

Robert Makowsky, Ph.D.  
University of Alabama at Birmingham  
Department of Biostatistics  
327 Ryals Public Health Building  
Birmingham, AL 35294  
Email: Makowsky@uab.com  
Office: (205) 975-9122

### EDUCATION

#### **Ph.D, Quantitative Biology (Statistics emphasis), 2009**

University of Texas-Arlington, advisor Paul Chippindale

Dissertation: Theoretical and practical utility of gene sequences in phylogenetic and phylogeographic analyses

#### **M.S., Biological Sciences, 2004**

Marshall University, West Virginia, advisor Dr. Thomas K. Pauley

Thesis: Natural history and sexual dimorphism in the Eastern Hellbender

#### **B.S., Biology and Neurobehavioral Biology, 2001**

Emory University, GA

### PROFESSIONAL EXPERIENCE

#### **Postdoctoral fellow, Biostatistics, 2009-Present, University of Alabama at Birmingham**

Working in the Section on Statistical Genetics on various projects concerning HIV susceptibility, vaccine efficacy, population structure, mediation, prediction of complex traits and general statistical consulting (experimental design, power analyses, and reporting of results).

#### **Lecturer, Advanced Biometry, Spring 2011, University of Alabama at Birmingham**

Currently teaching one graduate class focusing on topics such as multiple regression, maximum likelihood, AIC, multivariate statistics, and design of experiments. Responsible for all aspects of the class.

#### **Teaching Assistant, Biostatistics, 2009, University of Texas-Arlington**

Responsible for grading, holding office hours, and occasionally lecturing Biostatistics

#### **Lecturer, 2008-2009, Tarrant County Community College-Fort Worth, TX**

Taught one lecture section and two lab sections for Introductory Biology for three semesters.

Responsible for grading, testing, and managing labs.

#### **Research Assistant, 2007, University of Texas-Arlington**

Responsible for overseeing undergraduate students and for completing the following tasks; tissue extraction, PCR, sequencing, making up solutions, and ordering.

#### **Teaching Assistant, 2007, University of Texas-Arlington**

Participated in lab setup while teaching two sections of Introductory Biology. Was responsible for lecturing and grading.

#### **Lab Researcher, 2004-2006, University of Alabama, Tuscaloosa, AL**

Did molecular research involving AFLP's, DNA sequencing, and microsatellites. Responsible for making stock solutions, material sterilization, and data analysis. Helped install and collect data from pitfall traps installed in Talladega National Forest for a amphibian/reptile fire ecology study.

#### **Museum Collections Manager, 2004-2006, University of Alabama, Tuscaloosa, AL**

Worked in the University of Alabama Herpetology Collection. Responsible for collections, specimen loans, and entering specimens into the collection

#### **Field Technician, 2005, University of Alabama, Tuscaloosa, AL**

Spent two months installing drift fences in the Talladega National Forest. Research funded by the USFS

#### **Museum Collections Manager, 2003-2004, Marshall University, Huntington, WV**

Worked in the West Virginia Amphibian and Reptile Museum. Responsible for collections, specimen loans, ordering of supplies, and copying all written information about specimens into electronic form.

Funded by the WVDNR

**Field Assistant, 2002-2004, Marshall University, Huntington, WV**

Took part in field surveys of Mud River in Milton, WV. This was funded by the USGS. Responsible for frog call surveys, documentation of individuals, and submitting a report of findings.

**Field Coordinator, 2002-2004, Marshall University, Huntington, WV**

Was coordinator for surveys of the Gauley River Scenic Recreation Area. Responsibilities included planning trips, obtaining equipment, conducting various searches (including SCUBA,) and entering data. Funded by the NPS.

**Field Assistant, 2002-2004, Marshall University, Huntington, WV**

Participated in stream salamander surveys throughout West Virginia. This research was funded by the USGS and EPA.

**Teaching Assistant, 2003, Marshall University, Huntington, WV**

Participated in coordination all lab activities for Herpetology including setup, maintenance of specimens, teaching, administration of lab particles, and grading.

**Field Specialist: Diver, 2003, Marshall University, Huntington, WV**

Conducted various collections of fresh water mussels in Dresden, Ohio. Research funded by Dominion Power.

**Publication Coordinator, 2002-2003, Marshall University, Huntington, WV**

Compiled all findings and produced a 450 page report concerning three years of field work in the Bluestone National Recreation Area.

**Amphibian and Reptile Keeper, 2001-2002, Sun Pet, Atlanta, GA**

Responsible for cleaning, housing, breeding, and care of animal inventory. Experienced hundreds of species and hundreds of thousands of specimens.

**Teaching Assistant, 2000, Emory University, Decatur, GA**

Responsible for Vertebrate Population Biology lab activities including setup, working with students, collection of live specimens, administration of lab particles, and grading

**Key Employee, 1996-2001, T.J. Applebees, Stone Mountain, GA**

Responsibilities included cooking, ordering food and supplies, overseeing other employees, and scheduling.

PAPERS PUBLISHED

**Makowsky R**, Chesser J, Rissler LJ (2009) A striking lack of genetic diversity in the wide ranging amphibian *Gastrophryne carolinensis* (Anura: Microhylidae). *Genetica* 135:169-183.

**Makowsky R**, Wilson LA, Pauley TK (2010) Sexual dimorphism in the eastern hellbender. *Herpetological Conservation and Biology* 5(1):44-48.

**Makowsky R**, Marshall JC, McVay J, Chippindale PT, Rissler, LJ (2010) Phylogeographic analysis of the plain-bellied watersnake (*Nerodia erythrogaster*) reveals low genetic and ecological differentiation and no support for subspecies. *Molecular Phylogenetics and Evolution*. 55(3):985-995.

Reynolds MR, Weiler AM, Piaskowski SM, Kolar HL, Weiker M, Weisgrau KL, **Makowsky R**, McDermott AB, Boyle R, Allison DB, Wilson NA, Koff WC, Watkins DI (2010) Macaques vaccinated with Simian Immunodeficiency Virus SIVmac239 $\Delta$ nef delay acquisition and control replication after repeated low-dose heterologous SIV challenge. *Journal of Virology*. 84(18): 9190-9199.

Schargel WE, Rivas G, **Makowsky R**, Señaris JC, Natera MA, Barros TR, Molina CR, Barrio-Amorós CL (2010) Phylogenetic systematics of the genus *Gonatodes* (Squamata: Sphaerodactylidae) in the Guayana region, with description of a new species from Venezuela. *Systematics and Biodiversity*. 8(3):321-339.

**Makowsky R**, Cox CL, Roelke CE, Chippindale PT (2010) Analyzing the relationship between sequence divergence and nodal support using Bayesian phylogenetic analyses. *Molecular Phylogenetics and Evolution*. 58:485-494.

Fontenot BE, **Makowsky R**, Chippindale PT (2011) Nuclear-mitochondrial discordance and gene flow in a recent radiation of toads. *Molecular Phylogenetics and Evolution*. 59:68-80.

- Makowsky R**, Pajewski NM, Klimentidis YC, Vazquez AI, Duarte CW, Allison DB, de los Campos G. (2011) Beyond missing heritability: Prediction of complex traits. *PLoS Genetics*. 7(4): e1002051
- Ingram KH, Lara-Castro C, Munoz AJ, **Makowsky R**, Lawrence JC, Newcomer BR, Lopez-Ben R, Rigsby D, Gower BA, Garvey WT. (In press) Intramyocellular Lipid and Insulin Resistance: Differential Relationships in European and African Americans. *Obesity*.
- Morse JT, **Makowsky R**, McMahan, RF. (In review) Analysis of North American Dreissenid invasion biology with amplified fragment length polymorphism (AFLP). *Biological Invasions*.
- Heflin L, Gibbs V, Powell M, **Makowsky R**, Lawrence A, Lawrence J, Watts S. (In review) Effect of dietary protein and carbohydrate levels on weight gain and gonad production in the sea urchin *Lytechinus variegatus*. *Aquaculture*.
- Challaner RC, McClintock JB, Makowsky R. (In review) Effects of near-future ocean acidification on fertilization and early development in the common sea urchin *Lytechinus variegatus*: important implications for phenotypic plasticity in echinoplutei. *Marine Ecology Progress Series*
- Watson CM, **Makowsky R**. (In review) A Geographic and Climatic Assessment of Reproductively Bimodal Lizard Genera Supports a New Hypothesis for the Evolution of Viviparity. *American Naturalist*
- Heflin L, Gibbs V, Powell M, **Makowsky R**, Lawrence A, Lawrence J, Watts S. (In prep) Food quality affects nutrient allocation to the test and Aristotle's lantern in the sea urchin *Lytechinus variegatus*. *Journal of Experimental Marine Biology and Ecology*.

#### NOTES AND NON-REVIEWED MANUSCRIPTS

- Pope B, Roelke CE, **Makowsky R**. 2008. *Eleutherodactylus* (=Syrhophus) *marnockii*. Geographic distribution. *Herpetological Review*. 39(3):362
- Streicher JW, Franklin CJ, **Makowsky R**, Cabrera-Guzman E. 2010. *Thamnophis marcianus*. Diet. *Herpetological Review*. 41(2): 238

#### PAPERS PRESENTED

- Eastern North American Region of the International Biometric Society, 2011. Beyond missing heritability: Prediction of complex traits
- UAB, 2011. Environmental factors driving the evolution of viviparity in lizards.
- Aquaculture America, 2011. (6<sup>th</sup> author) Effect of menhaden and soy oils on juvenile growth in the sea urchin *Lytechinus variegatus*
- National Shellfisheries Meeting, 2011. (5<sup>th</sup> author) Neutral and phospholipid requirements are minimal in the sea urchin *Lytechinus variegatus*
- Global Obesity Summit, 2010. (2<sup>nd</sup> author) Change in insulin sensitivity with weight gain is determined by fatness better than fitness. *Selected for "Hot Topics" section and recipient of travel award*.
- UAB, 2010. An attenuated AIDS vaccine in simians.
- Society for the Study of Amphibians and Reptiles, 2006. Understanding the biodiversity of reptiles and amphibians in the Southeastern United States
- Association of Southeastern Biologists, 2004. Sexual Dimorphism in the Eastern Hellbender
- Hellbender Symposium, 2003. Sexual Dimorphism in the Eastern Hellbender
- Association of Southeastern Biologists, 2001. Diet of the Eastern Hellbender

#### POSTERS PRESENTED

- UAB, 2011. Analyzing the relationship between sequence divergence and nodal support using Bayesian phylogenetic analyses.
- Joint Statistical Meetings, 2010. (2<sup>nd</sup> author) Linear mixed models for assessing longitudinal mediation
- UAB, 2010. Analyzing the relationship between sequence divergence and nodal support using Bayesian phylogenetic analyses.
- Society of Integrative and Comparative Biologists, 2008. A striking lack of genetic diversity in a wide-ranging frog, *Gastrophryne carolinensis*
- Association of Southeastern Biologists, 2004. Amphibian and reptile surveys in the Gauley River National Recreation Area in West Virginia

Association of Southeastern Biologists, 2004. Status of the West Virginia state collection of amphibians and Reptiles

### INVITED SEMINARS

2010, Research Experiences for Undergraduates (REU) and Research Experiences for Teachers (RET).

“Introduction to statistical analysis methods”

2010, UAB Biology Department. “Evidence based statistics in watersnakes and rattlesnakes”

### INVITED LECTURES

2011, Genetics in Public Health 635, UAB. “Creating and using phylogenies”

2010, Molecular Ecology and Phylogenetics 669, UAB. “Comparing phylogenetic hypotheses: theory and practice”

2010, Graduate Biomedical Sciences 701, UAB. “Basic continuous measurements and analyses”

2010, Graduate Biomedical Sciences 701, UAB. “Correlation and linear regression”

2011, Graduate Biomedical Sciences 701, UAB. “Basic continuous measurements and analyses”

2011, Graduate Biomedical Sciences 701, UAB. “Correlation and linear regression”

### GRANTS/AWARDS

June, 2011. Nominated for Best Paper award by the Science Unbound Foundation in the area of UAB-based investigator in Statistical Genetics (Analyzing the relationship between sequence divergence and nodal support using Bayesian phylogenetic analyses).

April, 2011. Placed third in the University of Alabama at Birmingham public health research day.

February, 2011. Placed second in the University of Alabama at Birmingham postdoctoral research day (\$200).

January, 2011. Received a career enhancement award from the office of post-doctoral education at UAB (\$1,500).

February, 2010. Placed third in the University of Alabama at Birmingham postdoctoral research day (\$100).

February, 2009. Received \$750.00 from Phi Sigma to study population genetics of the greater siren, *Siren lacertina*. Matched by department and graduate school (\$250 ea),

November, 2007. Received \$1000.00 from Phi Sigma to study evolutionary history of *Nerodia erythrogaster*. Matched by department and graduate school (\$250 ea),

February, 2006. Received a \$1,750 grant to study watersnakes in Alabama from the Birmingham Audobon Society.

August, 2005. Received an Enhancement Fellowship from the University of Alabama. ~\$40,000

May, 2003. Received an \$8,000.00 grant to study the Eastern Hellbender in West Virginia by the WVDNR.

July, 2003. Received a \$500.00 award to supplement above studies from the Marshall University College of Science.

April, 2001. Received \$100.00 award to cover travel expenses for undergraduate research from Emory University.

### LEADERSHIP ACTIVITIES

Vice president of Phi Sigma- Graduate student honors society (2007)

President of Phi Sigma- Graduate student honors society (2008)

Invited and organized a short course on AIC at UAB (2010)

### PROFESSIONAL MEMBERSHIPS

AEL- Graduate student honors society

Phi Sigma- Graduate Honors Society

ASA- American Statistical Association

IBS- International Biometric Society

## VOLUNTEER WORK

Have participated in volunteer outreach programs for 10 years involving talking with schools or the public about reptiles and amphibians.

Reviewer for: Herpetological Review, Herpetologica, Nature Publishing Group, Obesity, *ad hoc* reviewer for NSF.

## SKILLS

Proficient in MS Access, Word, Excel, Powerpoint, Minitab, Sigma Stat, SAS, R, PLINK, Statistica, Systat, MrBayes, Paup, Mesquite, MEGA, and Sequencher.

Statistic familiarity: Regression, design of experiments, model selection, multivariate analysis, maximum likelihood, Bayesian, missing data and interpretation of biological significance.

Statistical and mathematical classes: Calculus I, calculus II, biostatistics, introductory statistics, design of experiments, mathematical statistics I (unofficial audit), multivariate statistics, regression, applied linear models, advanced biometry, categorical data analysis (unofficial audit), statistical consulting.

Biology classes: Molecular evolution, theoretical systematics, virology, population ecology, biological modeling, tropical ecology, and microbiology.

Short courses: International microarray workshop (2010), applied information criterion and multimodel inference (2010), genetics of twin studies (2010), statistical learning and data mining (2011), missing data (2011).

## REFERENCES

Paul T. Chippindale, Professor,  
Department of Biology,  
University of Texas at Arlington.  
[paulc@exchange.uta.edu](mailto:paulc@exchange.uta.edu); 817-272-2703

Thomas K. Pauley, Professor,  
Department of Biological Sciences,  
Marshall University  
[pauley@marshall.edu](mailto:pauley@marshall.edu); 304-696-2376

T. Mark Beasley, Associate Professor,  
Department of Biostatistics,  
University of Alabama at Birmingham  
[mbeasley@uab.edu](mailto:mbeasley@uab.edu); 205-975-4957

Hemant K. Tiwari, Associate Professor,  
Department of Biostatistics,  
University of Alabama at Birmingham  
[htiwari@ms.soph.uab.edu](mailto:htiwari@ms.soph.uab.edu); 205-934-4907

David B. Allison, Professor and Section Head,  
Department of Biostatistics,  
University of Alabama at Birmingham  
[dallison@uab.edu](mailto:dallison@uab.edu); 205-975-9169

Kui Zhang, Associate Professor,  
Department of Biostatistics,  
University of Alabama at Birmingham  
[kzhang@ms.soph.uab.edu](mailto:kzhang@ms.soph.uab.edu); 205-996-4094

Jianming (James) Tang, Associate Professor,  
Department of Medicine,  
University of Alabama at Birmingham  
[jtang@uab.edu](mailto:jtang@uab.edu); 205-975-8630

John Morse, Fish and Wildlife Biologist,  
U.S. Fish and Wildlife Service  
[John\\_morse@fws.gov](mailto:John_morse@fws.gov); 817-277-1100 ext 30

Steven A. Watts, Professor,  
Department of Biology  
University of Alabama at Birmingham  
[sawatts@uab.edu](mailto:sawatts@uab.edu); 205-934-8308

Gustavo de los Campos, Assistant Professor  
Department of Biostatistics,  
University of Alabama at Birmingham  
[gcampos@uab.edu](mailto:gcampos@uab.edu); 205-975-9248