

## Mrinalini Muralidharan

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### Educational Qualifications:

- **PhD.** at **Arizona State University** in the department of **Molecular and Cellular Biology**, in **Dr. Tsafir Mor's lab** expected date of graduation –Summer -07  
*Thesis: Cholinesterase in Plants*
- **B.S in Molecular Biology and Biotechnology.** (**Arizona State University: Spring '00 -- Spring '02**) *Summa Cum Laude*
- **De Anza Community College**, CA (Spring '99 – Fall '99)
- **Bellevue Community College** WA (Fall '98 -- Winter '99)
- **K-12: Mumbai, India** (1983 – 1998)

### **Brief description of current research**

Acetylcholinesterase (AChE), in mammals, is an enzyme that hydrolyses the neurotransmitter acetylcholine (ACh). The chronic up-regulation of AChE is associated with Alzheimer's disease. Literature shows that plants too have a cholinergic system, but no clear function has been ascribed to it. Considering the lack of a neural network in plants, it is very much a surprise to find AChE in plants, considering the classical role of this enzyme in mammals is to hydrolyze a neurotransmitter. I am currently studying the function of this gene using *A. thaliana* plants that over-express this gene or are knockouts. I'm also studying the localization of this gene on plant cells using GFP fusions. It is also important to understand the conditions under which this gene is expressed, for which we are using GFP fusions with the promoter of this gene.

### Prior Research Experience

- As a part of my undergraduate degree program, I did a one-semester internship in Dr. David Rhoads' Lab (Spring '01).
- In the summer of '01 I got accepted into the Biology Research Experience Program for Undergraduates, which is supported by the Howard Hughes Medical Institute. As a part of this program I worked in Dr. Tsafir Mor's lab for one year. I'm continuing the research project I started as an undergraduate for my graduate program.

### Awards:

- **Travel Grant from Graduate College and SoLS:** to attend a workshop "Transgene to Organism" in Hebrew University (Jerusalem, Israel) – Jan 29<sup>th</sup> – Feb 12<sup>th</sup> 2005
- **The Department of the Army Medical Defense Command:** award covered travel, registration and lodging at the VIII International Meeting on Cholinesterase– Fall '04
- **Travel Grant from Graduate College and SoLS:** To present a poster at American Society for Plant Biologists conference. (Honolulu, Hawaii Aug 2003).
- **Travel grant from the American Society for Plant Biologists:** to present a poster at their conference. (Denver, CO Aug 3-7 2002).
- **Outstanding Student Award** – Spring '02 (Department of Plant Biology, ASU)
- **Biology Research Experience Program for Undergraduates** – Summer '01 – Spring '02
- **Dean's Honor List** – Fall '00 – Spring '02 (ASU)
- **Inducted into Golden Key Honors Society** – Fall '00
- **Dean's Honor's List** – Fall '98 – Winter '99 (BCC)
- **Inducted into Phi Theta Kappa Honor's Society** – Winter '99

### Assistantships

- **Research Assistant** – Spring '06 - present
- **Teaching Assistant** – Fall '04 -- Fall'05
- **Research Assistant** – Fall '03 – Spring '04
- **Teaching Assistant** – Fall '02 – Spring '03

## **Publications**

**Muralidharan M**, Soreq H and Mor, TS (2005) Characterizing Pea Acetylcholinesterase. *Chem Biol Interact*

Geyer BC, **Muralidharan M**, Cherni I, Doran J, Fletcher SP, Evron, T, Soreq H and Mor TS (2005) Purification of Transgenic Plant-Derived Recombinant Human Acetylcholinesterase-R. *Chem Biol Interact*

Rhoads DM, White SJ, Zhou Y, **Muralidharan M** & Elthon TE (2005) Altered gene expression in plants with constitutive expression of a mitochondrial small heat shock protein suggests the involvement of retrograde regulation in the heat stress response. *Physiol. Plant.* 123: 435-444.

Matoba N, Magerus A, Geyer BC, Zhang Y, **Muralidharan M**, Alfsen A, Arntzen CJ, Bomsel M, Mor TS. *A mucosally targeted subunit vaccine candidate eliciting HIV-1 transcytosis-blocking*. Proc Natl Acad Sci U S A. 2004 Sep 14;101(37):13584-9. Epub 2004 Sep 03.

## **Conferences and Workshops Attended:**

- ***Molecular Approaches to Plant Science***: organized by Cold Spring Harbor (June 30<sup>th</sup> –July 20<sup>th</sup> 2006)
- ***Transgene to Organism***: a workshop focusing on Acetylcholinesterase conducted by Dr. Hermona Soreq at the Hebrew University of Jerusalem (Feb 2005)
- International Meeting on Cholinesterases (Perugia, Italy. Sept 26<sup>th</sup>-30<sup>th</sup> 2004). Poster title: **Characterizing Pea Acetylcholinesterase**
- American Society for Plant Biologists conference. (Honolulu, Hawaii Aug 2003). Poster title: **Characterizing Acetylcholinesterase in Plants**
- American Society for Plant Biologists conference. (Denver, CO Aug 3-7 2002). Poster title: **Role of Acetylcholinesterase in Plants**

## **Extra curricular activities**

- Metabolic Biology Faculty Search Committee (Spring 2006): I was the graduate student representative from the School of Life Sciences on this search committee
- **President of Society for Promotion of Indian Classical Music and Culture Amongst Youth.** (SPICMACAY-ASU). Fall 2002- current: I have been a part of SPICMACAY-ASU since 2000. I have helped organize 14 Indian classical music and dance concerts on campus. As a member of SPICMACAY, I have been in charge of the concert logistics, publicity, finances and grant writing