

Madhuparna Roychoudhury, Ph.D.

Trinity College, Department of Chemistry
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EDUCATION

- Ph.D. Chemistry;** (Biophysical Chem.) *Yale University*, New Haven, CT; (High Honors) 1997 -2000
Thesis: DNA structure prediction using solution techniques and Monte Carlo Simulation methods. (*Advisor: Prof. Don Crothers.*)
- M.S. Chemistry;** (Biophysical Chem.) *Yale University*, New Haven, CT; (High Honors) 1995-1996
2 semesters PhD program, Syracuse University, NY (Transferred to Yale), GPA 3.9 1994-1995
- B.Sc. Chemistry;** *Calcutta University*, India; 1989-1992
Ranked 1st in college; GPA 4.0, Ranked in top 0.5% in State-wide Chemistry Graduates of >10K students

WORK EXPERIENCE

- Visiting Assistant Professor of Chemistry: Trinity College** 2024-Present
Courses teaching – Introductory Chemistry lecture and lab
- Adjunct Faculty: University of New Haven** 2015 - 2024
Courses taught – General, Organic Chemistry lecture and lab
Analytical, Physical Chemistry; Molecular and Cellular Biology lab
- Scientist: Mass Genomics, LLC.** 2006 - Present
Role of Genomic Architecture in Genomic disorders. (*Incorporated to solicit funding*)
- Post Doctoral Associate: Yale University, CT.** (*Advisor: Dr. Michael Snyder*) 2001-2004
Identification of gene targets and expression profile for various transcription factors, Ste12, Tec1, Swi5 and others, in *Saccharomyces cerevisiae*. (Methods: Chromatin Immunoprecipitation and DNA microarray technology)
- Research Assistant: Yale University, CT.** (*Advisor: Dr. Donald Crothers.*) 1996-2000
Research 1: Determining structures of DNA polymers by a combination of Gel-shift Assays & computational analysis by Monte Carlo Simulation methods. (Methods: PCR, cloning, DNA purification, cell transformation, cell culture, programming in PERL)
- Teaching Assistant: Yale University, New Haven, CT.** 1995-1997
General, Biochemistry and Physical Chemistry. General chemistry laboratory courses.
- Syracuse University**, Syracuse NY. General Chemistry laboratory courses. 1994-1995
- Research Assistant: CuraGen Corp., Branford, CT.** 1994-1994
Assisted with experimental research on identification of disease related genes. Cell culture & analysis, DNA processing (sequencing, mapping, PCR, DNA splicing, cloning, etc.). Protein analysis techniques.

SKILLS

Molecular biology: Hands-on experience with basic cell biology and biochemistry, including cell culture, cell isolation, immunoblotting, biophysical characterization, and general molecular biology skills

(DNA/RNA extraction and purification, Electrophoresis (including 2D), PCR, RT-PCR, primer design, cloning, ChIP-chip assays).

Computer languages: PERL, Python.

Bioinformatics tools: Analyze sequencing data including alignment, variant calling, copy number variation, annotation, phylogenetic analysis. BLAST, BLAT, Primer3, non B DB, Clustal W, Tandem repeat finder, Inverted repeat finder, DNA secondary structure prediction tools (like, Mfold, Cn3d etc), Microarray data analysis tools, several Genome (ENSEMBL, NCBI, etc) and Genomic disorder database (DECIPHER, Sfari, dbVar, IGV, etc) and others.

ACADEMIC HONORS

Academic Award for ranking 1st in B.Sc (Chemistry). 1992;

J. Stafford Ellithrop fellowship research award at Syracuse University. 1994;

NIH biophysical fellowship at Yale. 1995-1999

PUBLICATIONS/ PRESENTATIONS

“Global structure and mechanical properties of a 10-bp nucleosome positioning motif.” Roychoudhury, et.al., *Proc Natl Acad Sci USA* 2000 Dec 5; 97(25):13608-13.

“DNA bending and flexibility by cyclization kinetics and Monte Carlo simulations”. *Bristol Mayer Squibb symposium at Yale* 1999.

“Finding clues to Genomic disorders by Analyzing Evolutionary DNA Variants”, in preparation for publication.

“Role of local genomic architecture mediated by non-B DNA structures in human inherited diseases”, in preparation for grant application.

OUTREACH

New Haven Reads: Tutored inner-city students.

2014-2017

Co-founded Center forward (nonprofit): Our goal is to maximize students’ potential by helping them access top-quality education by leveraging their strengths. We support with college counseling, application strategy, and process mainly for the less privileged.

2023-present