

## Jyoti Mishra Ramanathan

**POSITION**    **Postdoctoral Researcher**  
**Dept. of Neurology and Physiology**  
**University of California, San Francisco**

**ADDRESS**    UCSF MC 2240 Mission Bay  
Genentech Hall Rm N474  
600 16<sup>th</sup> St., San Francisco  
CA 94158-2330  
lab: 415-476-2164  
email: [jyoti@gazzalelab.ucsf.edu](mailto:jyoti@gazzalelab.ucsf.edu)

### EDUCATION

**2008 - 2009**    Postdoctoral Researcher, Dept. of Neurosciences  
University of California, San Diego

**2003 - 2008**    **Ph.D., Biology with specialization in Computational Neurobiology**  
University of California, San Diego  
*Dissertation:* Neural Processes underlying an Auditory-induced Visual Illusion  
*Advisor:* Dr. Steven A. Hillyard, Dept. of Neurosciences  
*Co-advisor:* Dr. Terrence J. Sejnowski, Salk Institute

**2000 - 2003**    **M.Sc., Life Sciences**  
National Center for Biological Sciences, India  
*Dissertation:* Spatiotemporal modulation of Store-Released Calcium Dynamics in Neurons

**1997-2000**    **B.Sc., Biochemistry with Honors**  
Sri Venkateswara College, Delhi University, India  
*Ranked 1<sup>st</sup> in the University year 1998; 2<sup>nd</sup> in year 2000*

### HONORS AND AWARDS

2006            Graduate Student award, International Multisensory Research Forum.  
2004            Graduate Internship award, RIKEN-Brain Research Institute, Japan.  
2003-2004    NSF Integrative Graduate Education and Research Training (IGERT) award.  
2003            TIFR Alumni Association Scholarship for Career Development, India.  
2000-2003    NCBS-TIFR Junior Scholarship, India.  
2000            1<sup>st</sup> place. Bioinformatics & recent advances session, Biotechcellence, National Students' Biotechnology Symposium, India.  
2000            1<sup>st</sup> place. All India Masters in Biotechnology Combined Entrance.  
2000            1<sup>st</sup> place. All India Institute of Medical Sciences M.S. Biotechnology Entrance.  
2000            1<sup>st</sup> place. Ambedkar Center for Biomedical Research Post-Graduate Entrance.  
1997-2000    1<sup>st</sup> place. All India Entrance Scholarship, Delhi University, India

## RESEARCH EXPERIENCE

- July 2009 - Postdoctoral research with Dr. A. Gazzaley, UCSF & Dr. M. Merzenich, PositScience  
- *Investigating the influence of congruent and incongruent auditory distracters on visual processing in the young and elderly.*  
- *Investigating the influence of auditory frequency discrimination training on speech-in-noise discrimination.*
- 2008 - 2009 Postdoctoral research with Dr. S. Hillyard, UCSD  
- *Investigating the contribution of EEG phase reset to attentional modulations of visual event related potentials (ERPs).*  
- *Neural basis of Visual Attention in expert video-game players.*
- 2004 - 2008 Ph.D. research with Dr. S. Hillyard, UCSD  
- *Investigating neural correlates of sound induced visual illusions.*
- Summer 2004 Internship with Dr. M. Tanifuji, RIKEN, Japan.  
- *Characterization and mapping of primate visual cortex using continuous intrinsic signal imaging.*
- Winter-Spr 2004 Graduate research with Dr. T. Sejnowski, UCSD  
- *Building a realistic biophysical neuronal model of visual attention.*
- 2001 - 2003 Masters' research with Dr. U.S. Bhalla, NCBS, India  
- *Building a laser confocal microscopy setup to study calcium transients in neuronal cultures.*  
- *Computational modeling and simulations of  $InsP_3$  mediated calcium release in neurons.*
- Spring 2001 Internship with Dr. R. Balakrishnan, IISc, India  
- *Classification of the local tree cricket population and characterization of their song structure.*
- Winter 2001 Masters' research with Dr. M. M. Panicker, NCBS, India  
- *Characterization of the upstream promoter region of the serotonin 5-HT<sub>2A</sub> receptor gene using molecular biology methods.*
- 1999 Undergraduate research with Dr. V. Kothekar, AIIMS, India  
- *Monte Carlo simulations of optimal drug docking at the Cyclooxygenase-2 enzyme active site.*

## TEACHING EXPERIENCE

### **Teaching Assistantships (UCSD)**

- Fall 2007, 2005 Information Processing in the Human Brain (S. Hillyard)  
Spring 2006 Basic Neurology; School of Medicine (M. Kritchevsky)  
Spring 2005 Mammalian Physiology (K. French)

### **Research Mentoring/ Supervision**

- 2009 - Jacqueline Boccanfuso, Research Associate, Gazzaleylab, UCSF  
Katie Zuppann, Research Assistant, Gazzaleylab, UCSF  
Miles Whedbee, Research Assistant, Gazzaleylab, UCSF  
Joe Darin, Research Assistant, Gazzaleylab, UCSF
- UCSD
- 2007 Alessandra Stella, visiting Rhodes scholar, University of Motor Sciences, Italy  
2006 Bjoërn Bonath, visiting Masters' student, Max Plank Institute, Germany
- NCBS, India
- 2002 Susanna Neves, visiting Graduate student, Mt. Sinai School of Medicine

### **Guest Lectures**

- 2008 Comparative Neuroanatomy, Summer Camp Grades 5-8 (Reuben Fleet Science Center, San Diego)
- 2007 Illusions and the Brain, Summer Camp Grades 5-8 (Reuben Fleet Science Center, San Diego)

### **Tutoring**

- 2004 Physics, Chemistry & Maths (Chula Vista High, San Diego), Winter  
- as part of UCSD 'OASIS' outreach program

### **PEER REVIEWS**

*Journals:* Brain Research, Brain Topography, Journal of Neuroscience, Journal of Neurolinguistics, Neuroimage  
*Ad-hoc Reviewer:* Cognitive Science, Nature, Neural Computation, Neuroreport, Trends in Neurosciences

### **PUBLICATIONS**

#### **Ph.D. research**

1. **Mishra J**, Martinez A, Hillyard SA. Effect of Attention on Early Cortical Processes associated with the Sound-induced Extra Flash Illusion. Journal of Cognitive Neuroscience. 2009. *Epub ahead of print.*
2. **Mishra J**, Martinez A, Hillyard SA. Cortical Processes Underlying Sound-Induced Flash Fusion. Brain Research 1242: 102-115. 2008.
3. **Mishra J**, Hillyard SA. Endogenous attention selection during binocular rivalry at early stages of visual processing. Vision Research 49: 1073-80. 2008.
4. Bonath B, Noesselt T, Martinez A, **Mishra J**, Schwiemaker K, Heinze H, Hillyard SA. Neural basis of the Ventriloquist illusion. Current Biology 17: 1-7. 2007.
5. **Mishra J**, Martinez A, Sejnowski TJ, Hillyard SA. Early cross-modal interactions in auditory and visual cortex underlie a sound-induced visual illusion. Journal of Neuroscience 27: 4120-4131. 2007.

#### Media Coverage:

- UCSD News (04.11.07) - Wired for Sound: How the brain senses visual illusion.
- LiveScience.com (04.11.07) - How sight and sound can trick your brain.

- News.Sawf.org (04.12.07) - Audio and visual stimuli can trick brain to see things that are not present.

6. **Mishra J**, Fellous JM, and Sejnowski TJ. Selective attention through phase relationship of excitatory and inhibitory input synchrony in a model cortical neuron. *Neural Networks* 19: 1329-46. 2006.

#### **Masters' research**

7. **Mishra J**, and Bhalla US. Simulations of Inositol Phosphate Metabolism and its Interaction with InsP<sub>3</sub> mediated Calcium Release. *Biophysical Journal* 83: 1298-1316. 2002.
8. Sivakumaran S, Hariharaputran S, **Mishra J**, and Bhalla US. The Database of Quantitative Cellular Signaling: management and analysis of chemical kinetic models of signaling networks. *Bioinformatics* 19: 408-415. 2003.

#### **Undergraduate research**

9. Kothekar V, Sahi S, Srinivasan M, Mohan A, and **Mishra J**. Recognition of cyclooxygenase-2 (COX-2) active site by NSAIDs: a computer modeling study. *Indian Journal of Biochemistry & Biophysics* 38: 56-63. 2001.
10. Kothekar V, Sahi S, and **Mishra J**. Molecular dynamics simulation of the interaction of 5-keto substituted 7-*tert*-butyl-2,3-dihydro-3,3-dimethylbenzofuran derivatives with cyclooxygenase-2. *Current Science* 80: 764-770. 2001.
11. Kothekar V, Sahi S, and **Mishra J**. Enzyme selectivity of new cyclooxygenase-2/5 lipoxygenase inhibitors using molecular modeling approach. *Indian Journal of Biochemistry & Biophysics* 37: 86-96. 2000.

#### **PUBLICATIONS IN PREPARATION**

12. **Mishra Ramanathan J**, Zinni M, Bavelier D, and Hillyard SA. Neural basis of superior visuo-spatial attentional performance in video-game players. 2009.
13. **Mishra Ramanathan J**, Martinez A, Hillyard SA. Evoked Alpha-Theta power added onto ongoing neural oscillations underlies visuo-spatial attentional gain. 2009.

#### **CONFERENCE PRESENTATIONS**

1. **Mishra J**, Martinez A, Sejnowski TJ, and Hillyard SA. Effect of attention on cortical processes underlying the sound induced extra flash illusion. *Cognitive Neuroscience Society Poster D57*. New York 2007.
2. **Mishra J**, Martinez A, Salejarvi WT, Sejnowski TJ, and Hillyard SA. Cortical processes underlying the sound induced visual illusion. *International Multisensory Research Forum, Graduate Student Symposium, Dublin, Ireland 2006*
3. **Mishra J**, Fellous JM, and Sejnowski TJ. A Biophysical Neuronal Model exploring Attention Mechanisms in Visual Cortex. *Society for Neuroscience Poster 331.14*. San Diego. 2004.
4. **Mishra J**, and Bhalla US. Simulations of Inositol Phosphate Metabolism and its Interaction with InsP<sub>3</sub> mediated Calcium Release. *Networks and Behavior: International Neurobiology Symposium*. National Centre for Biological Sciences, Bangalore, India. 2003 [also Student Graphics Designer for Symposium]
5. **Mishra J**, and Bhalla US. Simulations of Inositol Phosphate Metabolism and its Interaction with InsP<sub>3</sub> mediated Calcium Release. *International Symposium on Cell & Developmental Biology*. National Centre for Biological Sciences, Bangalore, India. 2001
6. **Mishra J** Computational model of visual face processing. *National Computational Neuroscience Workshop*. National Centre for Biological Sciences, Bangalore, India. 2000.

7. Sahi S, **Mishra J**, and Kothekar V. Enzyme selectivity of new cyclooxygenase-2/5 lipoxygenase inhibitors using molecular modeling approach. Indian Biophysics Society Symposium, New Delhi, India. 1999

### **COMPUTATIONAL SKILLS**

1. MATLAB, UNIX, C, HTML, DOS, Microsoft Macros, Labview
2. Psychophysics software: Presentation (Neurobehavioral Systems), CORTEX
3. EEG/ Neuroimaging data analyses: ERPSS, EEGLAB, AFNI  
*Brain electrical source modeling: BESA, LAURA*  
STATISTICA
4. Modeling in Simulators: NEURON, GENESIS, AMBER
5. Multimedia expertise: Adobe Photoshop and Illustrator, Quicktime, ProShow Gold, Audacity

### **LAB SKILLS**

1. Electrophysiology: Human Event Related Potential (ERP) recordings
2. Optics: *in vivo* Intrinsic Signal Imaging, Calcium Imaging, Confocal Microscopy
3. Molecular/ Cellular Biology: Cloning and Tissue Culture Techniques

### **LANGUAGE SKILLS**

1. English, Hindi (fluent)
2. French (Diplome de Langue, 2000)
3. Spanish, Urdu, Punjabi, Oriya, Sanskrit (familiar)

### **LEADERSHIP & COMMUNITY ACTIVITIES**

- 2009            'Mindful Eating and Portion Control': Guest food blog  
(<http://summertomato.com/mindful-eating-and-portion-control/>)
- 2008            Marathoner and top fundraiser for AID, San Diego  
(<http://www.runforindia.org/runners/jyoti>)  
- raised \$2209 to fund building of a primary school in rural south India & vocational training for tribal villagers in Orissa, west India.
- 2006-07        **Vice President, Local Affairs, Neural Networks Inc.**  
- organized & supervised local fundraisers and volunteer coordination for NNInc., which aims to improve rural access to neurological healthcare in India; designed NNInc. publicity brochure, edited funding proposals and media presentations.
- 2005-07        **President, UDAI**  
- co-founded this graduate student group at UCSD to promote awareness about socio-economic issues related to health, education & cultural heritage revival in India; organized and moderated UCSD colloquium on HIV/AIDS in the developing world; organized community fundraisers for UDAI affiliated Indian, non-profit: Jagruthi that aims to curb child prostitution; developed website for Jagruthi ([www.jagruthi.org.in](http://www.jagruthi.org.in)); visited affiliated Indian non-profits: Jagruthi and Katha, to assess progress.
- 2005            Volunteer and Member, Art of Living Organization, 2005

- 1998-2000 **Joint Secretary & Executive Member, Science Association**, Sri Venkateswara College, Delhi University, India.
- 1999 **Child Counselor, Childline**, New Delhi, India  
- counseled street children as well as children under psychological stress in unhealthy family environments, reported unlawful child labor practices to the police & made referrals to child-care facilities as per severity of case.