

## *Curriculum Vitae*

**Mariana Mondragón Palomino**

### **Research experience**

- Postdoctoral researcher** **Currently since October 2004**  
Friedrich-Schiller-Universität, Jena, Thüringen, Germany  
Department of Genetics. Experimental and bioinformatics study of the expression and functional divergence of MADS-domain transcription factors and their role in the morphological diversification of the orchid flower.
- Graduate student researcher** **1999-2004**  
University of California, Irvine, California, United States of America  
School of Biological Sciences. Department of Ecology and Evolutionary Biology.  
Bioinformatic study of the patterns of natural selection and gene conversion in the evolution of gene families and generation of pathogen recognition capabilities.
- Undergraduate student researcher** **1994-1998**  
Universidad Nacional Autónoma de México (UNAM), Mexico City, Mexico  
Instituto de Investigaciones Biomédicas
- Department of Immunology **(1996-1998)**  
Undergraduate Thesis in Biomedical Research. Acquired skills in computational phylogenetic analysis of DNA and protein sequences. Participated in discussion groups of Immunology and Molecular Phylogenetics.
  - Department of Immunology **(1995-1996)**  
“The role of MAFA in signal transduction”. Learned basic experimental skills in immunology: Culture of immortalized cell lines, *in vitro* stimulation of mast cell degranulation, Western hybridization, protein electrophoresis. Participated in discussion groups of Immunology research literature.
  - Department of Molecular Biology **(1994-1995)**  
“Effect of DNA supercoiling in the expression of heat shock proteins *gro EL*, *dnaK* and *Hsp90* in enterobacteria phylogenetically related to *E. coli*”. Acquired basic experimental skills in Molecular Biology: Bacterial cell culture, bacterial transformation, plasmid supercoiling DNA assays, and protein electrophoresis. Participation in discussion groups of Bacterial Molecular Biology.
  - Instituto de Química. **(6-8/1994)**  
“Molecular interactions between mRNA and ribosomal site 530”. Developed a database of sequences that was employed to study the molecular interactions between mRNA and ribosomal proteins.

## **Publications**

7. **Mondragón-Palomino, M.** and G. Theißen. 2007. “MADS-Box Genes involved in Orchid Floral Development: A primer” Proceedings of the 9<sup>th</sup> Asia-Pacific Orchid Conference, Seoul. In press.
6. Mishmar, D., Ruiz-Pesini, E., **Mondragon-Palomino, M.**, Procaccio, V., Gaut, B. and D.C. Wallace. 2006. “Adaptive selection of mitochondrial complex I subunits during primate radiation”. **Gene**. 378:11-18.
5. **Mondragón-Palomino, M.** and B.S. Gaut. 2005. Gene conversion and the evolution of three Leucine-Rich-Repeat gene families in *A. thaliana*. **Molecular Biology and Evolution**. 12:2444-2456.
4. **Mondragón-Palomino, M.**, Meyers, B.C., Michelmore, R.M. and B.S. Gaut. 2002. Pattern of positive selection in the complete NBS-LRR gene family of *Arabidopsis thaliana*. **Genome Research**. 12:1305-1315
3. **Mondragón-Palomino M.**, Pinero D., Nicholson-Weller, A. and J.P. Lacleste. 1999. Phylogenetic analysis of the homologous proteins of the terminal complement complex supports the emergence of C6 and C7 followed by C8 and C9. **Journal of Molecular Evolution**. 49:282-289.
2. Espitia, C., Lacleste, J.P., **Mondragón-Palomino, M.**, Amador, A., Campuzano, J., Martens, A., Singh, M., Cicero, R., Zhang, Y., and C. Moreno. 1999. The PE-PGRS glycine-rich proteins of Mycobacterium tuberculosis: a new family of fibronectin-binding proteins? **Microbiology** 145:3487-3495.
1. Mendoza L., **Mondragón, M.**, and J. Lagunez-Otero. 1998. Interaction of the 530 ribosomal site with regions of mRNA. **BioSystems**. 46:293-298

## **Education**

**Ph.D., Biological Sciences** **2004**

University of California, Irvine. United States of America

“Molecular evolution of disease resistance gene families from *Arabidopsis thaliana*”.

**B.S. Biomedical Research** **1998**

Universidad Nacional Autónoma de México (UNAM), Mexico City. Mexico

*Summa cum laude* Medal Gabino Barreda.

“Assembly of the Membrane Attack Complex of the Complement System: An evolutionary approach”. Supervision by Dr. Juan Pedro Lacleste. Molecular evolution of the gene family that forms the final complex in the complement system, part of the vertebrate innate immune response.

## **Professional Training**

### Cold Spring Harbor Laboratory (June 30 to July 20, 2006)

#### Frontiers and Techniques in Plant Science

This full-time course provided a practical and theoretical introduction to a wide range of advanced techniques in plant biology like QTL analysis, plant transformation, *in situ* hybridization, qRT-PCR and proteomics, among others. The course included a series of lectures and discussion sessions presented by experts on the area.

### Cold Spring Harbor Laboratory (October 15-30, 2001)

#### Bioinformatics: Writing Software for Genome Research.

This 90 hour course provided a practical introduction to programming in Perl, creation and use of MySQL databases, as well as advanced application of BLAST and CLUSTAL.

## **Teaching Experience**

### **Student supervision**

Luisa Hiese (From February 2007 to date). “Phylogeny and Molecular Evolution of *DEFICIENS*- and *GLOBOSA*-like MADS-Box genes in Orchids” Diplomarbeit in Botany at the Friedrich-Schiller-Universität, Jena.

Andrea Laube (2006). “Evolutionary aspect of MADS-box genes in the Hypoxidaceae”. Diplomarbeit in Biochemistry at the Friedrich-Schiller-Universität, Jena.

### **Course supervision**

#### Molecular Evolution

Friedrich-Schiller-Universität, Jena (April to June 2007).

Organized and supervised a 40 hours voluntary theoretical and practical course aimed to undergraduate Biology students. In this course students learn use and analyze the results of standard computational methods for sequence retrieval, alignment and phylogenetic reconstruction. This course was designed to become on fall 2007 part of the obligatory modularized program in for the Biology students of the 6th semester.

#### Yeast-n-hybrid Technology

Friedrich-Schiller-Universität, Jena (October 9 to 13, 2006).

Co-organized and supervised a full-time course on the theory and practice of the Yeast-n-hybrid technology for the International Leibnitz Research School in Jena. Graduate students from different fields of Biology learned about the varied applications of this technology and acquired practical experience by test protein-protein interactions between putative transcription factors.

## **Teaching Assistant**

### Molecular Evolution

University of California, Irvine (1/2003-4/2003 and 1/2004-4/2004).

Designed and demonstrated computer laboratory techniques; created course website; prepared class examples and references for the lecturers; held office hours; graded exams.

### Introduction to diversity of life

University of California, Irvine (9/2002-12/2002)

Designed and facilitated discussion in three student sections; created discussion section website; designed discussion quizzes and didactic material; held office hours; wrote exam questions; graded exams.

### Introduction to physiology

University of California, Irvine (3/2002-6/2002)

Assisted in writing and proctoring of exams; graded exams.

## **Pedagogical Training**

University of California, Irvine (3/2003- 1/2004)

Advanced Pedagogy and Academic Job Preparation. One year graduate course in advanced teaching methodologies applied to higher education and preparation for positions in academic institutions.

## **Fellowships and Honors**

- Post-doctoral Fellowship from the initiative in Evolutionary Biology of the VW Foundation. Salary, research and travel funds assigned for the period **(2006-2009)**.
- Fellowship for Graduate students and Young Researchers, Deutscher Akademischer Austausch Dienst (DAAD). **2004-2005 (extended to March 2006)**
- Fellowship in Bioinformatics. School of Biological Sciences, U. California, Irvine. **2003**
- Fellowship in Bioinformatics. School of Biological Sciences, U. California, Irvine. **2001**
- Ph.D. Credit-Scholarship. The University of California Institute for Mexico and the United States (UC-MEXUS) and Consejo Nacional de Ciencia y Tecnologia (CONACyT). **1999-2004**
- Scholarship for Undergraduate thesis dissertation. Fundación UNAM **1998-1997**
- Scholarship for High academic performance. Fundación UNAM **1996-1994**

## **Selected oral and poster presentations**

- **“MADS box B-class genes in the evolution of the orchid perianth”**. Invited oral presentation in 9th Asia Pacific Orchid Conference. Seoul, Korea. March 2007.
- **“MADS box B-class genes in the evolution of orchid flower structure”** Oral presentation in the First and founding meeting of the European Society of Evolutionary Developmental Biology. Prague, Czech Republic. August 2006.
  - **“Evolution of developmental genes and floral structure in orchids”**. Poster presentation. International Botanical Congress. Vienna, Austria. July **2005**.
  - **“Gene conversion in three complete gene families from *A. thaliana*”**. Poster presentation. Gordon Research Conference in Molecular Evolution. Ventura, California, USA. February **2004**.

- **“Molecular evolution of disease resistance gene superfamilies from *Arabidopsis thaliana*”**. Oral presentation. Evolutionary Biology department seminar. Max Planck Institute for Chemical Ecology. Jena, Germany. November **2003**

### **Reviewer**

2007 Plant Physiology, Plant Physiology and Biochemistry.

2006 Plant Cell, Molecular Biology and Evolution, Gene.

2005 Molecular Biology and Evolution, Journal of Molecular Evolution, Gene.

2004 Journal of Molecular Evolution.

2003 Molecular Biology and Evolution.

2002 Molecular Biology and Evolution.

### **Computer experience**

Operating Systems: DOS, Windows, MacOS, Unix, Linux

Programming Languages: Turbo Pascal and Perl

Specialty Software: GCG, Phylip, PAUP, BLAST, FASTA, SAS, MySQL, R.