

Bronwyn G. Butcher

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WORK EXPERIENCE

- June 2014 - present **Fuller Evolutionary Biology Program, Cornell Lab of Ornithology**, Cornell University, Ithaca, NY
Lab Manager
- May 2008 - June 2014 **Lab. of Prof. Samuel Cartinhour, Department of Plant Pathology and Plant-Microbe Biology**, Cornell University, Ithaca, NY
Research Support Specialist II (promoted from Research Support Specialist I in 2011)
Research interests: Gene regulation in the plant pathogen *Pseudomonas syringae*
- Jan 2007 – April 2008 **Lab. of Prof. John D. Helmann, Microbiology Department** Cornell University, Ithaca, NY
Research Associate
Jan 2004 – Dec 2006 **Postdoctoral Associate**
Research interests: Gene regulation in the soil microorganism *Bacillus subtilis*
- Sept. 2001 – May 2003 **Lab. of Prof. L. Banta, Biology Department**, Williams College, Williamstown, MA
Research Associate

EDUCATION

- 1999 – 2003 **University of Stellenbosch**, South Africa
PhD in Microbiology
Thesis title: Molecular Biology of the Arsenic Resistance Genes in the Biomining Bacterium *Acidithiobacillus ferrooxidans* ATCC 33020.
Supervisor: Prof DE Rawlings
- 1999 Upgrade from Masters to PhD at University of Stellenbosch
- 1997-1998 **University of Cape Town**, South Africa
M.Sc. in Microbiology
(title as above)
- 1996 B.Sc.(Honours) in Microbiology
Thesis title: Location and Study of the genes for arsenic resistance in *Thiobacillus ferrooxidans* ATCC33020.
Supervisor: Prof DE Rawlings
- 1993-1995 B.Sc. majoring in Microbiology and Biochemistry

PUBLICATIONS

Park SH, Bao Z, Butcher BG, D'Amico K, Xu Y, Stodghill P, Schneider DJ, Cartinhour S, Filiatrault M. (2014). Analysis of the small RNA *spf* in the plant pathogen *Pseudomonas syringae* pv. tomato strain DC3000. *Microbiology*. 160:941-53.

Filiatrault MJ, Stodghill PV, Wilson J, Butcher BG, Chen H, Myers CR, Cartinhour SW (2013). *CrcZ* and *CrcX* regulate carbon source utilization in *Pseudomonas syringae* pathovar tomato strain DC3000. *RNA Biology* 10:245-55.

Park SH, Butcher BG, Anderson Z, Pellegrini N, Bao Z, D'Amico K, Filiatrault MJ (2013). Analysis of the small RNA P16/RgsA in the plant pathogen *Pseudomonas syringae* pv. tomato strain DC3000. *Microbiology*. 159:296-306.

Markel E, Butcher BG, Myers CR, Stodghill P, Cartinhour S, Swingle B (2013). Regulons of three *Pseudomonas syringae* pv. tomato DC3000 iron starvation sigma factors. *Applied and Environmental Microbiology*. 79:725-7.

Filiatrault MJ, Stodghill PV, Myers CR, Bronstein PA, Butcher BG, Lam H, Grills G, Schweitzer P, Wang W, Schneider DJ, Cartinhour SW (2011). Genome-wide identification of transcriptional start sites in the plant pathogen *Pseudomonas syringae* pv. tomato str. DC3000. *PLoS One*. 6(12)

Markel E, Maciak C, Butcher BG, Myers CR, Stodghill P, Bao Z, Cartinhour S, Swingle B (2011). An extracytoplasmic function sigma factor-mediated cell surface signaling system in *Pseudomonas syringae* pv. tomato DC3000 regulates gene expression in response to heterologous siderophores. *Journal of Bacteriology* 193:5775-83.

Butcher BG, Bronstein PA, Myers CR, Stodghill PV, Bolton JJ, Markel EJ, Filiatrault MJ, Swingle B, Gaballa A, Helmann JD, Schneider DJ, Cartinhour SW (2011). Characterization of the Fur regulon in *Pseudomonas syringae* pv. tomato DC3000. *Journal of Bacteriology*. 193:4598-611.

Filiatrault MJ, Stodghill PV, Bronstein PA, Moll S, Lindeberg M, Grills G, Schweitzer P, Wang W, Schroth GP, Luo S, Khrebtukova I, Yang Y, Thannhauser T, Butcher BG, Cartinhour S, Schneider DJ (2010). Transcriptome analysis of *Pseudomonas syringae* identifies new genes, noncoding RNAs, and antisense activity. *Journal of Bacteriology*. 192:2359-72.

Bordi C., Butcher B.G., Shi Q., Hachmann A.B., Peters J.E. and Helmann J.D. (2008) In vitro mutagenesis of *Bacillus subtilis* by using a modified Tn7 transposon with an outward-facing inducible promoter. *Applied and Environmental Microbiology*. 74:3419-25

Butcher B.G., Lin Y-P. and J.D. Helmann (2007) The *yvdFGHIJ* operon of *Bacillus subtilis* encodes a peptide that induces the LiaRS two-component system. *Journal of Bacteriology*. 189:8616-25.

Butcher B.G., Mascher T. and J.D. Helmann (2007) Environmental sensing and the role of Extracytoplasmic Function (ECF) σ factors. In *Bacterial Physiology - A Molecular Approach*. Walid M. El-Sharoud (Ed.). Springer-Verlag GmbH Berlin Heidelberg.

Jordan S., Rietkotter E., Strauch M.A., Kalamorz F., Butcher B.G., Helmann J.D. and T. Mascher (2007). LiaRS-dependent gene expression is embedded in transition state regulation in *Bacillus subtilis*. *Microbiology*. 153:2530-40.

Butcher B.G. and J.D. Helmann (2006). Identification of *Bacillus subtilis* σ^W -dependent genes that provide intrinsic resistance to antimicrobial compounds produced by Bacilli. *Molecular Microbiology* 60:765-82

Butcher B.G and D.E. Rawlings. (2002). The divergent chromosomal *ars* operon of *Acidithiobacillus ferrooxidans* is regulated by an atypical ArsR protein. *Microbiology* 148:3983-3992.

Butcher, B.G., S.M. Deane and D.E. Rawlings (2000) The Chromosomal arsenic resistance genes of *Thiobacillus ferrooxidans* have an unusual arrangement and confer increased arsenic and antimony resistance to *Escherichia coli*. *Applied and Environmental Microbiology* 66:5-8

SEMINARS

"Detecting protein-nucleic acid interactions in the plant pathogen *Pseudomonas syringae*." October 17, 2012. Department of Plant Pathology and Plant-Microbe Biology Fall 2012 (Ithaca) Seminar Series

"Defining the regulon of the singlet oxygen induced ECF sigma factor PSPTO_1043 in the plant pathogen *Pseudomonas syringae* pv. *tomato* str. DC3000." March 4, 2014. All-hands SY meeting,

CONFERENCES

Poster Presentation Butcher B.G. and J.D. Helmann (2007) The *yydFGHIJ* Operon of *Bacillus subtilis* encodes a peptide that induces expression of the LiaRS Two-Component System (poster) ASM 107th General Meeting. Toronto, Canada, 21-25 May 2007.

Oral Presentation Butcher, B. G. and J.D. Helmann (2005) The *Bacillus subtilis* ECF sigma factor, σ^W , controls an antibiosis regulon providing resistance to cationic peptides produced by other bacilli. 3rd Conference on Functional Genomics of Gram-Positive Microorganisms (13th International Conference on Bacilli). San Diego, CA, USA, 12-16 June, 2005.

Poster Presentation Finley, S.A., B. Butcher, A. Vasse and L. Banta (2001). Effect of plasmid RSF1010 on transcription from the *vir* promoter. 22nd Crown Gall Conference, Emory University, Atlanta, GA, 16-18 November 2001.

Poster Presentation S. Levin, K. Ueda, B. Butcher, T. Jackson and L. Banta (2002).

- Characterization of a putative promoter sequence embedded within the *virB* operon of *Agrobacterium tumefaciens*. 23rd Crown Gall Conference, University of Minnesota, Minneapolis, MN, 1-3 November 2002.
- Oral presentation Butcher, B.G., S.M. Deane and D.E. Rawlings (2000) The molecular biology of the arsenic resistance genes of the biomining bacterium *Thiobacillus ferrooxidans*. BioY2K Combined Millennium Meeting, Grahamstown, 23-28 January 2000.
- Oral presentation Butcher, B.G. (1999) Arsenic Resistance in the biomining bacterium *Thiobacillus ferrooxidans*. Presented at the Experimental Biology Group, 150th General meeting, August 1999.
- Poster presentation Butcher, B.G., S.M. Deane and D.E. Rawlings (1998) Study of the genes for arsenic resistance in *Thiobacillus ferrooxidans* ATCC33020. Presented at The South African Society for Microbiology Conference, Durban, 1998.

RESEARCH SKILLS

- General Microbiological techniques.
- Molecular cloning techniques including chromosomal DNA isolation, plasmid isolation (cesium chloride and alkali lysis methods and commercial kits), restriction enzyme digests, ligations, transformations of *E. coli*, *Bacillus subtilis* and *Pseudomonas syringae*, electrophoresis, Southern hybridization, Site-directed mutagenesis. Gateway cloning (Invitrogen).
- Primer design and PCR and Real time PCR.
- Preparation of samples for Illumina Next Generation sequencing (both DNA and RNA).
- Attended a workshop on real-time PCR and the LightCycler run by Roche Diagnostics (South Africa).
- Protein work: *in vitro* transcription and translation, SDS-PAGE and native protein gels, Western hybridization, Purification of the DNA binding protein Fur using FPLC, EMSA, Immunoprecipitation with FLAG tagged DNA and RNA binding proteins.
- RNA isolation and Northern hybridization.
- Reporter gene fusions (*lux*, *lacZ* and *gfp*), β -galactosidase assays, fluorescence microscopy.
- Yeast two-hybrid assays.
- Plant tissue culture with tobacco leaf explants.
- Electroporation and conjugation of *Agrobacterium tumefaciens*.
- Handling of radioactive isotopes, ³²P and ³⁵S.
- Involvement in the general running of the laboratory, incl. ordering of supplies (trained to use Quali/e-SHOP, holder of the lab's procurement card), management of the radioactive room and waste control, manager and supervisor (incl. approving timesheets on Kronos) of undergraduate researchers.
- Proficient in molecular biology tools such as DNAMAN/ CloneManager, GCG, Vector NTI, Artemis and web-based tools such as NCBI BLAST and PubMed, alignment tools and genome analysis websites.

- Proficient in Microsoft Office products such as Word, Excel and PowerPoint, and generally skilled in computer operations.

TRAINING

EHS Cornell University Health and Safety Basics

EPA Chemical Waste Disposal

EHS-Radiation Safety for Users of Radioactive Material - Day 1 and 2

Postdoctoral Leadership Program, Cornell University, 2007

TEACHING AND SUPERVISORY EXPERIENCE

	Cornell University, Ithaca, NY
2008-present	Involved in the supervision and mentoring of a number of undergraduates, graduate students and technicians.
2004-2007	Directly supervised 6 undergraduate students and 4 rotation graduate students, as well as assisting graduate students and visiting researchers in the lab. Co-ordinator for undergraduate researchers in Dr. John Helmann's research group: this involves interviewing, selecting and advising these students.
2004, 2005, 2006, 2007	Assisted Dr. John Helmann in designing and leading an explorations workshop for Biological Science Students.
Spring & Fall 2005 and 2006, Spring 2007	Small group leader for BioMi290
Winter 2007	Participated in redesigning the worksheets and activities used in the BioMi290 Small Groups.
Summer 2006	Designed projects for and supervised two high school students from the CALS Summer College Research Program.
	Williams College, Williamstown, MA
2001-2003	Involved in mentoring and assisting undergraduate researchers, including students completing honours theses.
	University of Stellenbosch, South Africa
2000-2001	Lectured part of the Honours techniques course (SDS-PAGE). This involved preparing the course notes, practical, test and exam questions and lecturing the course.
2000	Demonstrator for the 3 rd year Microbiology course. This involves assisting the lecturer at the practical sessions.
1999	Demonstrator for the 2 nd year Microbiology course.
	University of Cape Town, South Africa
1997-1998	Demonstrator for the 3 rd year Microbiology course
1996	Demonstrator for the 2 nd year Microbiology course
	AWARDS
1999-2001	Harry Crossley Bursary for PhD studies, University of Stellenbosch
2000	Stellenbosch 2000 Merit Bursary for PhD studies, University of

1998 Stellenbosch
Poster award at the South African Society for Microbiology
Conference, Durban, South Africa

1995 Dean's Merit list, University of Cape Town

1994 Dean's Merit list, University of Cape Town

1993 Dean's Merit list, University of Cape Town

LANGUAGES

Fluent in English and Afrikaans