

# Benjamin de Bivort

Junior Fellow

Rowland Institute at Harvard

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## Appointments

- Principal Investigator (Junior Fellow), Evolution of Behavior Research Group 2008 – 2013  
Rowland Institute at Harvard
- Postdoctoral Fellow, Giribet Laboratory 2007 – 2008  
Department of Organismic and Evolutionary Biology, Harvard University

## Education

- Doctor of Philosophy in Molecular and Cellular Biology, Harvard University 2007  
Doctoral Thesis: “Polarity and plasticity elements of the *Drosophila* phototactic circuitry”
- Master of Arts in Molecular and Cellular Biology, Harvard University 2003
- Bachelor of Science in Biology and Mathematics, Duke University 2002  
Honors Thesis in Biology: “Notch is required for activity-dependent synaptic plasticity in *Drosophila*”  
Senior research in Mathematics: “A closed formula for the number of isothermal classes of  $n$ -cycles”

## Fellowships

- Merck-Wiley Graduate Fellowship 2005 – 2007
- National Science Foundation Graduate Research Fellowship 2002 – 2005
- PRUV Fellow, Duke University Mathematics Dept. (supports independent research) 2001 – 2002
- Lord Rothermere Fellow, New College, Oxford (supports summer coursework) 2000
- Angier B. Duke Memorial Scholarship to Duke (pays all tuition) 1998 – 2002

## Awards (selected)

- Ernie Peralta Prize (best departmental candidacy exam) 2004
- Derek Bok Teaching Award (based on student evaluations) 2003
- Westinghouse Science Competition Semifinalist 1997

## Publications by Topic

### **Drosophila Neuroscience**

- “Phototactic personality in the fruit fly and its suppression by serotonin” under revision  
KAIN, STOKES, DE BIVORT
- “Weather, climate and the evolution of behavioral diversity in *Drosophila*” in prep.  
KAIN, ZHANG, DE BIVORT
- “Automated biomechanical characterization of walking behavior in *Drosophila*” in prep.  
KAIN, STOKES, GAUDRY, SONG, WILSON, FOLEY, DE BIVORT

“Plasticity and polarity elements of the *Drosophila* phototactic circuitry” in prep.

DE BIVORT, ONAH, JAWITZ& HE, DAN, KUNES

“Determinants of the *Drosophila* odorant receptor pattern” *Developmental Cell* in press

SONG, DE BIVORT, KUNES

“Notch signaling is required for activity-dependent synaptic plasticity at the *Drosophila* neuromuscular junction” *Journal of Neurogenetics* 2009

DE BIVORT, GUO, ZHONG

### Theoretical & Systems Biology

“Cellular-level gene regulatory networks: their derivation and properties” 1(3), 429-466 2010

in *Systems Biology for Signaling Networks*

DE BIVORT – CHOI (ED.)

“Derivation of large-scale cellular regulatory networks from biological time series data” *Methods in Molecular Biology* 2010

in *Systems Biology in Drug Discovery and Development: Methods and Protocols*.

662, 149-65

DE BIVORT – YAN (ED.)

“Amino acid metabolic origin as an evolutionary influence on protein sequence in yeast” *J. of Molecular Evolution* 2009

DE BIVORT & PERLSTEIN, KUNES, SCHREIBER

65(5), 490-7

“Attractors and democratic dynamics” *Science* 2009

BAR-YAM, HARMON, DE BIVORT

323, 1016-7

“Empirical multiscale networks of cellular regulation” *PLoS Comp. Biology* 2007

DE BIVORT, HUANG, BAR-YAM

3(10), 1968-78

“Evolutionarily conserved optimization of amino acid biosynthesis” *J. of Molecular Evolution* 2007

PERLSTEIN & DE BIVORT, KUNES, SCHREIBER

65(2), 186-96

“Metabolic implications for the mechanism of mitochondrial endosymbiosis and human hereditary disorders” *Journal of Theoretical Biology* 2007

DE BIVORT, CHEN, PERRETTI, NEGRO, PHILIP, BAR-YAM

248(1), 26-36

“Estimating kinetic parameters from HIV primary infection data through the eyes of three different mathematical models” *Mathematical BioSciences* 2006

CIUPE, DE BIVORT, NELSON

200(1), 1-27

“Dynamics of cellular level regulation and function derived from murine expression array data” *PNAS* 2004

DE BIVORT, HUANG, BAR-YAM

101(51), 17687-92

### Systematics & Evolutionary Biology

“Growth and asymmetry of soil microfungi colonies from ‘Evolution Canyon,’ Lower Nahal Oren, Mount Carmel, Israel” in prep.

RAZ, GRAHAM, HEL-OR, COHEN, DE BIVORT,

GRISHKAN, NEVO

“A cladistic reconstruction of the ancestral mite harvestman (Arachnida, Opiliones, Cyphophthalmi): portrait of a Paleozoic detritivore” *Cladistics* under revision

DE BIVORT, CLOUSE, GIRIBET

“Evolutionary and biogeographic history of an ancient and global group of arachnids (Arachnida, Opiliones, Cyphophthalmi) with a new taxonomic arrangement” *Biological Journal of the Linnean Society* in press

GIRIBET, SHARMA, BENAVIDES, BOYER, CLOUSE, DE

BIVORT, KAWAUCHI, MURIENNE, SCHWENDINGER

“A systematic revision of South African Pettalidae (Arachnida : Opiliones : Cyphophthalmi) based on a combined analysis of discrete and continuous characters with the description of seven new species”	<i>Invertebrate Systematics</i> <b>24</b> (4), 371-406	2010
<u>DE BIVORT</u> , GIRIBET		
“Phylogenetic signals in morphometric data”	<i>Cladistics</i> <b>27</b> , 1-4	2010
CLOUSE, <u>DE BIVORT</u> , GIRIBET		
“A morphometrics-based phylogeny of the temperate Gondwanan mite harvestmen (Opiliones, Cyphophthalmi, Pettalidae)”	<i>J. of Zoological Systematics &amp; Evolutionary Research</i> <b>48</b> (4), 294-309	2010
<u>DE BIVORT</u> , CLOUSE, GIRIBET		
“A phylogenetic analysis for the South-east Asian mite harvestman family Stylocellidae (Opiliones : Cyphophthalmi) – a combined analysis using morphometric and molecular data”	<i>Invertebrate Systematics</i> <b>23</b> (6), 515-29	2009
CLOUSE, <u>DE BIVORT</u> , GIRIBET		
“New genus and species of cyphophthalmid with a phylogenetic analysis of the Sironidae (Arachnida, Opiliones, Cyphophthalmi)”	<i>Invertebrate Systematics</i> <b>18</b> (1), 7-52	2004
<u>DE BIVORT</u> , GIRIBET		

### Mathematics

“Isotemporal classes of diasters, daisies and beachballs”		in prep.
<u>DE BIVORT</u>		
“Isotemporal classes of n-cycles”		under revision
<u>DE BIVORT</u>		

### Teaching

• Lecturer, New England Complex Systems Institute Summer & Winter Schools		2006 – 2009
• Lecturer, Middle School Outreach: Behavioral Neuroscience, Harvard		2007 spring
• Teaching Fellow, Topics in Behav. Ecology: Learning & Memory (OEB174), Harvard		2005 spring
• Teaching Fellow, Systems Biology (MCB195), Harvard		2005 spring
• Teaching Fellow, HHMI High School Outreach: Behavioral Neuroscience, Harvard		2004 spring
• Teaching Fellow, Genetics and Genomics (BS50), Harvard		2003 fall
• Took graduate-only course, Teaching Biology, during undergraduate senior year		2002
• Teaching Assistant, Calculus I, Duke		1999 fall

### Presentations

Invited Talk	Janelia Conference: Function of the Insect Central Complex <i>A neural circuit controlling locomotor handedness</i>	2012
Talk	Cold Spring Harbor Laboratory Meeting on Neuroscience of <i>Drosophila</i> <i>The elements of fruit fly walking behavior</i>	2011
Poster	<i>Drosophila</i> Research Conference <i>Automated biomechanical characterization of walking behavior in flies</i>	2011
Talk	Janelia Conference: Vision in Flies <i>Developmental stochasticity underlies individual-to-individual idiosyncrasy in Drosophila visual behavior</i>	2011
Poster	Gordon Research Conference on Genes and Behavior <i>Automated biomechanical characterization of walking behavior in insects</i>	2010
Poster	Cold Spring Harbor Laboratory Meeting on Neuroscience of <i>Drosophila</i> <i>Rapid detection and characterization of walking behavior</i>	2009
Invited Talk	Harvard Organismic and Evolutionary Biology Seminar Series <i>Phylogenies from morphometrics</i>	2008

Talk	Hennig XXVII <i>Phylogenies from morphometrics</i>	2008
Poster	Janelia Conference: Functional Anatomy of the Arthropod Central Complex and Motor System <i>Plasticity and polarity elements of the Drosophila phototactic circuitry</i>	2008
Talk	International Conference on Complex Systems <i>Dynamics of cellular level function and regulation</i>	2006
Nominated Talk	Boston Area Graduate Student Symposium <i>Plasticity and polarity elements of the Drosophila phototactic circuitry</i>	2005
Poster	Cold Spring Harbor Laboratory Axon Guidance & Neural Plasticity Meeting <i>Measurement of Drosophila visual conditioning with an integrated counter-current maze</i>	2004
Poster	Hennig XXII <i>Iberosiro distylos, a new genus and species of sironid (Arachnida: Opiliones; Cyphophthalmi) &amp; morphological phylogenetic analysis of the Sironidae</i>	2003

### **Academic community participation**

- Volunteer interpreter, Boston Museum of Science: Butterfly Hall 2010
- Resident Tutor, Leverett House, Harvard 2004 – 2008
- Genetics and Genomics Training Program webpage committee 2003 – 2004
- Co-Organizer of departmental Genetics and Genomics Symposium on Species Interactions and Coevolution – joint between MCB and OEB Depts., Harvard 2002 – 2003