academic Standing

August 2009: First year student advising

August 2009: Biology Dept. Faculty Representative to Academic Fair for first year students

Fall 2008: Member of BMC Biology Search Committee, Computational Ecologist search

August 2008: First year student advising

August 2008: Biology Dept. Faculty Representative to Academic Fair for first year students

July 2008: Moderated Ethics in Science for BMC Summer Science Research Program

April 2008: Biology Department Faculty Representative to Open Campus Days Academic Fair

Fall 2007: Member of Bryn Mawr College Biology Search Committee, Evo-Devo search