

Curriculum Vitae

Dan Knights

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Education

- Ph.D. candidate, Computer Science, University of Colorado, 2007—
- Interdisciplinary Quantitative Biology program, Biofrontiers Institute, University of Colorado, 2011—
- M.S. Computer Science, University of Colorado, 2010
- B.A. Computer Science, Middlebury College, 2001

Honors

- Achievement Rewards for College Scientists Scholarship, ARCS Foundation, 2010
- Research and Community Development Award, University of Colorado, 2009
- Dean's Outstanding Merit Fellowship, University of Colorado, 2007
- Official Rubik's Cube World Champion, Toronto, 2003
- Departmental honors, Middlebury College, 2001

Professional Experience

- Research Assistant, Knight Lab, University of Colorado, 2009–present
- Research Assistant, Mozer Lab, University of Colorado, 2007–2009
- Research Intern, J.D. Power & Associates, Boulder, 2008-2009
- Secondary Mathematics Teacher, Buncombe County Schools, North Carolina, 2004-2007
- Consultant and Software Developer, Rubik's Seven Towns, Ltd., London, 2001-2003
- Research Assistant, Robotics Lab, Middlebury College, 2000
- Research Intern, Charles River Analytics, Cambridge, Massachusetts, 1999

Peer-reviewed journal publications

- Knights D, Parfrey LW, Zaneveld J, Lozupone C, Knight R. "Human-associated microbial signatures: examining their predictive value". **Cell Host & Microbe** 2011 Oct 4;10(4):292-6.
- Knights D, Kuczynski J, Charlson E, Zaneveld J, Collman RG, Bushman FD, Knight R, Kelley ST. (2011). Bayesian community-wide microbial source tracking. **Nat Methods**. 2011 Jul 17.
- Verhulst NO, Qiu YT, Beijleveld H, Chris Maliepaard C, Knights D, Schulz S, Berg-Lyons D, Lauber CL, Verduijn W, Haasnoot GW, Mumm R, Bouwmeester HJ, Claas FH, Dicke M, van Loon JJ, Takken W, Knight R, Smallegange RC. "Composition of human skin microbiota affects attractiveness to malaria mosquitoes". **PLoS One**. 2011;6(12):e28991. Epub 2011 Dec 28.
- McNulty NP, Yatsunenkov T, Hsiao A, Faith JJ, Muegge BD, Goodman AL, Henrissat B, Oozeer R, Cools-Portier S, Gobert G, Chervaux C, Knights D, Lozupone CA, Knight R, Duncan AE, Bain JR, Muehlbauer MJ, Newgard CB, Heath AC, Gordon JI. "The impact of a consortium of fermented milk strains on the human gut microbiome: a study involving monozygotic twins and gnotobiotic mice". **Sci Transl Med**. 2011 Oct 26;3(106):106ra106.
- Wu GD, Chen J, Hoffmann C, Bittinger K, Chen Y, Keilbaugh SA, Bewtra M, Knights D, Walters WA, Knight R, Sinha R, Gilroy E, Gupta K, Baldassano R, Nessel L, Li H, Bushman FD, Lewis JD. "Long term dietary patterns shape gut microbial enterotypes". **Science** 2011 Oct 7;334(6052):105-8.
- Werner JJ, Knights D, Garcia ML, Scalfone NB, Smith S, Yarasheski K, Cummings TA, Beers AR, Knight R, Angenent LT. (2011). "Bacterial Community Structures are Unique and Resilient in Full-Scale Bioenergy Systems". **PNAS** 108, 4158-4163.
- Muegge BD, Kuczynski J, Knights D, Clemente JC, González A, Fontana L, Henrissat B, Knight R, Gordon JI. (2011). "Diet Drives Convergence in Gut Microbiome Functions Across Mammalian Phylogeny and Within Humans." **Science** 2011, 332(6032):970-974.
- Knights D, Costello EK, Knight R. (2011). "Supervised Classification of Human Microbiota". **FEMS Microbiol Rev** 35, 343-359.
- Jesse RR, Zaneveld J, Wegener Parfrey, Will Van Treuren, Catherine Lozupone, Jose C. Clemente, Dan Knights, Jesse Stombaugh, Justin Kuczynski, and Rob Knight. "High-Throughput Studies of Microbial Habitat Adaptation: Principles and Progress". **Trends in Microbiol**. 2011 Oct;19(10):472-82.
- Knights D, Kuczynski J, Koren O, Ley RE, Field D, Knight R, DeSantis TZ, Kelley ST. (2011). "Supervised classification of microbiota mitigates mislabeling errors". **The ISME Journal** 5, 570-573.

- Caporaso JG, Lauber CL, Costello EK, Berg-Lyons D, Gonzalez A, Stombaugh J, Knights D, Gajer P, Ravel J, Fierer N, Gordon JI, Knight R. (2011). "Moving pictures of the human microbiome." **Genome Biol.** 2011 May 30;12(5):R5.
- Yilmaz, P. et al. (2011). "Minimum information about a marker gene sequence (MIMARKS) and minimum information about any (x) sequence (MIxS) specifications". **Nat Biotech** 29, 415-420.
- Flores GE, Bates ST, Knights D, Lauber CL, Stombaugh J, Knight R, Fierer N. "Microbial Biogeography of Public Restroom Surfaces". **PLoS ONE**, in press.
- Lozupone C, Lladser ME, Knights D, Stombaugh J, Knight R. (2011). "UniFrac: an effective distance metric for microbial community comparison". **The ISME Journal** 5, 169-172.
- Kuczynski J, Costello EK, Nemergut DR, Zaneveld J, Lauber CL, Knights D, Koren O, Fierer N, Kelley ST, Ley RE, Gordon JI, Knight R. (2010). "Direct sequencing of the human microbiome readily reveals community differences". **Genome Biol.** 11(5):210.
- Caporaso JG, Kuczynski J, Stombaugh J, Bittinger K, Bushman FD, Costello EK, Fierer N, Peña AG, Goodrich JK, Gordon JI, Huttley GA, Kelley ST, Knights D, Koenig JE, Ley RE, Lozupone CA, McDonald D, Muegge BD, Pirrung M, Reeder J, Sevinsky JR, Turnbaugh PJ, Walters WA, Widmann J, Yatsunenko T, Zaneveld J, Knight R. (2010). "QIIME allows analysis of high-throughput community sequencing data". **Nat Methods** 7(5):335-6.

Peer-reviewed journal publications – under review or submitted

- Yatsunenko T, Rey F, Manary M, Trehan I, Dominguez-Bello MG, Baldassano RN, Anokhin AP, Heath AC, Warner B, Reeder J, Kuczynski J, Lozupone C, Lauber C, Clemente JC, Knights D, Knight R, Gordon JI. "Human gut microbiome differentiation viewed across cultures, ages and families" (in review, **Nature**).
- HMP Consortium. "Structure, Function and Diversity of the Human Microbiome in an Adult Reference Population" (submitted, **Nature**).
- HMP Consortium. "A framework for human microbiome research". (submitted, **Nature**).

Peer-reviewed conference proceedings

- Werner J. J., Knights D. B., Garcia M. L., Scalfone N., Cummings T. A., Beers A. R., Knight R. and Angenent L. T. (2010). "Phylogenetic dynamics of bacterial communities in a time series of nine full-scale granular upflow digesters treating brewery". In: Proc. of the 12th World Conference on Anaerobic Digestion, October 31-November 4, 2010, Guadalajara, Mexico.

- Knights D, Mozer MC, Nicolov N. (2009). "Detecting Topic Drift with Compound Topic Models". 2009 International AAAI Conference on Weblogs and Social Media.
- Knights D, Mytkowicz T, Sweeney PF, Mozer MC, Diwan A. Blind Optimization for Exploiting Hardware Features. In: Proc. 2009 International Conference on Compiler Construction, York, United Kingdom.

Other publications

- Otte M, Knights D, Pfeiffer III J, Mulligan J and Grudic G. (2009). New Techniques for Path Planning in Image Space. 2009 Technical report, Dept. of Computer Science, University of Colorado at Boulder.
- Knights D. (2003). Rubik's Cube: 7-Step Solution Guide. Booklet packaged with Rubik's Cube worldwide.
- Das S, Wu C, Knights D and Truszkowski W. (1999). Distributed Intelligent Planning and Scheduling. NASA Goddard Space Flight Center (Agents Division).

Invited talks (funded)

- "Applications of Machine Learning in Microbiome Studies". Methods to Study the Human Microbiome. October 17-18, 2011. University of Toronto, Toronto, Canada.
- "Supervised Classification of Microbial Communities". Working with Genomes Workshop. March 28-30, 2011. Institute of Microbial Technology, Chandigarh, India.