

Matthew F. Copeland

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Education:

Integrated Program in Biochemistry (IPiB) Ph.D. program

University of Wisconsin-Madison, GPA: 3.9

Advisor: Douglas B. Weibel, Ph.D.

September 2006 – February 2012

B.A. Biochemistry summa cum laude

McDaniel College, GPA: 4.0

August 2002 – May 2006

Research Experience:

Post-doctoral Researcher

University of Wisconsin-Madison

Advisor: Brian F. Pfleger, Ph.D., Assistant Professor in Chemical and Biological Engineering

May 2012 – Present

Post-doc Research:

I am developing transcriptional activator-like effectors (TALEs) into specific and potent repressors of bacterial transcription initiation and elongation.

Intern

ConjuGon Inc., Madison, WI

Advisor: Steven R. Watt, Ph.D., Chief Operating Officer

August 2010 – October 2010

Intern Research:

I worked on the development of a Conjugation-Based Killing Technology product, which is designed for the prevention and treatment of bacterial infections, specifically those associated with wounds.

Research Assistant

University of Wisconsin-Madison

Advisor: Douglas B. Weibel, Ph.D., Assistant Professor in Biochemistry

August 2006 – February 2012

Thesis Research:

I studied the behavior and flagellar dynamics of *Escherichia coli* and *Proteus mirabilis* by engineering strains whose flagella could be specifically labeled with fluorescent dyes for microscopic observation.

Undergraduate Research

McDaniel College

Advisor: Randall L. Morrison, Ph.D., Associate Professor and Chair of the Department of Biology

May 2004 – September 2004

Previous Research:

I studied the properties of pigments and pigment-producing cells of the Panther chameleon, indigenous to Madagascar, by analyzing different sections of the dermal tissue by light microscopy, thin-layer chromatography, and transmission electron microscopy (TEM).

NSF Research Experience for Undergraduates (REU) Intern

Experiences in Molecular Biology and Academic Research Careers (EMBARC) Trainee
Advisor: Lasse Lindahl, Ph.D., Professor and Chair of the Department of Biological Sciences
University of Maryland, Baltimore County
May 2005 – August 2005

Intern Research:

I investigated the role of ribosomal proteins in the function of the eukaryotic large subunit by creating amino acid deletions in the tentacle tip region of the L4 ribosomal protein in *Saccharomyces cerevisiae*.

Journal Publications:

Copeland MF*, Politz MC*, Pflieger BF. **2012**. Artificial Repressors for Controlling Gene Expression in Bacteria. *Chem. Commun.* Accepted Nov. 16, 2012; [Epub Nov. 19, 2012]
PMID: 23230569

*Authors contributed equally

Copeland MF*, Tuson HH*, Trevino-Dopatka S, Sacotte R, Weibel DB. **2013**. Flagellum density regulates *Proteus mirabilis* swarm cell motility in viscous environments. *J. Bacteriology*. **195**(2): 368-377. PMID: 23144253

*Authors contributed equally

Copeland MF, Flickinger ST, Tuson HH, Weibel DB. 2010. Studying the Dynamics of Flagella in Multicellular Communities of *Escherichia coli* by Using Biarsenical Dyes. *Applied Environ. Microbio.* **76**:1241-50. PMCID: PMC2820973

Copeland MF, Weibel, DB. 2009. Bacterial swarming: A model system for studying dynamic self-assembly. *Soft Matter* **5**, 1174-1187.

Flickinger ST, **Copeland MF**, Downes EM, Braasch AT, Tuson HH, Eun YJ, Weibel DB. 2011. Quorum sensing between *Pseudomonas aeruginosa* biofilms accelerates cell growth. *J. Am. Chem. Soc.* **133**, 5966-5975. PMCID: PMC3076519

Eun YJ, Utada AS, **Copeland MF**, Takeuchi S, Weibel DB. 2011. Encapsulating bacteria in agarose microparticles using microfluidics for high-throughput cell analysis and isolation. *ACS Chem. Biol.* **6**, 260-266. PMCID: PMC3060957

Poster Presentations at Scientific Meetings:

Copeland MF, Tuson HH, Weibel DB. Measuring Intra- and Inter-cellular Flagella-Flagella Interactions during *E. coli* Swimming and Swarming motility
General Meeting for the American Society of Microbiology (ASM)
May 2011

Copeland MF, Flickinger ST, Tuson HH, Weibel DB. Studying the Dynamics of Flagella in Multicellular Communities of *Escherichia coli* by Using Biarsenical Dyes
Sensory Transduction in Microorganisms (STIM)
January 2010

Copeland MF, Weibel DB. A mechanical study of *Escherichia coli* swarming motility
Bacterial Locomotion and Signal Transduction X (BLAST X)
January 2009

Copeland MF, Zengel J, Lindahl L. Functional analysis of deletions in the L4 ribosomal protein of *Saccharomyces cerevisiae*
UMBC 8th Annual Summer Research Symposium. Baltimore, MD.
August 2005

Teaching Experience:

Summer Undergraduate Instructor/Advisor

University of Wisconsin-Madison

Oversaw the daily operation of the undergraduate 2012 International Genetically Engineered Machine (iGEM) competition team

- Team qualified for World competition and won a gold medal

May 2012 – October 2012 (will be repeating as mentor this Spring 2013)

Seminar Instructor

University of Wisconsin-Madison

Undergraduate Biochemistry seminar series (Biochemistry 651)

January 2011 – May 2011

Guest Teaching Assistant

California Institute of Technology

Taught session at Rob Phillips' Bioengineering Bootcamp

(http://www.rpgroup.caltech.edu/courses/PBL/bootcamp2009/BE_Bootcamp_2009/Home.html)

September 2009

Teaching Assistant

University of Wisconsin-Madison

Undergraduate Biochemistry Lab (Biochemistry 651)

January 2009 – May 2009

Teaching Assistant

University of Wisconsin-Madison

Undergraduate Biochemistry Lecture (Biochemistry 501)

August 2007 – December 2007

Biology and Genetics Tutor

McDaniel College

August 2004 – May 2006

Honors and Awards:

- Participant in the 5th Annual Wisconsin Entrepreneurial Bootcamp (WEB)
June 2012
- Integrated Program in Biochemistry (IPiB) Undergraduate Mentoring Award
February 2011
- Wisconsin Alumni Research Foundation (WARF) Research Assistant Award
June 2011
- NIH Biotechnology Training Program Fellowship
February 2008 – February 2011

- NSF Graduate Research Fellowship – Honorable Mention
April 2007
- Edith Farr Ridington Phi Beta Kappa Writing Award – Best senior honors thesis across all departments, McDaniel College
May 2006
- Outstanding undergraduate in Chemistry, Maryland chapter of the American Chemistry Society, McDaniel College
May 2006
- H.P. Sturdivant Biology Award – Biology Department, McDaniel College
April 2006
- Phi Beta Kappa
Inducted 2006
- Anna J. Treff Award for Excellence in Pre-Medical or Biological Studies – Biology Department, McDaniel College
May 2005
- Tri-Beta National Biological Honor Society
Inducted 2004
- Gamma Sigma Epsilon Chemistry Honor Society
Inducted 2004
- Dean’s List, McDaniel College
2002 – 2006
- NCAA Second Team Academic All-American for DIII Athletics (Lacrosse), McDaniel College
May 2005
- Co-captain of McDaniel Men’s Lacrosse Team, NCAA DIII program, McDaniel College
Spring 2005 and Spring 2006 seasons

Community:

- Assistant Coach for the Verona Area High School Boy’s Varsity Lacrosse Team
2008 – 2012
 - Wisconsin DI State Champions, 2011
 - Wisconsin DI State Finalist, 2010
- Assistant Coach for the University of Wisconsin-Madison Men’s Great Lakes Lacrosse League Club Team
2006 – 2011

References:***Brian F. Pflieger, Ph.D.***

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Steven R. Watt, Ph.D.

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Randall Morrison, Ph.D.

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