

# Michael Scott Robeson II

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## Objective:

To use, and develop bioinformatic and phylogenetic tools to address questions about micro- and meiofaunal communities.

## Education:

2004-Current – University of Colorado at Boulder, Ecology & Evolutionary Biology Department

- Focusing on applying phylogenetic methods to ascertain meiofaunal invertebrate diversity.
- Develop and use bioinformatics tools to handle parsing large amounts of microbial data.

1997-2001 - University of South Florida, Tampa, FL

- Obtained an M.S. degree in Zoology.
- Emphasis on Molecular Evolutionary Genetics & Systematics.
- Sequenced most of the mitochondrial genome of a Monogonont rotifer, *Brachionus plicatilis*, in order to help clarify its position among closely related taxa (i.e. Acanthocephala, Platyhelminthes, and Gnathostomulida). Another aspect of the project was to offer more flexibility in data analysis, i.e., make universal primers for a variety of closely related taxa (especially within the Rotifera).

1993-1997 - University of Tampa, Tampa, FL.

- B.S. Biochemistry
- Minor Biology

## Awards:

2005-2006 Academic Year

- National Science Foundation GK-12 Grant. Spent 2 days a week teaching several Biology and Science classes at Nederland Middle/High School in Colorado. Also, taught students how to use computers (both Windows and Mac OS X machines) to perform basic literature searches, and use online educational tools.

## Publications / Manuscripts:

*Published:*

- Kristen R Freeman, Monte Y Pescador, Sasha C Reed, Elizabeth K Costello, **Michael S Robeson** and Steven K Schmidt (2009) *Soil CO<sub>2</sub> flux and photoautotrophic community composition in high-elevation, 'barren' soil*. ENVIRONMENTAL MICROBIOLOGY 11:3 674-686
- Ryan T Jones, **Michael S Robeson**, Christian L Lauber, Micah Hamady, Rob Knight and Noah Fierer (2009) *A comprehensive survey of soil acidobacterial diversity using pyrosequencing and clone library analyses*. THE ISME JOURNAL. 1-12
- Diana R Nemergut, **Michael S Robeson**, Robert F Kysela, Andrew P Martin, Steven K Schmidt and Rob Knight (2008) *Insights and inferences about integron evolution from genomic data*. BMC GENOMICS. 9:261
- Noah Fierer, Mya Breitbart, James Nulton, Peter Salamon, Catherine Lozupone, Ryan Jones, **Michael Robeson**, Robert A. Edwards, Ben Felts, Steve Rayhawk, Rob Knight, Forest Rohwer, and Robert B. Jackson (2007) *Metagenomic and Small-Subunit rRNA Analyses Reveal the Genetic Diversity of Bacteria, Archaea, Fungi, and Viruses in Soil*. APPLIED AND ENVIRONMENTAL MICROBIOLOGY, p. 7059–7066
- Rob Knight, Peter Maxwell, Amanda Birmingham, Jason Carnes, J Gregory Caporaso, Brett C Easton, Michael Eaton, Micah Hamady, Helen Lindsay, Zongzhi Liu, Catherine Lozupone, Daniel McDonald, **Michael Robeson**, Raymond Sammut, Sandra Smit, Matthew J Wakefield, Jeremy Widmann, Shandy Wikman, Stephanie Wilson, Hua Ying and Gavin A Huttley (2007) *PyCogent: a toolkit for making sense from sequence*. GENOME BIOLOGY 8: R171

## Abstracts and Presentations:

- *Poster:* C. R. Davis, L. C. Heller, K. K. Peak, D. L. Wingfield, C. L. Goldstein-Hart, D. W. Bodager, **M. S. Robeson**, A. C. Cannons, P. T. Amuso, J. Cattani. "Molecular and Physical Characterization of an Outbreak Related Strain of *Vibrio parahaemolyticus*." American Society of Microbiology General Meeting, May 18 - 22, 2003 Washington DC.
- *Poster:* A. Tatavarthy, L. C. Heller, C. R. Davis, K. K. Peak, **M S Robeson**, J. S. Gullledge, A. C. Cannons, P. T. Amuso, J. Cattani. "Detection and Subtyping of *Salmonella* spp. by Real – Time PCR, RiboPrinting and Pulse Field Gel Electrophoresis." American Society of Microbiology General Meeting, May 18 - 22, 2003 Washington DC.
- *Poster:* K. K. Peak, V. A. Luna, L. Heller, W. Veguilla, D. S. King, **M S Robeson**, F. Reeves, L. Heberlein-Larson, A. Cannons, P. Amuso, J. Cattani. "The Development of a Culture Collection of Authenticated *Bacillus* spp, including *B. anthracis*, Isolated from Suspicious Samples and Regional Soil Samples." University of South Florida College of Public Health "HSC Research Day", February 13, 2003 and the Bio-terrorism Consortium meeting (Lubbock, TX) April 30th. American Society of Microbiology General Meeting 2003.
- *Poster:* Luna VA, Heller L, King D S, Peak, K K, **Robeson M S**, Skibicka K, Tatavarthy A Reeves F, Cannons A, Amuso P, Cattani J. "DNA Fingerprining and Phenotypes of 50 *Bacillus* spp. Isolated from Forensic Samples from October through December 2001." American Society of Microbiology General Meeting, May 18 - 22, 2003 Washington DC.
- *Poster:* Peak KK, Luna VA, Heller L, Veguilla W, King DS, **Robeson M S**, Reeves F, Heberlein-Larson L, Cannons A, Amuso P, and Cattani J. "The Development of a Culture Collection of Authenticated *Bacillus* spp, including *B. anthracis*, Isolated from Suspicious Samples and Regional Soil Samples." American Society of Microbiology General Meeting, May 18 - 22, 2003 Washington DC.
- *Presentation:* "Analysis of Ba813 DNA Sequence from Several *Bacillus* sp. Isolates", Bio-terrorism Consortium meeting (Lubbock, TX) April 30<sup>th</sup>, 2003.
- Luna V, Heller L, Skibicka K, Tatavarthy A, King D, Peak K K, **Robeson M S**, Reeves F, Cannons A, Amuso P, Cattani J. "The Molecular and Phenotypic Characterization of *Bacillus* Species Isolated from Forensic Samples from October through December of 2001 in Central Florida." 2003 **Submitted for publication.**
- *Presentation: Invited Speaker.* Florida Association of Food Protection (F.A.F.P.) On "Detection and Typing of Bioterrorism agents in food: Molecular Approaches", April 3<sup>rd</sup> 2003.
- *Poster:* Health Sciences Center – Research Day "Analysis of Ba813 DNA sequence from several *Bacillus* sp. isolates", February 13, 2003.
- *Poster:* Luna VA, King,D, **Robeson M S**, Ewert M, Amuso P, Cannons A, Peak KK, Davis C, Heller L, Wingfield D, and Cattani J. "Rapid Identification of Bacillus anthracis Spores in Low Concentrations in Clinical and Environmental Specimens by Real-time PCR." American Society of Microbiology General Meeting, May 19 - 23, 2002 Salt Lake City, UT.
- *Poster:* Ewert M, Luna VA, **Robeson M S**, Amuso P, Cannons A, Davis C, Heller L, King D, Peak KK, Wingfield D, and Cattani J. "Rapid Presumptive PCR-Based Identification of Bacillus anthracis in Human Blood." American Society of Microbiology General Meeting, May 19 - 23, 2002 Salt Lake City, UT.
- *Poster: Robeson M S*, Luna VA, King D, Ewert M, Amuso P, Cannons A, Davis C, Heller L, Peak KK, Wingfield, DOn "Assessment of the Utility of Automated Ribotyping for Surveillance and Molecular Characterization of Bioterrorism Agents", American Society of Microbiology General Meeting May 22, Spring 2002.
- *Presentation: Guest Speaker.* Association of Public Health Laboratories (A.P.H.L.) & The Center for Disease Control and Prevention (C.D.C), On "Bio-terrorism Preparedness and Response." CDC-PulseNet Update Meeting, Ann Arbor, MI April 8<sup>th</sup>, 2002.
- *Presentation:* University of South Florida, final Masters thesis seminar. July 23, 2001.
- *Presentation:* Florida Ecological and Evolutionary Symposium (F.E.E.S.), Masters research, Spring 2001.
- *Poster:* Society for Integrative and Comparative Biology (S.I.C.B.), Masters research, Spring 2001.
- *Presentation:* Society for Integrative and Comparative Biology (S.I.C.B.), Masters research, Spring 2000.
- *Poster:* Association of Southeastern Biologists (A.S.B.), Masters research, Spring 1999.
- *Poster:* Institute for Biomolecular Science (I.B.S.) at U.S.F., Masters research, Summer 1998.
- *Presentation:* Mote Marine Laboratory, on "Captive Research Animal Maintenance" internship, Summer 1995.

## **Internships:**

- Lab Technician, Summer 1996 - Sun Health Research Institute in Sun City, AZ. Involved in Alzheimer's disease research. Worked with chemo-tactic polypeptides using blind-wells on a daily basis. Research performed to analyze which types of protein polypeptides would attract neuronal cells through a membrane. Research centered on how and why glial cells are attracted to damaged areas of the brain. Trained extensively in microbiological techniques to avoid contamination of cell cultures. Performed E.L.I.S.A.s.
- Lab Technician, Summer 1995 - Mote Marine Laboratory (M.M.L.) in Sarasota, FL. Helped in the production of a new internship program at M.M.L. called "Captive Research Animal Maintenance" (C.R.A.M). Primary focus was to care for and maintain marine animals in a healthy and useful condition for research use. Extensive handling and transferring of sharks, skates, rays, and sea turtles was primary focus. Maintained aquaria tanks, filtration, & water quality (i.e. pH, ammonia, & salinity levels etc.) in order to maintain viability of the marine animals. Aided in design and construction of filters in large aquaria.

## **Work Experience:**

- Associate in Research 2003-2004 – (Promoted from Assistant in Research) College of Public Health at the University of South Florida. I run and maintain a variety of nucleic acid analysis and detection equipment. Aid in research design as well as lend guidance in genetics and molecular evolution analyses. Was involved in creating a Multi – Locus VNTR typing system for a food-borne pathogen. Also, engaged in DNA sequencing several loci in a variety of *Bacillus spp.*
- Assistant in Research 2001-2003 – College of Public Health at the University of South Florida. I ran and maintained a variety of nucleic acid analysis and detection equipment. Aided in research design that was based on molecular evolution and genetics. Helped train laboratory technicians in basic genetic analysis software, equipment and protocols.
- Chief sequencing technician 1997-2001 – U.S.F. Department of Biology in faculty mentor's lab. Ran and maintained an ABI 310 sequencer and associated thermo-cyclers for DNA sequencing for the USF Dept. of Biology.
- Teaching Assistant – The University of South Florida. Taught the following laboratory classes: General Chemistry 2045L, Fall Semester 2000; Cellular Processes 2010L, Spring Semesters of 1999 & 2000; Genetics 3063L, Spring Semester 2001. Wrote and presented laboratory material, concepts, and techniques; scientific writing. Administered and graded written and practical examinations; reviewed, critiqued, and graded laboratory exercises and reports.
- Benthic Sorter, Fall & Spring 1995 - Environmental Protection Commission (EPC) in Ybor City, FL. Participated in Benthic Sorting work. Sorted through sediment samples from Tampa Bay. Extracted mainly marine invertebrates and organized them according their upper level taxonomic classification. Data used to determine the trends in species diversity and abundance over time. The focus of the research was to ascertain if any biological indicators of pollution in Tampa Bay exist. Different animals may respond in various ways to particular types pollutants. Thus, the EPC may be able to make appropriate suggestions as how to deal with ecological disturbance in Tampa Bay.

## Highlights

### Equipment experience:

- ABI 310 and 7700
- Autoclave.
- Beckman-Coulter CEQ 2000XL and 8000
- Bio-Rad CHEF – Mapper (PFGE)
- Chromatography Columns (i.e. Size Exclusion Chromatography, Ion Exchange chromatography, Affinity chromatography, & Paper chromatography).
- Centrifuges
- Cryo-stat.
- General molecular biology tools.
- pH meters.
- Refractometers.
- RiboPrinter (Dupont-Qualicon)
- Roche LightCycler
- Roche MagNA Pure LC
- Spectrophotometers.
- Speed-Vac
- Various analytical scales.
- Various dissection and compound microscopes.
- Various forms of gel electrophoresis.
- Various Thermocyclers

### Protocol Experience:

- Blind-well experiments.
- Cloning.
- Cycle-Sequencing.
- DNA & mtDNA Extraction from animals and microbes.
- E.L.I.S.A.s.
- Growing and maintaining cell cultures.
- Growing Rotifer and Algae Cultures.
- Handling of sharks, skates, rays, & sea turtles.
- Making various stock solutions.
- Mini & Midi-preps.
- PFGE
- Polymerase Chain Reaction.
- Restriction Digests.
- Water quality testing.
- Various molecular biology protocols

### Research software:

- ARB
- BioNumerics
- Clustal
- DCSE
- Lasergene Package
- FACTURA & Auto-Assembler package
- MEGA
- PAUP
- PHYLIP
- PHYML
- RAxML
- Sequencher
- Tree editing programs
- Various UNIX, Python, and Perl based applications/scripts
- Various web-based sequence gathering & analysis programs.

**Other Skills:** MS DOS, MS Windows 3.1, 95, 98, Me, NT, 2000 (and server edition), XP & all Mac OS from classic to X (including basic OS X server), basic Linux use. Python scripting. All Microsoft Office packages, Disk utility programs, Endnote, Basic Web Site design, Computer / Network maintenance & equipment troubleshooting, Problem solving. **Interests:** Photography, Hiking, Camping, Computers, Reading, Maintaining pet aquaria. Would like to write science / technical books.