

## Robin D. Dowell

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CONTACT INFORMATION Department of Molecular, Cellular and Developmental Biology  
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Boulder, CO 80309 USA WWW: mcdb.colorado.edu/labs1/dowellde/

ACADEMIC POSITIONS **University of Colorado** October 2009 - Present  
Boettcher Investigator  
Assistant Professor, Molecular, Cellular and Developmental Biology  
Affiliated Faculty, Computer Science  
Core Faculty, Computational Bioscience Program

**Massachusetts Institute of Technology**

Postdoctoral Fellow, 2005-2009  
Adviser: David K. Gifford

EDUCATION

**Washington University in St. Louis**

D.Sc. Biomedical Engineering, December 2004  
“Stochastic Context-Free Grammars for RNA Secondary Structure Prediction”  
Adviser: Sean R. Eddy

M.S. Computer Science, May 2001  
Advisers: Lincoln Stein, Sean R. Eddy, Michael R. Brent  
Project: “A Distributed Annotation System” (Tech report wucs-01-07)

**Texas A&M University**

B.S. Computer Engineering, May 1997  
B.S. Genetics, May 1997  
Cum Laude, University Honors, Foundation Honors, Engineering Scholar  
Honors Thesis: “A Graphical User Interface for Contig Mapping”

HONORS

Spencer T. and Ann W. Olin Medical Scientist Fellow, 2005  
Mr. and Mrs. Spencer T. Olin Fellowship, 2002-2004  
Association of Women Faculty Graduate Student Award, 1999  
Howard Hughes Predoctoral Fellowship, 1997-2002  
National Science Foundation Fellowship (declined), 1997  
University Undergraduate Research Fellow (Best Presentation Award), 1997

GRANTS

**Active Support**

- 2010 Butcher Seed Grant (Espinosa/Dowell)
- 2010 Boettcher Foundation Webb-Waring Biomedical Research Award (Dowell)

**Completed Support**

- Ruth L. Kirschstein National Research Service Award (F32 DK076284; 2006)

## PUBLICATIONS

**R.D. Dowell.** Transcription factor binding variations in the evolution of gene regulation. *Trends in Genetics* 26(11):468-475, 2010.

T. Danford, **R. Dowell**, S. Agarwala, P. Grisafi, G.R. Fink, and D.K. Gifford. Discovering regulatory overlapping RNA transcripts. *Fourteenth International Conference on Research in Computational Molecular Biology*. Lisbon, Portugal, August 2010.

J. Wolf, **R.D. Dowell**, S. Mahony, M. Rabani, D.K. Gifford, and G.R. Fink. Dual transcriptional-translational regulation of *FLO11* by Khd1p implements a developmental switch. *Genetics* 185:513-522, 2010.

**R.D. Dowell\***, O. Ryan\*, A. Jansen, D. Cheung, S. Agarwala, T. Danford, D.A. Bernstein, P.A. Rolfe, L.E. Heisler, B. Chin, P.C. Phillips, G.R. Fink, D.K. Gifford and C. Boone. Genotype to phenotype: A complex problem. *Science* 328(5977):469, 2010.

S.L. Bumgarner, **R.D. Dowell**, P. Grisafi, D.K. Gifford, and G.R. Fink. Toggle involving *cis*-interfering noncoding RNAs controls variegated gene expression in yeast. *PNAS*, 106(43):18321-18326, 2009.

G.K. Gerber, **R.D. Dowell**, T.S. Jaakkola, and D.K. Gifford. Automated discovery of functional generality of human gene expression programs. *PLoS Computational Biology*, Aug;3(8):e148, 2007.

D.T. Odom\*, **R.D. Dowell\***, E.S. Jacobsen, W. Gordon, T.W. Danford, K.D. MacIsaac, P.A. Rolfe, C.M. Conboy, D.K. Gifford, and E. Fraenkel. Tissue-specific transcriptional regulation has diverged significantly between human and mouse. *Nature Genetics*, Jun;39(6):730-2, 2007.

**R.D. Dowell** and S.R. Eddy. Efficient Pairwise RNA Structure Prediction and alignment using sequence alignment constraints. *BMC Bioinformatics*, 7:400, 2006.

Y. Qi, P.A. Rolfe, K.D. MacIsaac, G.K. Gerber, D. Pokholok, J. Zeitlinger, T.W. Danford, **R.D. Dowell**, T.S. Jaakkola, R.A. Young, and D.K. Gifford. High-resolution computational models of genome binding events. *Nature Biotechnology*, 24(8):963-970, 2006.

D.T. Odom, **R.D. Dowell**, E.S. Jacobsen, L. Nekludova, P.A. Rolfe, T.W. Danford, D.K. Gifford, E. Fraenkel, G.I. Bell, and R.A. Young. Core transcriptional regulatory circuitry in human hepatocytes. *Nature/EMBO Molecular Systems Biology*, 2:2006.0017, 2006.

**R.D. Dowell** and S.R. Eddy. Evaluation of Several Lightweight Stochastic context-free grammars for RNA secondary structure prediction. *BMC Bioinformatics*, 5:71, 2004.

**R.D. Dowell**, R.M. Jokerst, A. Day, S.R. Eddy, and L. Stein. The distributed annotation system. *BMC Bioinformatics*, 2:7, 2001.

**R.D. Dowell.** A graphical user interface for contig mapping (an abstract). *Texas A&M University Undergraduate Journal of Science*, Spring 1997.

SUBMITTED PUBLICATIONS E.O. Mazzone, S. Mahony, S. McCuine, T.W. Danford, C. Reeder, P.A. Rolfe, **R.D. Dowell**, S.R. Thornton, L.A. Boyer, R.A. Young, D.K. Gifford, and H. Wichterle. Rapid and synchronous clearance of PcG histone modifications from *Hox* genes anticipates motor neuron differentiation. *submitted*.

PRESENTATIONS *Discovering Regulatory Overlapping RNA Transcripts*  
 Research in Computational Molecular Biology (RECOMB) Conference August 2010  
 (Lisbon, Portugal)

*A Complex Transcriptome: Noncoding Transcripts as Regulators*  
 Invited Presentation at Bioinformatics Center May 2010 (Copenhagen, Denmark)

*A Complex Transcriptome: Noncoding Transcripts as Regulators*  
 Sequence This: Genomics Today Mini-Symposium April 2010 (Denver, Colorado)

*From Genotype to Phenotype with Whole Genome Comparisons*  
 2008 Yeast Genetics & Molecular Biology Meeting July 2008 (Toronto, Ontario)

*High Resolution Models of Eukaryotic Transcriptional Regulation*  
 2006 Nebraska Research Expo March 2006 (Lincoln, Nebraska)

*Probabilistic Models of RNA Secondary Structure*  
 HHMI Predoctoral Fellows Meeting September 2002 (Chevy Chase, Maryland)

*Development of a Distributed Annotation System*  
 Chemo\*Bio Informatics Conference February 2001 (San Diego, California)

*A Distributed Annotation System Client*  
 Bioinformatics Open Source Conference (BOSC) August 2000 (San Diego, California)

*ACeDB and DAS: a Distributed Annotation System*  
 A *C. elegans* Database (ACEDB) Conference June 2000 (Vancouver, British Columbia)

TEACHING University of Colorado, Boulder, Colorado USA  
 MCDB 4520/5520;CSCI 4830 Bioinformatics and Genomics (Fall 2010: Instructor)  
 CBPS 7712 Bioinformatics II (Spring 2010: 3 lectures)  
 CSCI 4810 Seminar in Computational Biology (Spring 2010: 1 lecture)

Massachusetts Institute of Technology, Cambridge, Massachusetts USA  
 6.874;7.90 Computational Systems Biology (Spring 2008-2009: 2 lectures)

Washington University in St. Louis, St. Louis, Missouri USA  
 BME 140 Introduction to Biomedical Engineering (Fall 2001-2004: 1 lecture)  
 Bio 5495;BME 537 Computational Molecular Biology (Spring 1999: Teaching Assistant)

MENTOR University of Colorado, Boulder, Colorado USA



**Intern Programmer**

May 1995 - August 1995

Texas A&M University; Computer Information Services, College Station, Texas USA

**Computer Technician**

July 1994 - Oct. 1995

Post Oak Willowbend Animal Clinic, Houston, Texas USA

**Veterinary Technician**

June 1990 - June 1994

PROFESSIONAL  
MEMBERSHIPS

- Association of Computing Machinery
- Biomedical Engineering Society
- Institute of Electrical and Electronics Engineers
- International Society for Computational Biology