

# **SUDHA CHAKRAPANI**

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## **EDUCATION**

1999-2004      **PhD** (Biophysics), University at Buffalo, (Advisor: Anthony Auerbach)  
1997-1999      **M.Tech** (Biomedical Engineering) Indian Institute of Technology, India  
1995-1997      **M.Sc** (Biochemistry) University of Pune, India  
1992-1995      **B.Sc** (Chemistry) University of Madras, India

## **PROFESSIONAL EXPERIENCE**

2008 -Present      Research (Assistant Professor), University of Chicago  
2006-2008      Postdoctoral Fellow, University of Chicago (with Eduardo Perozo)  
2003-2006      Postdoctoral Fellow, University of Virginia (with Eduardo Perozo)

## **TEACHING AND MENTORING EXPERIENCE**

- 2003-present      Graduate and Undergraduate course participation
- 1999-2003      Graduate Assistant, University at Buffalo
- 1997-1999      Teaching Assistant, Indian Institute of Technology

## **PUBLICATIONS**

- **Chakrapani, S.**, T.D. Bailey, and A. Auerbach. 2003. The role of loop 5 in acetylcholine receptor channel gating. *J Gen Physiol.* 122:521-539.
- **Chakrapani, S.**, T.D. Bailey, and A. Auerbach. Gating Dynamics of the Acetylcholine Receptor Extracellular Domain. *J Gen Physiol.* 123: 341-356. (Featured on the Cover).
- **Chakrapani, S.**, and A. Auerbach, A speed limit for conformational change of an allosteric membrane protein. *Proc Natl Acad Sci U S A*, 2005. 102(1): p. 87-92.
- **Chakrapani, S.**, and Perozo, E. (2007). How to gate an ion channel: lessons from MthK. *Nat Struct Mol Biol* 14, 180-182.
- **Chakrapani, S.**, Cordero-Morales, J. F., and Perozo, E. (2007a). A quantitative description of KcsA gating I: macroscopic currents. *J Gen Physiol* 130, 465-478.
- **Chakrapani, S.**, Cordero-Morales, J. F., and Perozo, E. (2007b). A quantitative description of KcsA gating II: single-channel currents. *J Gen Physiol* 130, 479-496.
- **Chakrapani, S.**, Cuello, L.G., Cortes, D.M., and Perozo, E. (2008). Structural dynamics of an isolated-voltage sensor domain in lipid bilayer. *Structure* 16, 398-409

- **Chakrapani, S.**, Sompornpisut, P., and Perozo, E. Molecular architecture of a Sodium channel voltage sensor (*Submitted*)
- **Chakrapani, S.\***, Cordero-Morales, J. F.\*, Jogini, V., and Perozo, E. Structural basis for modal gating in K<sup>+</sup> channels (*Submitted*)
- Cordero-Morales, J. F., Jogini, V., **Chakrapani, S.** and Perozo, E. A Multipoint Hydrogen Bond Network Driving Potassium Channel C-type Inactivation (*Submitted*)
- Cuello, L.G., Jogini, V., Cortes, D.M., Pan, A. C., Gagnon, D. H., Dalmas, O., Cordero-Morales, J. F., **Chakrapani, S.**, Roux, B., and Perozo, E. Structural basis for the coupling between activation and inactivation gate in potassium channels (*Submitted*)
- **Chakrapani, S.**, Jogini V., Cuello, L.G., Cortes, D.M., and Perozo, E. (2009). On the structure function correlates of ion occupancy and C-type inactivation (*In preparation*)

## **POSTERS**

- **Chakrapani, S.**, Jogini, V., Cuello, L.G., Cortes, D. M., Perozo, E. (2009) On the structure function correlates of ion occupancy and C-type inactivation. 53<sup>th</sup> *Annual meeting of the Biophysical Society*
- **Chakrapani, S.**, Cordero-Morales, J. F., Cuello, L.G., Perozo, E. (2008) C-type inactivation from the perspective of permeant ions. 52<sup>th</sup> *Annual meeting of the Biophysical Society*
- **Chakrapani, S.**, Perozo. (2007) Structural Dynamics of the Isolated-Voltage Sensor Domain of a Sodium Channel Reconstituted in Lipid Bilayer. 51<sup>th</sup> *Annual meeting of the Biophysical Society*.
- Cuello L. G., **Chakrapani, S.**, Cordero-Morales J., Perozo E. (2007) Molecular basis of the conformational coupling between K<sup>+</sup> channels activation and inactivation gates. 51<sup>th</sup> *Annual meeting of the Biophysical Society*.
- Cordero-Morales J.F., , Cortes D. M., **Chakrapani S.**, Jogini V., Cuello L. G., Vásquez V., Perozo E. (2007) Multiple Gating Modes in KcsA are Determined by the Selectivity Filter Dynamics. 51<sup>th</sup> *Annual meeting of the Biophysical Society*.
- **Chakrapani, S.**, Cordero J., and E. Perozo. (2006) Kinetic analysis of gating mechanisms in KcsA using macroscopic and single-channel currents. 49<sup>th</sup> *Annual meeting of the Biophysical Society*.
- Cuello L.G, **Chakrapani, S.**, Cortes D.M., and Perozo E. (2006) Domain interactions between pore and voltage-sensing domains of KvAP: A structural model of the open-inactivated state. 50<sup>th</sup> *Annual meeting of the Biophysical Society*.
- **Chakrapani, S.**, L. G. Cuello, Cortes D.M., and E. Perozo . (2005) 48<sup>th</sup> *Annual meeting of the Biophysical Society*. Structural dynamics of the isolated KvAP voltage-sensor domain in lipid bilayer by EPR spectroscopy. 49<sup>th</sup> *Annual meeting of the Biophysical Society*.
- **Chakrapani, S.**, Bailey T.D., and A. Auerbach. (2004). The Gating conformational “wave” in the Extracellular domain of the Acetylcholine receptor. 48<sup>th</sup> *Annual meeting of the Biophysical Society*.

- **Chakrapani, S.** and A. Auerbach. (2003). Speed-limit of AChR gating. *17<sup>th</sup> Annual meeting of the Protein Society*.
- **Chakrapani, S.,** T.D. Bailey, and A. Auerbach. (2003). Loop 5 is a key determinant in the AChR gating. *17<sup>th</sup> Annual meeting of the Protein Society*
- Mitra, A., Tascione, R., Licht, S., **Chakrapani, S.,** and A. Auerbach. (2003). Energy landscape of acetylcholine receptor channel gating. *47<sup>th</sup> Annual meeting of the Biophysical Society*
- **Chakrapani, S.,** Bailey T.D., and A. Auerbach. (2003). Loop A is a key determinant in the AChR gating. *47<sup>th</sup> Annual meeting of the Biophysical Society*.

### **SEMINARS**

- Structure and dynamics of voltage-dependent potassium channels in lipid bilayer. *Progress in ab initio modelling of biomolecules: towards computational spectroscopy*, University "La Sapienza", Rome (2007).
- Molecular architecture of the Isolated-Voltage Sensor Domain of a Sodium Channel Reconstituted in Lipid Bilayer. *51<sup>th</sup> Annual meeting of the Biophysical Society* (2007).
- Structure and dynamics of voltage-gated potassium channels in lipid bilayer. *Annual meeting of the Association for Research in Otolaryngology* (2005).

### **GRANTS**

2007-2008 American Heart Association Post-doctoral Fellowship. Average Priority Score: 1.18; Percentile rank: 1.25

2005-2007 American Heart Association Post-doctoral Fellowship. Average Priority Score: 1.32; Percentile rank: 1.16

### **SCHOLARSHIPS AND AWARDS**

- 2004 University at Buffalo nominee for the CGS/UMI Distinguished Dissertation award.
- 2004 Dean's Award for Outstanding Dissertation, First Prize. University at Buffalo, SUNY.
- 2004 Herbert Schuel Award for outstanding research in the field of Cell and Developmental Biology, University at Buffalo, SUNY.
- 1999 Selected for the Cambridge Commonwealth Trust Scholarship and Overseas Research Scholar Award.
- 1997-1999 Biomedical Engineering Scholarship, Indian Institute of Technology, Bombay, India
- 1997 All India second rank (99.85 percentile score) in the Graduate Aptitude Test in Engineering (GATE) conducted by the Indian Institute of Technology and Indian Institute of Sciences, India

- 1997 Ranked among top 2 % in the nation level examination conducted by the Council for Scientific and Industrial Research (CSIR), Government of India, and selected for the Junior Research Fellowship (1997).
- 1995-1997 National Chemical Laboratory Scholarship All India second rank in the examination conducted by the National Chemical Laboratory (NCL) Pune, India.
- 1997 Third place, Prof. Arnikar Inter-college lecture competition, University Chemical Society, University of Pune, India.
- 1995 Third place, Royal Society of Chemistry, London (Madras section) chemistry quiz competition.
- 1995 Silver Medal and Balaraman Memorial award, University of Madras, India.
- 1994 Eva Mathew Rolling shield Inter-college Chemistry quiz competition.
- 1991 National Talent Search Contest in mathematics.

## **REFERENCES**

- Dr. Eduardo Perozo  
Professor, Department of Biochemistry and Molecular Biology,  
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