

ARATI A. INAMDAR

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EDUCATION

Ph.D (Molecular and Cellular Biology/Neurobiology)

August 2009

The University of Alabama, Tuscaloosa AL

M.S., Molecular and Cell Biology,

May 2008

The University of Alabama, Tuscaloosa AL

M.B.B.S.,

February 2003

Dr. V.M.M.C, Sholapur, MH, India

SKILLS

Drosophila Behavioral Studies

Drosophila Genetics

Molecular Cloning and Genetic Engineering

Enzyme biochemical assays

High Pressure/Performance Liquid Chromatography (HPLC) Analysis

Light (Confocal, DIC and Bright field) and Electron Microscopy

Gas Chromatography Mass Spectrometry (GC-MS)

INTERESTS

- * Etio-pathological mechanisms of Parkinson's disease (PD)
- * Neuroinflammatory response in PD
- * Dopamine homeostasis in PD and Early Onset Dystonia (EOD)
- * Molecular roles of dopamine pathway regulatory genes in PD and EOD
- * Cellular roles of *Drosophila* microglial cells, hemocytes in PD and EOD

General Areas of Research Interest

- * Molecular Neuroscience
- * Disease Models
- * Genetics
- * Cell migration, rearrangement and proliferation
- * Immunology
- * Therapeutics agents for Neurodegenerative diseases

PROFESSIONAL EXPERIENCE

Scientific Researcher

01/05 – 04/09

The University of Alabama, Advisor: Janis M. O'Donnell

Dissertation:

Identification of novel etio-pathological and cellular mechanisms of Parkinson's disease and discovery of neuroprotective agents for Parkinson's disease

- Identification of gene-environmental interaction in *Drosophila* model of Parkinson's disease
 - Novel interaction of paraquat with the dopamine regulatory genes
 - Sex specific differential response to paraquat.
 - Effect of paraquat on dopamine homeostasis.
- Identification of microglial like response to paraquat exposure in dopaminergic neurons

- Identification of neuroinflammatory response against paraquat in adult *Drosophila* brain
- Identification of novel microglial cells, hemocytes as the cells responsible for neuroinflammatory induced death of dopaminergic neurons in adult *Drosophila* brain.
- Identification of unique neuroinflammatory response upon exposure to the soil-bacteria, *Streptomyces* associated with Parkinsonian symptoms (In collaboration with Caldwell Lab, University of Tuscaloosa, AL)
 - Identification of unique neuroinflammatory response against bacterial extract, *Streptomyces venezuelae* in adult *Drosophila* brain.
 - Identification of cellular mechanism of action of toxic bacterial extract and establishing the signaling pathways for the action of bacterial extract
 - Investigating the role of glial cells in bacterial toxin induced dopaminergic neuronal loss.
- Characterization of torsin gene in Early Onset Dystonia (In collaboration with Dr.Noriko Wakabayashi-Ito, Massachusetts General Hospital, Boston, MA.
- - Characterization of torsin gene in a *Drosophila* model of Early Onset Dystonia (EOD)
 - Investigating the role of torsin gene in Dopamine homeostasis.
- Determining the mechanism for neuroprotective role of minocycline in *Drosophila* Parkinson's disease model
 - Identifying the neuroprotective role of minocycline, an antibiotic in *Drosophila* Parkinson's disease model
 - Identification of signaling pathway for the neuroprotective response of minocycline
- Investigating the neuroprotective role of EGCG, component of green tea against genetic and toxic model of Parkinson's disease
 - Identification of protective role of EGCG against the paraquat induced and genetic Parkinson's disease model in *Drosophila*
 - Interaction between EGCE and genes involved in dopamine homeostasis.
- Behavioral and neuronal analysis of sporadic exposure of paraquat to adult *Drosophila* brain
 - Thorough study of sporadic exposure of paraquat and expression of microglia cells in adult *Drosophila* brain.

LECTURALSHIP/TEACHING ASSISTANTSHIP

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|-------------------|--|
| 2007- Spring 2009 | Teaching Assistant Department of Biological Sciences at University of Alabama, Tuscaloosa, AL. BSC 115 |
| 2005-2006 | Teaching Assistant at Department of Biological Sciences at University of Alabama, Tuscaloosa, AL. BSC 242, BSC 310 |
| 2002-2003 | Teaching Assistant/Lecturer at Biochemistry Department at Rajarshree Chatrapati Shahu Government Medical College, Kolhapur, India. |

MENTORING EXPERIENCE

Guanine triphosphate cyclohydrolase (GTPCH) mutant genes sequencing to characterize protein structure – **Jeala Bart and Amelia**

Behavioral and neural analysis of sporadic exposure of paraquat to adult *Drosophila* brain- **Shane Welche**

Investigating the neuroprotective role of EGCG (component) of green tea against genetic and toxic model of Parkinson's disease - **Russ Alexander**

Characterization of torsin in a *Drosophila* model of EOD- **Conor Rutledge**

HONORS AND AWARDS

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| American Foundation for Aging Research Award | Oct 2008 |
| Teaching Assistantship- Department of Biological Science, Univ Alabama | 2008-2009 |
| Genetics Society of America-Graduate student award: Berlin, Germany Conference | May 2008 |
| The Inge and Louise Hill Research Fellowship: Outstanding Teaching Assistant | 2008-2009 |
| Teaching Assistantship - Department of Biological Science, Univ Alabama | 2007-2008 |
| Student Association Travel Award | March 2008 |
| Graduate Council Research and Creativity Fellowship – Graduate School | 2006-2007 |
| Teaching Assistantship - Department of Biological Science, Univ Alabama | 2005-2006 |
| Graduate Research and Travel Award- 48 th Annual <i>Drosophila</i> Research Conferences | March 2007 |
| Graduate Student Association Travel Award | March 2007 |
| Graduate Research and Travel Award- 36 th Annual Neuroscience Meeting | Oct 2006 |
| Dhirubhai Ambani Foundation Scholarship - Medical Education | 1996-2000 |

GRANT SUBMISSIONS

Functional Links between the Immune System, Brain Function and Behavior (R01): **Department of Health and Human Services, National Institute of Health (NIH) PA-08-097. PI-** Dr. Janis O'Donnell. Using *Drosophila* we proposed to identify the immune system and CNS interaction associated with paraquat exposure.

Functional interaction between soil bacteria and nitric oxide pathway: **American Foundation for Aging Research, North Carolina. PI- Arati A. Inamdar**
ACCEPTED FOR THE FUNDING

PEER REVIEW PUBLICATION

Chaudhuri, A., Bowling, K., Funderburk, C., Lawal, H., Inamdar, A., Wang, Z., O'Donnell J.M. (2007)
Interaction of Genetic and Environmental factors in a *Drosophila* Parkinsonism Model.
Journal of Neuroscience, Mar 7; 27(10):2457-67

Inamdar, A., Lawal, H., Ferdousy, F., Chaudhuri, A., O'Donnell, J. M. (2009)
Drosophila mounts a microglial-like neuroinflammatory response to paraquat-induced degeneration of dopaminergic neurons
Submitted to Nature Neuroscience (August 2008) AND IN REVISION PROCESS FOR RESUBMISSION

Inamdar, A., Chaudhuri, A., Brown, J., O'Donnell J.M. (2008)

Minocycline confers neuroprotection in a paraquat -induced Parkinson disease model in *Drosophila* via JNK and Akt signaling pathways. (ms in preparation)

Inamdar, A., Welch, S., Alexander, R., Rutledge, C., O'Donnell J.M. (2008)

Green tea provides neuroprotection in a *Drosophila* genetic model of Parkinson's disease through anti-apoptotic signaling pathway (ms in preparation)

Inamdar, A., Welch, S., Alexander, R., Bart, J., O'Donnell J.M. (2008)

Sporadic exposure of paraquat induces neuroinflammatory and neurodegenerative responses in *Drosophila* (ms in preparation)

Inamdar, A., Caldwell, K., Caldwell, G., O'Donnell, J.M. (2008)

Induction of neuroinflammatory response against a bacterial toxin induced *Drosophila* model of Parkinson's disease (ms in preparation).

Inamdar, A., Ito, N., O'Donnell, J. M. (2008)

Mutation in torsin alters dopamine homeostasis in a *Drosophila* model of Early Onset Dystonia (ms in preparation).

PUBLISHED ABSTRACTS AND ATTENDED CONFERENCES

XX International Congress of Genetics, July 12th-17th, 2008

Inamdar A., Chaudhuri A., Lawal H., O'Donnell (2008) Modification of Neuroinflammatory Response by Mutation in Dopamine Regulatory Pathway in *Drosophila* Model of Parkinson's Disease. **A-065-0028-00525**

National Student Research Forum, 49th Annual Meeting, University of Texas Medical Branch, Galveston, Texas, 24th -25th Apr 2008

Inamdar, A., Chaudhuri, A., Lawal, H., Ferdousy, F., O'Donnell, J. M. (2008). *Drosophila* as a Model to study neuroinflammatory response in Parkinson's disease. **44**.

49th Annual *Drosophila* Research Conference, San Diego, CA 1st- 5th April 2008

Inamdar, A., Chaudhuri, A., Lawal, H., Ferdousy, F., O'Donnell, J. M. (2008). A *Drosophila* Model for neuroinflammatory response in neurodegenerative disease. **827B**.

2nd Genetic Analysis: Model Organisms to Human Biology, San Diego, CA, 5th-8th Jan 2008.

Neuroinflammatory response in a *Drosophila* model for Parkinson disease. Inamdar A., Lawal H., Ferdousy F., O'Donnell J.

Annual Neuroscience Conference, San Diego, Nov 2nd-6th 2007.

Comparison of paraquat and rotenone oxidative stress-induced dopamine neuron degeneration and its rescue by minocycline in *Drosophila* mutants altering dopamine homeostasis. Inamdar A., O'Donnell J.

48th Annual *Drosophila* Research Conference, Philadelphia, PA, 7th-11th Mar 2007.

Minocycline blocks oxidative stress and confers neuroprotection against paraquat induced Parkinson model. Inamdar A., Chaudhuri A., Barnett J., Ward A., O'Donnell J. **71**

Annual Neuroscience Conference, Atlanta, GA, 14th- 18th Oct 2006.

Minocycline modulates catecholamine pathway and confers neuroprotection against Paraquat induced *Drosophila* model of Parkinson's Disease. Inamdar A., Chaudhuri A., O'Donnell J.

Genetic Analysis: Model Organisms to Human Biology, San Diego, CA, 5th-7th Jan 2006.

Investigating role of Minocycline in Parkinson's disease model in *Drosophila*. Inamdar A., Chaudhuri A., O'Donnell J.