

## Curriculum Vitae

### Education

Ph.D., Microbiology Doctoral Training Program <b>University of Wisconsin, Madison, WI</b>	2014
B. A. Biology, <b>New York University, New York, NY</b>	2000

### Research Experience

Graduate Student, <b>University of Wisconsin, Madison, WI</b> <b>Department of Genetics (Prof. Nicole Perna)</b> <b>Dissertation Research:</b> Comparative genome-scale analysis of the transcriptional response to oxygen limitation in the enterobacteria. <b>Research experience:</b> Comparative and phylogenetic analysis of enterobacteria genomes. Gene expression analysis of enterobacteria at varying evolutionary timescales. Metabolic and biological subsystem analysis of gene expression and regulation. Statistical analysis of variance of evolutionary patterns of gene expression within and between species of closely related enterobacteria.	2005-2013
Associate Research Specialist, <b>University of Wisconsin, Madison, WI</b> <b>Department of Biochemistry (Prof. William S. Reznikoff)</b> <b>Research experience:</b> Created a reduced genome of <i>Escherichia coli</i> using a specialized transposon mutagenesis system (Tn5c7, developed by Goryshin, Naumann, and Reznikoff) that allowed for the recursive deletion of genomic DNA in vivo. Performed microarray mapping of several mutant strains of <i>E. coli</i> K-12 that have reduced genomes (>10% reduction). Assisted Prof. Reznikoff with comparative protein sequence analysis of aligned IS50 transposase homologs with the known Tn5 crystal structure.	2001-2005
Research Specialist, <b>University of Wisconsin, Madison, WI</b> <b>Department of Genetics (Prof. David C. Schwartz)</b> <b>Research experience:</b> Optical mapping of <i>E. coli</i> O157:H7.	1999-2000
Junior Research Scientist, <b>New York University, New York, NY</b> <b>W.M. Keck Laboratory for Biomolecular Imaging,</b> <b>Department of Chemistry (Prof. David C. Schwartz)</b> <b>Research experience:</b> Optical Mapping of the <i>Plasmodium falciparum</i> genome.	1997-1999

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### Publications

**Apodaca J\***, Kiley PJ, Glasner JD, et al. Evolution of the oxygen-responsive transcriptional stimulon in *Escherichia coli* strains and *Salmonella enterica* typhimurium LT2 involves differences in network composition and variation in regulation of orthologous genes. In preparation.

**Apodaca J\***, Babujee L\*, Balakrishnan V, Liss P, Kiley PJ, Charkowski AO, et al. Evolution of the metabolic and regulatory networks associated with oxygen availability in two phytopathogenic enterobacteria. *BMC Genomics*. BioMed Central Ltd; 2012 Mar 22;13(1):110. \*equal author contribution.

Reznikoff WS, Bordenstein SR, **Apodaca J**. Comparative sequence analysis of IS50/Tn5 transposase. *J Bacteriol*. 2004 Dec;186(24):8240–7.

Goryshin IY, Naumann TA, **Apodaca J**, Reznikoff WS. Chromosomal Deletion Formation System Based on Tn5 Double Transposition: Use For Making Minimal Genomes and Essential Gene Analysis. *Genome Research*. 2003 Mar 12;13(4):644–53.

Lim A, Dimalanta ET, Potamouisis KD, Yen G, **Apodaca J**, Tao C, et al. Shotgun optical maps of the whole *Escherichia coli* O157:H7 genome. *Genome Research*. 2001 Sep;11(9):1584–93.

Perna NT, Plunkett G, Burland V, Mau B, Glasner JD, Rose DJ, et al. Genome sequence of enterohaemorrhagic *Escherichia coli* O157:H7. *Nature*. 2001 Jan;409(6):529–33.

Lai Z, Jing J, Aston C, Clarke V, **Apodaca J**, Dimalanta ET, et al. A shotgun optical map of the entire *Plasmodium falciparum* genome. *Nature Genetics*. 1999 Nov;23(3):309–13.

### Talks

Evolution of the transcriptional response to oxygen limitation. The 2009 Evolution and Ecology of Infectious Diseases, Park City, Utah. March 30-April 2, 2009. 2001-2005

Evolution of the Transcriptional Response to Oxygen Limitation in the Enterobacteria. 2007 Molecular Genetics of Bacteria and Phages. Madison, Wisconsin. August 7-12, 2007. 2007

Regulation in the phytopathogenic *Enterobacteria*. Jennifer Apodaca, Jeremy D. Glasner, Amy Charkowski, Patricia J. Kiley, Nicole T. Perna International Erwinia Workshop, Scottish Crop Research Institute, Dundee, Scotland. July 8-10th, 2006. 2006

Comparative genomics of Oxygen Regulation in phytopathogenic *Enterobacteria*. Jennifer Apodaca, Jeremy D. Glasner, Amy Charkowski, Patricia J. Kiley, Nicole T. Perna 11 th International Conference on Plant Pathogenic Bacteria. Edinburgh, Scotland. July 10th -14th, 2006.

### Awards

**Genomic Sciences Training Program - Predoctoral Trainee** 2005-2010,

**Awarded by:** Institutional training grant from the National Human Genome Research Institute (NHGRI: T32HG002760). 2013

2011

**Computational Informatics in Medicine and Biology – Predoctoral Trainee**

## Curriculum Vitae

**Awarded by:** National Library of Medicine (NLM: 5T15LM007359), with additional support from the University of Wisconsin-Madison Graduate School

**Burroughs Wellcome Travel Scholarship**

2007

## Teaching Experience

Teaching Assistant, **University of Wisconsin, Madison, WI**

**Department of Zoology**

Course: **Introductory Biology 151 Laboratory**

2012

Teaching Assistant, **University of Wisconsin, Madison, WI**

**Department of Bacteriology**

Course: **Microbiology 304: Biology of Microorganisms Laboratory**

2009-2010

## Technical Skills

**Molecular genetics:** DNA/RNA purification, Pulsed Field Gel Electrophoresis, subcloning, southern blotting, gene expression analysis, transposon mutagenesis, *in vitro* transposition assays, and phage transduction.

**Biochemistry:** Protein purification, protein expression, HPLC, 2D gel electrophoresis.

**Genomic analysis packages (sequence analysis and mapping):** MAUVE multiple genome alignment, InterPro, HMMR, RFAM, Blast, MUSCLE, MEGA, RAST, Mr. Bayes, Paup, DNASTAR.

**Programming and scripting:** R, Matlab, Java, Python, Perl, shell scripting (tcsh, csh, sed/awk).

**OS:** Unix, Linux, MacOS, and Windows.

**Data management, analysis & visualization:** MySQL, MS Access, R-packages (bioconductor, ggplot, lattice), Chimera, Biocyc Pathway Tools (EcoCyc, MetaCyc), Cytoscape and Gelphi.

**Software:** Illustrator, Photoshop

**Experience:** Graphic design, Linux Administration.

## Affiliations/Memberships

American Society of Microbiology

Society of Molecular Biology and Evolution

## Jennifer Apodaca

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## Curriculum Vitae

### References

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<http://www.genome.wisc.edu/information/gplunkett.html>