

# Michael Milner Hoffman

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<b>Education</b>	2008–present	University of Washington	Seattle, WA
	Senior Fellow		
	▪	Research mentor: Dr. William Stafford Noble, Associate Professor	
	2003–2008	Trinity College, University of Cambridge	Cambridge, UK
	Doctor of Philosophy, Biology		
	▪	Thesis adviser: Dr. Ewan Birney, Senior Scientist	
	▪	Marshall Scholar	
	▪	National Science Foundation Graduate Research Fellow	
	1998–2003	The University of Texas at Austin	Austin, TX
	Bachelor of Science, Biochemistry, with Highest Honors, Special Honors		
	Bachelor of Arts, Plan II Honors Liberal Arts, with Highest Honors		
	▪	Thesis adviser: Dr. Andrew D. Ellington, Professor	
	▪	College of Natural Sciences Commencement Speaker and Dean's Honored Graduate	
	▪	College of Liberal Arts Dean's Distinguished Graduate	
	▪	GPA: 3.965/4.000—University Honors	Major GPA: 4.000/4.000

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<b>Publications</b>	▪	ENCODE Project Consortium. "A user's guide for ENCODE." In preparation.
	▪	Hoffman MM, Buske O, Bilmes JA, Noble WS. "Segway: a dynamic Bayesian network method for segmenting genomic data." In preparation.
	▪	Hoffman MM, Noble WS. "The genomedata format for storing large-scale functional genomics data." In preparation.
	▪	Meynert A, Zhang Z, Hoffman MM, Auer T, Krainer AR, Ettwiller L, Birney E. "Design principles for vertebrate transcriptional enhancers." In preparation.
	▪	Hestand MS, Hoffman MM, Birney E, van Ommen GJB, den Dunnen, JT, 't Hoen PAC. "Identifying regulatory elements with a model for transcription factor binding competition." Submitted.
	▪	Hoffman MM, Birney E. "An effective model for natural selection in promoters." Submitted.
	▪	Hoffman MM, Birney E. "Estimating the neutral rate of nucleotide substitution using introns." <i>Mol Biol Evol.</i> 2007 Feb; 24:522-31.
	▪	International Chicken Genome Sequencing Consortium. "Sequence and comparative analysis of the chicken genome provide unique perspectives on vertebrate evolution." <i>Nature</i> 2004 Dec 9; 432:695-716.
	▪	Hoffman MM, Khrapov MA, Cox JC, Yao J, Tong L, Ellington AD. "AANT: the Amino Acid-Nucleotide Interaction Database." <i>Nucleic Acids Res.</i> 2004 Jan 1; 32:D174-81.

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## Presentations

- Hoffman MM, Andronescu M, Bilmes JA, Noble WS. "Segway: a dynamic Bayesian network for genomic segmentation." ENCODE and modENCODE Consortia Meeting. Bethesda, MD. Spring 2009.
  - Hoffman MM. "Properties of natural selection in mammalian promoters." Weizmann UK Symposium: Biological complexity: from models to systems. London, England. Summer 2008.
  - Hoffman MM. "Properties of natural selection in mammalian promoters." Seminar, Broad Institute of MIT and Harvard. Cambridge, MA. Spring 2008.
  - Hoffman MM. "Properties of natural selection in mammalian promoters." Seminar, Program in Bioinformatics and Integrative Biology, University of Massachusetts Medical School. Worcester, MA. Spring 2008.
  - Hoffman MM. "Properties of natural selection in mammalian promoters." Sanger-Cambridge PhD Symposium. Hinxton, England. Spring 2008.
  - Meynert AM, Hoffman MM, Birney E. "Regulatory switches—multiple weak transcription factor binding sites explain the ultra conserved regions in mammalian genomes." Genome Informatics. Cold Spring Harbor, NY. Autumn 2007.
  - Hoffman MM. "Predicting Selection in Promoters by Simulating the Effects of Mutations." Waterman Seminar, Leibniz Institute of Plant Genetics and Crop Plant Research. Gatersleben, Germany. Autumn 2007.
  - Hoffman MM. "Sunflower: a model of transcription factor binding." EMBL Predoctoral Fellow Retreat. Barcelona. Summer 2007.
  - Hoffman MM. "Measurements of evolution and natural selection." Trinity College Science Society Symposium. Cambridge, England. Spring 2007.
  - Hoffman MM. "Poly: rapid development of embarrassingly parallelizable applications." Bioinformatics Open Source Conference. Glasgow. Summer 2004.
  - Hoffman MM. "Visualizing protein–DNA and protein–RNA interactions with AANT." Trinity College Science Society Symposium. Cambridge, England Spring 2004.
  
  - Student address, The University of Texas at Austin 120th Spring Commencement, College of Natural Sciences Convocation, 17 May 2003.
  - Student address, The University of Texas at Austin 55th Honors Day Convocation, 12 April 2003.
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## Posters

- Andronescu M, Hoffman MM, Noble WS. "Exploratory data analysis of genomic segmentations." ENCODE and modENCODE Consortia Meeting. Bethesda, MD. Spring 2009.
  - Hoffman MM, Birney E. 2008. "The properties of natural selection in mammalian promoters." The Biology of Genomes. Cold Spring Harbor, NY.
  - Meynert A, Zhang Z, Hoffman MM, Auer T, Krainer A, Ettwiller L, Birney E. 2008. "An explanatory model for vertebrate enhancers." The Biology of Genomes. Cold Spring Harbor, NY.
  - Hoffman MM, Birney E. 2007. "Predicting selection in promoters by simulating the effects of mutations." The Biology of Genomes. Cold Spring Harbor, NY.
  - Hoffman MM, Birney E. 2007. "Estimating the neutral rate of nucleotide substitution using introns." Cambridge Science Festival. Cambridge, UK.
  - Hoffman MM, Birney E. 2006. "Estimating the neutral rate of nucleotide substitution using introns." Newton Institute Workshop on Recent Advances in Statistical Genetics and Bioinformatics. Cambridge, UK.
  - Hoffman MM, Birney E. 2006. "Estimating the neutral rate of nucleotide substitution using introns." 3rd European Molecular Biology Laboratory Biennial Symposium: From Functional Genomics to Systems Biology. Heidelberg, Germany.
  - Hoffman MM, Birney E. 2004. "Intron evolution in the vertebrates." 12th International Conference on Intelligent Systems for Molecular Biology/3rd European Conference on Computational Biology. Glasgow, Scotland.
  - Hoffman MM, Hesselberth JR, Marcotte EM, Ellington AD. 2002. "Computational identification of microRNA targets." American Chemical Society Southwest Regional Meeting. Austin, TX.
  - Hoffman MM, Browning KS. 2001. "Design and implementation of a genomic data mining workbench." College of Natural Sciences Undergraduate Research Poster Session. Austin, TX.
  - Hoffman MM, Dauwalder MR, Browning KS. 2000. "Immunolocalization of protein synthesis initiation factors in *Arabidopsis thaliana*." College of Natural Sciences Undergraduate Research Poster Session. Austin, TX.
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**Software**

- Hoffman MM. 2009. "Segway: a dynamic Bayesian network method for segmenting genomic data."
- Hoffman MM, Buske O. 2009. "Segtools: exploratory data analysis of genomic segmentations." <[http://encodestatistics.org/svn/segmentation\\_validation/trunk/src/segtools/](http://encodestatistics.org/svn/segmentation_validation/trunk/src/segtools/)>
- Hoffman MM. 2008. "Genomedata: a format for storing large-scale functional genomics data." <<http://noble.gs.washington.edu/~mmh1/software/genomedata/>>
- Hoffman MM. 2007. "Sunflower: a model of transcription factor binding and evolution."
- Hoffman MM. 2007. "Textinput: streamlined version of stdlib fileinput." <<http://pypi.python.org/pypi/textinput/>>
- Hoffman MM. 2007. "Optbuild: build command lines for external programs." <<http://pypi.python.org/pypi/optbuild/>>
- Hoffman MM. 2006. "Metascript: a model of gene evolution incorporating alternative transcripts." <<http://pypi.python.org/pypi/metascript/>>
- Hoffman MM. 2006. "Xyddplot: dot-dash-density plots for R." <<http://www.ebi.ac.uk/~hoffman/software/xyddplot/>>
- Hoffman MM. 2006. "GALAXI: Global and Local Alignment eXcel Implementation." <<http://www.ebi.ac.uk/~hoffman/software/galaxi/>>
- Hoffman MM. 2005. "Renamer: rename files according to a ruleset." <<http://www.ebi.ac.uk/~hoffman/software/renamer/>>
- Hoffman MM. 2005. "Enscclip: unique identifiers for Ensembl features." <<http://www.ebi.ac.uk/~hoffman/software/ensclip/>>
- Hoffman MM. 2004. "Poly: rapid development of embarrassingly parallelizable applications." <<http://www.ebi.ac.uk/~hoffman/software/poly/>>
- Hoffman MM, Melsopp C. 2004. "Ensembl/Jython." <<http://oct2006.archive.ensembl.org/info/software/java/jython.html>>
- Hoffman MM, 2004. "Bio.Wise." In *The Biopython Project*, Chapman BA, ed. <<http://www.biopython.org/>>
- Hoffman MM, Hesselberth JR, Ellington AD. 2002. "Bio.GFF, Bio.DocSQL." In *The Biopython Project*, Chang JT, ed. <<http://www.biopython.org/>>
- Hoffman MM, Hesselberth JR, Ellington AD. 2002. "Aptabench: A workbench for aptamer selection."
- Hoffman MM, Browning KS. 2002. "Genematrix." <<http://research.cm.utexas.edu/kbrowning/flat/genematrix.tar.gz>>

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**Databases**

- Hoffman MM, Khrapov MA, Cox JC, Yao J, Tong L, Ellington AD. 2004. "AANT: the Amino Acid-Nucleotide Interaction Database." <<http://aant.icmb.utexas.edu/>>
- Hoffman MM, Browning KS. 2002. "FIAT: Factors in *Arabidopsis* Translation." <<http://www.cm.utexas.edu/flat/>>
- Hoffman MM, Zhang MQ. 2001. "AtProbe: *Arabidopsis thaliana* Promoter Binding Element Database." <<http://rulai.cshl.org/cgi-bin/atprobe/atprobe.pl>>

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**Other teaching**

- "Introduction to Python." Taught two-day seminar. European Molecular Biology Laboratory. Autumn 2005.
  - EMBL Predoctoral Bioinformatics Workshop. Organizing committee member and teaching assistant for three-day course. European Molecular Biology Laboratory. Autumn 2004.
  - "Biological sequence analysis." Discussion leader for eight-week seminar. The University of Texas at Austin Society for Computational Biology. Summer 2003.
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<b>Experience</b>	2008–present	Department of Genome Sciences University of Washington	<i>Seattle, WA</i>
	Predoctoral Fellow		
	<ul style="list-style-type: none"> <li>▪ Research Supervisor: Dr. William Stafford Noble, Associate Professor</li> <li>▪ Developed bioinformatics methods for discovering patterns in functional genomics data.</li> </ul>		
	2003–2008	EMBL–European Bioinformatics Institute	<i>Cambridge, UK</i>
	Predoctoral Fellow		
	<ul style="list-style-type: none"> <li>▪ Research Supervisor: Dr. Ewan Birney, Senior Scientist</li> <li>▪ Developed bioinformatics methods for studying the binding of transcription factors and the evolution of noncoding DNA in vertebrates.</li> </ul>		
	2002–2003	Department of Chemistry and Biochemistry The University of Texas at Austin	<i>Austin, TX</i>
	Research Assistant		
	<ul style="list-style-type: none"> <li>▪ Research Supervisor: Dr. Andrew D. Ellington, Professor</li> <li>▪ Developed database of protein-nucleic acid interactions and bioinformatics methods for elucidating microRNA targets.</li> </ul>		
	2001	Cold Spring Harbor Laboratory	<i>Cold Spring Harbor, NY</i>
	Undergraduate Research Program Participant		
	<ul style="list-style-type: none"> <li>▪ Research Supervisor: Dr. Michael Q. Zhang, Associate Professor</li> <li>▪ Created a database of promoter binding elements in <i>Arabidopsis thaliana</i>.</li> </ul>		
	1999–2001	Department of Chemistry and Biochemistry The University of Texas at Austin	<i>Austin, TX</i>
	Research Assistant		
	<ul style="list-style-type: none"> <li>▪ Research Supervisor: Dr. Karen S. Browning, Associate Professor</li> <li>▪ Designed and executed immunocytochemical experiments to determine cellular locations of specific proteins in <i>Arabidopsis</i> and wheat.</li> </ul>		
	2000	Plant Biochemistry Research Training Center Washington State University	<i>Pullman, WA</i>
	Undergraduate Research Fellow		
	<ul style="list-style-type: none"> <li>▪ Research Supervisor: Dr. Vincent R. Franceschi, Professor</li> <li>▪ Performed immunocytochemical experiments to localize specific proteins in <i>Arabidopsis</i> using a transmission electron microscope and a laser scanning confocal microscope.</li> </ul>		

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<b>Languages</b>	<ul style="list-style-type: none"> <li>▪ <b>Computer</b> Python, R, LaTeX, SQL, Perl, C, Bash, HTML, CSS</li> <li>▪ <b>Human</b> English, Spanish</li> </ul>
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<b>Other scholarships and awards</b>	<ul style="list-style-type: none"> <li>▪ National Merit Scholarship, 1998–2002.</li> <li>▪ IBM Thomas J. Watson Memorial Scholarship, 1998–2002.</li> <li>▪ Dorothy B. Banks Charitable Trust Scholarship, 1999–2000.</li> <li>▪ Dedman Merit Scholarship, 1998–2002.</li> <li>▪ NSF Research Experience for Undergraduates supplement, 1999.</li> <li>▪ The University of Texas at Austin Undergraduate Research Fellowship, 1999–2000, 2000–2001, 2002–2003.</li> <li>▪ The University of Texas at Austin Junior Fellows Research Grant, 2003.</li> <li>▪ Trinity College Moore, Beale Sargent and Mitchell Fund, 2005</li> </ul>
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**Honors**

- Phi Beta Kappa Award of Distinction, 2003.
- Inducted into Phi Beta Kappa, 2003.
- Cambridge Overseas Trust Honorary Scholar, 2003.
- College of Liberal Arts Junior Fellow, 2000–2003.
- College of Natural Sciences Dean's Scholar, 1998–2003.
- College of Liberal Arts Plan II Honors Program (2% of university), 1998–2003.
- College of Natural Sciences College Scholar 2000, 2001, 2002, 2003.

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**Organizations and committees**

- **Chair**, Cambridge University Student Pugwash Society, 2006–2007. **Secretary**, 2007–2008. *Organized seminar series on science and society topics.*
- **President**, Texas Student Publications Board of Operating Trustees, 2002–2003. **Vice President**, 2001–2002. **Member**, 2000–2003. *Managed finances, personnel, and policy of daily newspaper, radio station, television station, and other media. \$2.9 million annual budget.*
- **Secretary/Treasurer**, International Society for Computational Biology Student Council, 2004. **Member**, 2003–2004.
- **Representative**, EMBL–European Bioinformatics Institute Predoctoral Fellow Association, 2004–2005.
- **Chair**, Texas Student Publications Handbook Revision Committee, 2002.
- **Chair**, Texas Student Publications Election Committee, 2001–2002.
- **Founder** and **Co-President**, Barbecue Club, 1999–2003.
- **Member**, College of Natural Sciences Dean's Scholars Committee, 2000–2003.
- **Member**, Information Technology Coordinating Council, 1999–2002.
- **Member**, General Faculty Admissions and Registration Committee, 1999–2000.
  
- **Member**, Northwest Institute of Genetic Medicine, 2009–present.
- **Member**, American Association for the Advancement of Science, 2007–2008.
- **Member**, Genetics Society, 2006–2007.
- **Junior Member**, Isaac Newton Institute for Mathematical Sciences, 2006–present.
- **Member**, Society of Computational Biology, 2002–2003.
- **Member**, Microbiology and Molecular Biology Student Society, 1998–1999.

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**References**

- Dr. William Stafford Noble, Associate Professor, Department of Genome Sciences, University of Washington.  
+1 206 543 8930    noble@gs.washington.edu
- Dr. Ewan Birney, Senior Scientist, EMBL–European Bioinformatics Institute.  
+44 1223 494 420    birney@ebi.ac.uk
- Dr. Andy D. Ellington, Wilson and Kathryn Fraser Research Professor in Biochemistry, Department of Chemistry and Biochemistry, The University of Texas at Austin.  
+1 512 232 3424    andy.ellington@mail.utexas.edu

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**Citizenship**

- United States of America. Proof available upon request.