NEUROTEXAS℠ INSTITUTE
St David's HealthCare

Matthew C. Cowperthwaite, Ph.D.

Director of Research
Center for Computational Neuroscience

Education

1994–1998	University of Maryland, College Park Bachelor of Science, Plant Biology (December 1996)
2002–2008	University of Texas at Austin - Institute for Cellular and Molecular Biology, Ph.D. (Advisor: Dr. Lauren Ancel Meyers)

Research Positions

1996–1998	University of Maryland, College Park Undergraduate Research Assistant (Dr. Theophanes Solomos)
1999–2002	Rutgers, The State University of New Jersey Research Laboratory Manager for Dr. Hugo K. Dooner
2002-2008	University of Texas at Austin - Institute for Cellular and Molecular Biology, Graduate Research Assistant
2008-	The NeuroTexas Institute at St. David's Medical Center Director of Research – Center for Computational Neuroscience

Awards & Fellowships

2008	Center for Computational Neuroscience start-up grant from St. David's Community Health Foundation, co-P.I. ($2,000,000)
2008	Nominated for University of Texas Outstanding Doctoral Dissertation Award
2007	University of Texas Office of Graduate Studies Professional Development Award ($500)
2003–2005	NSF IGERT Fellowship – Computational Phylogenetics and Applications to Biology, Graduate Research Traineeship ($70,500)
2005	NIH Evolution of Infectious Disease Symposium Student Travel Award ($300)
2002–2003	University of Texas – Institute for Cellular and Molecular Biology Graduate Student Fellowship ($24,500)
1996	Inducted into Phi Kappa Phi National Honor Society

1996	University of Maryland, College Park Graduated Magna cum Laude.
1994-1995	University of Maryland, College Park Recipient of the M.J. and S.J. Grove Memorial Academic Scholarship

Publications

2008	Cowperthwaite MC, et al. "The Ascent of the Abundant: How Mutational Networks Constrain Evolution". **PLoS Computational Biology**. 4(7): e1000110.
2008	Cowperthwaite MC and Ellington AD. "Bioinformatic analysis of the effects of primer sequences on RNA aptamer selections". **Journal of Molecular Evolution**. 67(1):95.
2007	Cowperthwaite MC and Meyers LA. "How mutational networks shape evolution: Lessons from RNA models". **Annual Reviews of Ecology, Evolution, and Systematics**. 38: 203.
2006	Cowperthwaite MC, Bull JJ, and Meyers LA. "From bad to good: Fitness reversals and the ascent of deleterious mutations". **PLoS Computational Biology**. 2(10): e141. – Received a rating of 3.0(Recommended) from Faculty of 1000.
2005	Cowperthwaite MC, Bull JJ, and Meyers LA. "Distributions of beneficial fitness effects in RNA". **Genetics**. 170(4): 1449.
2004	Meyers LA, Lee JF, Cowperthwaite MC, and Ellington AD. "The robustness of naturally and artificially selected nucleic acid secondary structures." **Journal of Molecular Evolution**. 58(6): 681.
2002	Cowperthwaite, MC, et al. "Use of the transposon Ac as a gene-searching engine in the maize genome". The Plant Cell. 14(3): 713.

Manuscripts In Preparation

2008	Dang KK, Cowperthwaite MC, Burch CL. "Variable environments select for genetic and environmental robustness in computational models". *Manuscript under review*.
2008	Cowperthwaite MC and Bull JJ. "Evolution of mutation rates in finite asexual populations". *Manuscript under review*.

Conferences Attended

2007	Gordon Conference – Microbial Population Biology. Andover, NH. **Poster presentation**: "Evolution of Mutation Rate".
2005	Gordon Conference – Microbial Population Biology. Andover, NH. **Poster presentation**: "Consequences of asexuality: Is Muller's ratchet fatal?".
2005	NIH Evolution of Infectious Diseases Symposium. Bethesda, MD.
2005	Annual Meeting of the Society for the Study of Evolution. Fairbanks, AK. **Short talk**: "Distributions of beneficial fitness effects in RNA".
2003	Santa Fe Institute Mini-symposium on the Evolution of Robustness in Complex Systems. Santa Fe, NM.
2001	Maize Genetics Conference. Madison, WI.

Software Developed

RNAvolver–	A stochastic simulation of asexual evolution. The program implements a simple birth-death model of an evolving population. Each individual possesses an RNA genome and a secondary–structure–based phenotype upon which fitness is based. – Written in C and freely available upon request.

Teaching Experience (University of Texas)

2006	Introduction to Biology (BIO-301D)
2005–2006	Biostatistics (BIO-381M)

Outreach & Professional Service

2008	Evolution and Intelligent Design Outreach event - sponsored by the University of Texas Environmental Science Institute. Demonstrated EpiNets, an interactive computer simulation of epidemic diseases outbreaks.
2006	ExploreUT – university-wide demonstrations of research to the public. Developed EpiNets, an interactive computer simulation of epidemic diseases outbreaks.
2004–2005	Research mentor to John Wyles, undergraduate biochemistry student.
2004–	Reviewer for Genetics, Journal of Experimental Zoology, Journal of Theoretical Biology.