JAMES (JAMIE) T. MORTON

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EDUCATION

Graduate	University of California, San Diego
2015 - Present	PhD student in Computer Science
Graduate	University of Colorado, Boulder
2014 - 2015	PhD student in Computer Science
	Integrative Quantitative Biology Program
Undergraduate	Miami University
2010 - 2014	Four B.S. Degrees with majors in
	Computer Science (Cum Laude)
	Engineering (Cum Laude)
	Mathematics and Statistics
	Engineering Physics
	GPA: 3.74/4.0
Study Abroad	Hong Kong University of Science and Technology
Spring 2012	

HONORS

- **NSF Graduate Fellow**, 2015 - 2018 (Started date deferred from Fall 2014 as requested)
- **Integrated Quantitative Biology Fellowship**, University of Colorado Boulder, 2014 - 2015
- **National Barry Goldwater Scholar**, 2013
- **Benjamin Harrison Scholar**, Miami University, 2010-2014
- **First place**, Institute of Navigation (ION) Autonomous Snowplow Competition, 2014
- **NSF REU**, Cold Spring Harbor Laboratories, Summer 2012
- **Provost Academic Achievement Award**, Miami University, 2012
- **Ohio Space Grant Scholar Award**, NASA, 2012 - 2014
- **Dean's List**, Miami University, 2010-13
- **R.L. Edwards Scholarship**, Department of Physics, Miami University, 2011, 2013
- **Mary Jeannette and Clifford Harvey Scholarship**, Department of Mathetmatics, Miami U., 2013
- **Mary Jean and Joseph R. Priest Scholarship**, Department of Physics, Miami University, 2012
- **President List**, Miami University, 2010-11
- **Nestle Scholar**, Computer Sci. and Software Eng. Dept, Miami University, 2011
- **Faculty Prize**, Department of Mathematics, Miami University, 2011
- **Joseph A. Culler** Award, Department of Physics, Miami University, 2010,2011
- **NSF Travel Grant**, Coupling, Energetics, & Dynamics of Atmospheric Regions workshop, 2010
- **Wright Scholar**, Air Force Research Laboratory, Wright Patterson Air Force Base, 2009

PUBLICATIONS

- Morton, J. T., Sanders, J., Quinn, R. A., McDonald, D., Gonzalez, A., Vázquez-Baeza, Y., Navas-Molina, J. A., Song, S. J., Metcalf, J. L., Hyde, E. R., et al. (2017a). Balance trees reveal microbial niche differentiation. *mSystems*, 2(1):e00162–16

- Morton, J. T., Toran, L., Edlund, A., Metcalf, J. L., Lauber, C., and Knight, R. (2017b). Uncovering the horseshoe effect in microbial analyses. *mSystems*, 2(1):e00166–16

- Amir, A., McDonald, D., Navas-Molina, J. A., Debelius, J., Morton, J. T., Hyde, E., Robbins-Pianka, A., and Knight, R. (2017a). Correcting for microbial blooms in fecal samples during room-temperature shipping. *mSystems*, 2(2):e00199–16

- Amir, A., McDonald, D., Navas-Molina, J. A., Kopylova, E., Morton, J. T., Xu, Z. Z., Kightley, E. P., Thompson, L. R., Hyde, E. R., Gonzalez, A., et al. (2017b). Deblur rapidly resolves single-nucleotide community sequence patterns. *mSystems*, 2(2):e00191–16
- Vázquez-Baeza, Y., Gonzalez, A., Smarr, L., McDonald, D., Morton, J. T., Navas-Molina, J. A., and Knight, R. (2017). Bringing the dynamic microbiome to life with animations. *Cell Host & Microbe*, 21(1):7–10
- Vrbanac, A., Debelius, J. W., Jiang, L., Morton, J. T., Dorrestein, P., and Knight, R. (2017). An elegan (t) screen for drug-microbe interactions. *Cell Host & Microbe*, 21(5):555–556
- Hill-Burns, E. M., Debelius, J. W., Morton, J. T., Wissemann, W. T., Lewis, M. R., Wallen, Z. D., Peddada, S. D., Factor, S. A., Molho, E., Zabetian, C. P., et al. (2017). Parkinson's disease and parkinson's disease medications have distinct signatures of the gut microbiome. *Movement Disorders*
- Reber, S. O., Siebler, P. H., Donner, N. C., Morton, J. T., Smith, D. G., Kopelman, J. M., Lowe, K. R., Wheeler, K. J., Fox, J. H., Hassell, J. E., et al. (2016). Immunization with a heat-killed preparation of the environmental bacterium mycobacterium vaccae promotes stress resilience in mice. *Proceedings of the National Academy of Sciences*, page 201600324
- Gilbert, J. A., Quinn, R. A., Debelius, J., Xu, Z. Z., Morton, J., Garg, N., Jansson, J. K., Dorrestein, P. C., and Knight, R. (2016). Microbiome-wide association studies link dynamic microbial consortia to disease. *Nature*, 535(7610):94–103
- Nellore, A., Collado-Torres, L., Jaffe, A. E., Alquicira-Hernández, J., Wilks, C., Pritt, J., Morton, J., Leek, J. T., and Langmead, B. (2016). Rail-rna: Scalable analysis of rna-seq splicing and coverage. *Bioinformatics*, page btw575
- Petras, D., Nothias, L.-F., Quinn, R. A., Alexandrov, T., Bandeira, N., Bouslimani, A., Castro-Falcon, G., Chen, L., Dang, T., Floros, D. J., et al. (2016). Mass spectrometry-based visualization of molecules associated with human habitats. *Analytical Chemistry*, 88(22):10775–10784
- Barberán, A., Dunn, R. R., Reich, B. J., Pacifici, K., Laber, E. B., Menninger, H. L., Morton, J. M., Henley, J. B., Leff, J. W., Miller, S. L., et al. (2015). The ecology of microscopic life in household dust. In *Proc. R. Soc. B*, volume 282, page 20151139. The Royal Society
- Morton, J. T., Freed, S. D., Lee, S. W., and Friedberg, I. (2015). A large scale prediction of bacteriocin gene blocks suggests a wide functional spectrum for bacteriocins. *BMC bioinformatics*, 16(1):381
- Morton, J. T., Abrudan, P., Figueroa, N., Liang, C., and Karro, J. E. (2014). Scope++: Sequence classification of homopolymer emissions. *Genomics*, 104(3):157–162

PRESENTATIONS

- Morton et al. Balances Reveal Microbial Niche Differentiation. CODAwork (2017)
- Morton et al. From Probabilities to Balances: An Alternative Approach. Information Theory and Applications Workshop (2016)
- Morton et al. From Probabilities to Balances: An Alternative Approach Random Processes and Time Series: Theory and Applications (2016)
- Reber et al. An immunization strategy for prevention of post-traumatic stress disorder (PTSD) promotes stress resilience in mice. University California San Diego Pediatrics Symposium (2016)
- Reber et al. Immunization with a heat-killed preparation of the environmental bacterium Mycobacterium vaccae promotes stress resilience in mice. DNA Day (2015)

- Morton, J., Lladser M., Knight R., Uncovering the Unknown: A New Approach in Analyzing Microbiome Data NSF Data Science Workshop, 2015
- Morton, J., Freed, S. Lee, S. Friedberg, I. Prediction of Bacteriocin Associated Operons Rocky Mountain Bioinformatics Conference, 2014
- Morton, J., Freed, S. Lee, S. Friedberg, I. A pipeline for Identifying Bacteriocin-Associated Gene Clusters. ISMB Boston, 2014
- Morton, J., Freed, S. Lee, S. Friedberg, I. Discovering the Next Antibiotic Ohio Space Grant Consortium, Cleveland OH, 2014
- Morton, J., P., Abrudan, J. Karro, C. Liang , Sequence classification of homopolymer emissions (SCOPE), Great Lakes Bioinformatics Conference, Pittsburgh, PA, 2013
- Morton, J., P., Abrudan, J. Karro, C. Liang , Sequence classification of homopolymer emissions (SCOPE), Ohio Space Grant Consortium, Cleveland OH, 2013
- Morton, J., P., Abrudan, J. Karro, C. Liang , Sequence classification of homopolymer emissions (SCOPE), IEEE 2nd International Conference on Computational Advances in Bio and Medical Sciences, ICCABS 2012, Las Vegas, NV, February 2012
- Morton, J., J. Karro, C. Liang, A novel approach for identifying poly(A) tails in raw cDNA sequence data using General Hidden Markov Models, Genome Informatics Cold Spring Harbor, NY, November 2011.

EXPERIENCE

Research Experience

Rotation student University of California San Diego, La Jolla, CA, Fall 2015 - Present
– Working in Dr. Rob Knight's lab to study microbial ecology.

Research Rotations University of Colorado, Boulder, CO, Spring 2015
– Worked with Dr. Manuel Lladser to develop coverage statistics and study Aitchison geometry.
– Worked with Dr. Christopher Lowry to study anxiety effects on mouse microbiota.
– Worked with Dr. Noah Fierer and Albert Barberan to study microbes found in household dust.

Research Assistant Miami University, OH, Summer 2014
– Worked with Dr. Iddo Friedberg to develop **BOA** to identify bacteriocin associated gene clusters.

Data Scientist Intern Johns Hopkins University, MD , Summer 2013
– Worked with Dr. Benjamin Langmead to develop **Rail-RNA**

Undergraduate Research Program Cold Spring Harbor Laboratories, NY , Summer 2012
– Worked with Dr. Thomas Gingeras and Dr. Alex Dobin to study allelic specific expression

Research Assistant Miami University, OH , Spring 2011 - Fall 2011
– Worked with Dr. John Karro and Dr. Chun Liang to develop **SCOPE++** to study alternative polyadenylation

Research Assistant Miami University, OH , Summer 2010
– Worked with Dr. Qihou Zhou on processing incoherent scattering radar data

Engineering Aide Wright Patterson Air Force Base, OH, Summer 2010
– Testing out RSS localization algorithms on USRP using GNU radio.

Wright Scholar Wright Patterson Air Force Base, OH, Summer 2009
– Studied cognitive radio, radar, and GPS concepts and techniques

Teaching Experience

Teaching Assistant Woods Hole, MA, Summer 2016
– Teaching assistant for computational microbiology course at STAMPS.

Teaching Assistant Miami University, OH, Spring 2011
– Assisted Professor Mostafa Modirrousta in teaching of two sections of Intro to Engineering labs

National Competitions

Autonomous Snowplow Competition St. Paul MN, January, 2014

– One of three team members, First Place Award, Best Report Award, Best Presentation Award

Intelligent Ground Vehicle Competition Rochester, MI , Summer 2013

– One of four team members, 5th place in Design

SKILLS

Foreign Language Skills

- Chinese – Working Proficency in Mandarin and written Chinese

Technical Skills

- Python
- C/C++
- Java
- Javascript
- LaTeX
- ROS
- Hadoop
- Matlab
- R
- Unix
- SQL
- OpenCL
- CUDA
- git

OPEN SOURCE CONTRIBUTIONS

- Gneiss (Core Maintainer)
- Micronota (Core Developer)
- Sci-kit Bio (Developer)
- Emperor (Developer)
- BOA: Bacteriocin Operon Associator (Lead Developer)
- SCOPE++: Sequence Classification Of homoPolymer Emissions (Lead Developer)
- Rail-RNA (Contributor)
- Scipy (Contributor)
- Biopython (Contributor)

ACTIVITIES

- Poster Reviewer for ISMB 2015 2014-2016
- International Society of Computational Biology Student member, Summer 2014-Present
- Sigma Pi Sigma,Tau Beta Pi,Eta Kappa Nu Spring 2014-2014
- National Society of Collegiate Scholars, Fall 2012 - Spring 2013
- Association for Computing Machinery Student member, Fall 2011-2014
- Institute of Electrical and Electronics Engineers Student member, Fall 2011-2016
- IEEE Miami Student Chapter Treasurer, Fall 2011- Spring 2012