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## CURRICULUM VITAE

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**HIRAK CHAKRABORTY**

1521 East Franklin Street,  
Apt# C206  
Chapel Hill, NC 27514, USA  
Phone: (001) 919-951-9783  
Email: [hc@email.unc.edu](mailto:hc@email.unc.edu),  
[hirakchakraborty@gmail.com](mailto:hirakchakraborty@gmail.com)

## POSITION TITLE:

**Postdoctoral Research Associate**  
Dept. of Biochemistry & Biophysics  
University of North Carolina at Chapel Hill  
Suite# 3010, 120 Mason Farm Road  
Chapel Hill, NC 27599-7260, USA

## EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Jadavpur University, India	Ph.D	Dec, 2006	Drug Membrane Interaction
Saha Institute of Nuclear Physics, India	Post M.Sc	2001	Biophysical Sciences
Jadavpur University, India	M.Sc	2000	Chemistry with Physical Chemistry specialization
University of Calcutta, India (Ramakrishna Mission Vidyamandira, Belur Math)	B.Sc	1998	Chemistry (H), Physics, Mathematics

**A. Positions and Honors.****Positions and Employment**

Aug 2007 – till date	Postdoctoral Fellow, Department of Biochemistry & Biophysics, University of North Carolina at Chapel Hill, USA.
Dec 2006 – July 2007	Research Associate, Saha Institute of Nuclear Physics, India
Aug 2006- July 2007	Guest Lecturer of Chemistry, Institute of Jute Technology, India
2002-2006	Senior Research Fellow, Saha Institute of Nuclear Physics, India
2000-2002	Junior Research Fellow, Saha Institute of Nuclear Physics, India

**Professional Membership**

2005 Life Member, Indian Biophysical Society

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2008- Member, American Association for the Advancement of Science

2009- Member, Biophysical Society

## **Honors**

- 2008            **My paper came in Research Highlight in NATURE India website, August 28, 2008**
- 2000-2006    Research fellowship by Saha Institute of Nuclear Physics, India
- 2000            National Eligibility Test, India (Ranked among top 10%)
- 2000            Graduate Aptitude Test in Engineering (Conducted by Indian Institute of Technology), India
- 1995            National Scholarship, India
- 1993            National Scholarship, India

## **B. Expertise in**

1. UV-VIS absorption spectroscopy
2. Fluorescence Spectroscopy (Steady state, Time domain and Frequency Domain)
3. Circular Dichroic Spectroscopy
4. Transmission Electron Microscopy
5. Freeze-Fracture Electron Microscopy
6. Ultra Centrifugation
7. Peptide Synthesis
8. Dynamic Light Scattering
9. Modeling of different physical processes using Sigma Plot

## **C. Selected peer-reviewed publications (in chronological order).**

1. **Chakraborty H**, Klapper D, Lentz, BR. HA Fusion Peptide, but Not Two Biologically Inactive Mutants, Lowers Activation Barrier of the Pore Formation Step during PEG-mediated Fusion. **(Manuscript under preparation)**
  2. Haque ME, **Chakraborty H**, Koklic T, Lentz, BR. Anomalous Behavior of Hexagonal Phase Promoting Cholesterol Esters in Membrane Fusion. **(Manuscript under preparation)**
  3. Haque ME, **Chakraborty H**, Koklic T, Komatsu H, Axelsen PH, Lentz BR. Effect of HA Mutant Peptides on Physical Properties and Poly(ethylene glycol)-Mediated Model Membrane Fusion. **(Manuscript under preparation)**
  4. Kundu S, **Chakraborty H**, Sarkar M, Datta A. Interaction of Oxicam NSAIDs with Lipid Monolayer: Anomalous Dependence on Drug Concentration. **Colloids and Surfaces B: Biointerface**. 2009; 70: 157-161.
  5. **Chakraborty H**, Mondal S, Sarkar, M. Membrane fusion: A new function of non-steroidal anti-inflammatory drugs. **Biophys. Chem.** 2008; 137: 28-34. **(Research Highlight in NATURE India)**
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6. **Chakraborty H**, Devi PG, Sarkar M, Dasgupta D. Multiple Functions of Generic Drugs: Future Perspectives of Aureolic Acid Group of Anti-Cancer Antibiotics and Non Steroidal Anti-Inflammatory Drugs. **Mini Rev. Med. Chem.** 2008; 8: 331-349.
7. **Chakraborty H**, Chakraborty PK, Raha S, Mandal PC, Sarkar M. Interaction of Piroxicam with mitochondrial membrane and cytochrome c **Biochem. Biophys. Acta (Biomembrane)** 2007; 1768: 1138-1146.
8. **Chakraborty H**, Sarkar M. Interaction of Piroxicam and Meloxicam with DMPG/DMPC mixed vesicles: anomalous partitioning behavior. **Biophys. Chem.** 2007; 125: 306-313.
9. **Chakraborty H**, Roy S, Sarkar M. Interaction of oxicam NSAIDs with DMPC vesicles: differential partitioning of drugs. **Chem. Phys. Lipids** 2005; 138: 20-28.
10. **Chakraborty H**, Sarkar M. Effect of counterion on the structural switchover and binding of piroxicam with sodium dodecyl sulfate (SDS) micelles. **J Coll. Inter. Sci.** 2005; 292: 265-270.
11. **Chakraborty H**, Sarkar M. Interaction of piroxicam with micelles: Effect of hydrophobic chain length on structural switchover. **Biophys. Chem.** 2005; 117: 79-85.
12. Banerjee R, **Chakraborty H**, Sarkar M. Host-Guest complexation of oxicam NSAIDs with  $\beta$ -cyclodextrin. **Biopolymers** 2004; 75: 355-365.
13. **Chakraborty H**, Sarkar M. Optical Spectroscopic and TEM studies of cationic micelles of CTAB/SDS and their interaction with a NSAID. **Langmuir** 2004; 20: 3551-3558.
14. **Chakraborty H**, Banerjee R, Sarkar M. Incorporation of NSAIDs in micelles: implication of structural switchover in drug-membrane interaction. **Biophys. Chem.** 2003; 104: 315-325.
15. Banerjee R, **Chakraborty H**, Sarkar M. Photophysical studies of oxicam group of NSAIDs: piroxicam, meloxicam and tenoxicam. **Spectroch. Acta Part A** 2003; 59: 1213-1222.

#### D. Conference Attended

1. Biophysical Society Meeting. February 28 – March 04, 2009. Venue: Boston Convention and Exhibition center, 'HA Fusion Peptide Lowers Activation Barrier of the Pore Formation Step during PEG-mediated Fusion and Induce Cubic Phospholipid Phase' by **Hirak Chakraborty and Barry R Lentz. (Poster Presentation).**
  2. National Symposium on Biophysics: Trends in Biomedical Research. February 13-15, 2007. Venue: INSA Auditorium, New Delhi, India. **Organized by: Indian Biophysical Society and Department of NMR, All India Institute of Medical Sciences, New Delhi.** 'Interaction of piroxicam with mitochondrial membrane' by **Hirak Chakraborty, Prabir K. Chakraborty, Sanghamitra Raha, Parikshit Ch. Mandal and Munna Sarkar (Poster Presentation).**
  3. *National Conference on Photophysics.* December 31, 2006. Venue: Jadavpur University, Calcutta, India. **Organized by: Indian Photobiology society and Department of Chemistry, Jadavpur University.** 'Effect of membrane parameters on the structural dynamism and membrane partitioning of oxicam group of NSAIDs' by **Hirak Chakraborty and Munna Sarkar (Oral Presentation).**
  4. *Molecular Mechanism of Diseases and Drug Action 2005.* November 16-18, 2005. Venue: Saha Institute of Nuclear Physics, India, **Organized by: Saha Institute of Nuclear Physics, India.** 'Direct effect of piroxicam on mitochondrial membrane and its interaction with Cytochrome c' **Hirak**
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**Chakraborty, Prabir K. Chakraborty, Sanghamitra Raha, Parikshit C. Mandal and Munna Sarkar (Poster Presentation).**

5. *National Symposium on Recent Trends in Molecular and Medicinal Biophysics*. January 22-25, 2005. Venue: University of Pune, India. **Organized by: Indian Biophysical Society and Department of Physics & School of Medical Sciences, University of Pune.** 'Effect of varying hydrophobic chain length on the interaction of piroxicam, a structurally dynamic Non Steroidal Anti-inflammatory Drug (NSAID) with simple membrane mimetic systems' by **Hirak Chakraborty and Munna Sarkar (Poster Presentation).**
  6. *International Conference on Soft Matter*. November 18-20, 2004, Venue: The Park, Kolkata, India. **Organized by: Indian Society for Surface Science & Technology and Centre for Surface Science, Jadavpur University, Kolkata – 700 032.** Effect of Membrane Properties on the Structural Dynamism of NSAIDS: Piroxicam, a case study by **Hirak Chakraborty and Munna Sarkar (Poster Presentation).**
  7. *Health and Environment: Hazards and Remedies*. September, 24-25, 2004 Venue: Raiganj College (University College), Raiganj, Uttar Dinajpur, India. **Organized by: Raiganj College (University College)** 'Interaction of piroxicam, a oxycam group of NSAID with membrane mimetic systems' by **Hirak Chakraborty and Munna Sarkar (Oral Presentation).**
  8. *International Symposium on Molecules, Machines and Networks*. January 5-9, 2004, Venue: National Centre for Biological Sciences, Bangalore, India. **Organized by: National Centre for Biological Sciences, TIFR, Bangalore.** 'Interaction of a oxycam group of NSAID with membrane mimetic system' by **Hirak Chakraborty and Munna Sarkar (Poster Presentation).**
  9. *National Conference on Recent Trends in Biology and Biology Inspired Physics*. March 18-21, 2002. Venue: S. N. Bose National Centre for Basic Sciences, SaltLake, Kolkata, India. **Organized by: S. N. Bose National Centre for Basic Sciences.**
  10. *Discussion Meeting on Structural Biology and Symposium on Biophysics*. January 21-23, 2002. Venue: Department of Crystallography and Biophysics, University of Madras, India. **Organized by: Indian Biophysical Society and Department of Crystallography and Biophysics, Chennai University.** 'Interaction of oxycam group of NSAIDs on membrane mimetic environment' by **Hirak Chakraborty and Munna Sarkar (Poster Presentation).**
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