

Megha Wal

Center for Eukaryotic Gene Regulation
The Pennsylvania State University
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Date of Birth: 30th October 1984
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EDUCATION

Current (2008-Present)

Ph.D candidate in Department of Biochemistry, Microbiology and Molecular Biology
The Pennsylvania State University

Previous (2002-2007)

MS in Biotechnology, Banasthali Vidyapith University, India
BS in Biochemistry, Deshbandhu College, Delhi University, India

RESEARCH TRAINING

1. Undergoing Ph.D research on the topic "***In vitro* Approach to Study the Determinants of Nucleosome Positioning in *Saccharomyces cerevisiae***" under Dr. B. Franklin Pugh, Centre for Eukaryotic Gene Regulation, The Pennsylvania State University, PA, Jan 2009-Present.

Using MNase ChIP-Seq to study genome wide nucleosome positions. Using *in vitro* approaches to identify *trans*-factors affecting nucleosome positioning.

2. Undergone project dissertation on the topic "**Tryptophan Rich Antigen from Plasmodium vivax-its recombinant expression, purification and binding partners on RBC**" under Dr.A.Srinivasan, Department of Biophysics, All India Institute of Medical Sciences, New Delhi, Spring 2007.

My work included expression and purification of PvTRAg protein. I did pull down assays and affinity chromatography to identify its binding partners on RBC membrane. I set up crystal trials for several proteins and successfully got initial crystals for TAV2B Viral protein.

WORK EXPERIENCE

Project Assistant (2007-2008)

Worked at Centre for DNA Fingerprinting and Diagnostics, Hyderabad, India for a one-year project titled as "**Characterization of Transcription Termination and Anti-termination in *Mycobacterium tuberculosis***" under the guidance of **Dr. Ranjan Sen**, Laboratory of Transcription Biology.

My work involved cloning and purification of Mtb Rho and NusG proteins. I did *in vivo* complementation; cross-linking and gel filtration assays to further characterize the proteins. This work led to contributions in peer-reviewed journals.

Summer Trainee (Summer 2006)

Undergone project training on the topic "**Optimization of Autoinduction and Its Comparison with IPTG Induction in Different Bacterial Strains**" under Prof. V.K.Chaudhary, Department of Biochemistry, University Of Delhi, South Campus.

My aim was to evaluate the expression of T7/*lac* promoter based constructs under auto-inducing conditions and its comparison with IPTG induction. I found that the culture density and amount of target protein was typically considerably higher in auto-induction media than what is obtained by IPTG induction.

Summer Trainee (Summer 2004)

Learnt **Basic Biochemical Techniques** under Prof. V.K.Chaudhary, Department Of Biochemistry, University of Delhi, South Campus.

MAJOR ACHIEVEMENTS

Honorable mention for Robert T. Simpson Graduate Student Award for **Innovative (Risky) Science**, Department of Biochemistry, Microbiology and Molecular Biology, The Pennsylvania State University, 2012.

Merit based fellowship awarded in M.S Biotechnology by the Department Of Biotechnology, Ministry of Science and Technology, Government of India (2005-2007).

SECOND POSITION in M.S Biotechnology, Banasthali Vidyapith University (2005-2007).

Awarded **GOLD MEDAL** for First Position in B.S (Honors) with pure sciences in Deshbandhu College, Delhi University (2002-2005).

Secured First position in **BIOMOSAIC**-The Poster Presentation Competition, held during Intercollegiate Biochemistry Symposium, Deshbandhu College, Delhi University on the topic RNA Interference, 2004.

Received Merit based scholarship from State Bank of India (1996-2005).

Awarded certificate for distinctive performance in 4th National Science Olympiad, 2002.

Awarded certificate for passing the pre-senior UNESCO information test conducted by United Schools International (USI), 1998.

POSTER PRESENTATIONS AND TALK

Poster presented at The 2014 **Mechanism of Eukaryotic Transcription Meeting** organized by Cold Spring Harbor Laboratory.

Megha Wal, et. al. *In vitro* Approach to Study the Determinants of Nucleosome Positioning in *Saccharomyces cerevisiae*.

Poster presented at The 2013 **Mechanism of Eukaryotic Transcription Meeting** organized by Cold Spring Harbor Laboratory.

Megha Wal, et. al. *In vitro* Approach to Study the Determinants of Nucleosome Positioning in *Saccharomyces cerevisiae*.

Invited speaker at The 2012 **4th Minisymposium on Nucleosome Positioning** organized by **TRR81 international graduate research training school**, The University of Giessen, Germany.

Megha Wal, et. al. *In vitro* Approach to Dissect the Role of Chromatin Remodelers in *Saccharomyces cerevisiae*.

Poster presented at The 2011 **Chromatin and Epigenetic Regulation of Transcription Meeting** organized by The Pennsylvania State University.

Megha Wal, et. al. Genome-Wide Reconstitution of Nucleosome Positions by Yeast Whole Cell Extract Suggests an Active Packing Mechanism for Nucleosome Organization at the 5' End of Genes.

PUBLICATIONS

A NusG paralogue from Mycobacterium tuberculosis, Rv0639, has evolved to interact with ribosomal protein S10 (Rv0700) but not to function as a transcription elongation-termination factor.

Kalyani BS, Kunamneni R, Wal M, Ranjan A, Sen R.

Microbiology. 2015 Jan;161(Pt 1):67-83. doi: 10.1099/mic.0.083709-0.

Genome-wide mapping of nucleosome positions in yeast using high-resolution MNase ChIP-Seq.

Wal M, Pugh BF.

Methods Enzymol. 2012;513:233-50. doi: 10.1016/B978-0-12-391938-0.00010-0.

A packing mechanism for nucleosome organization reconstituted across a eukaryotic genome.

Zhang Z, Wippo CJ, Wal M, Ward E, Korber P, Pugh BF.

Science. 2011 May 20;332(6032):977-80. doi: 10.1126/science.1200508.

A bacterial transcription terminator with inefficient molecular motor action but with a robust transcription termination function.

Kalarickal NC, Ranjan A, Kalyani BS, Wal M, Sen R.

J Mol Biol. 2010 Feb 5;395(5):966-82. doi: 10.1016/j.jmb.2009.12.022. Epub 2009 Dec 21.

TEACHING EXPERIENCE

Teaching Assistant for Microbiology 107 Laboratory Course, Spring 2008 and Fall 2009.

My role was to setup and teach experiments, design and grade quizzes and lab reports and guide students.

TECHNICAL SKILLS

Genomics: Immunoprecipitation, Whole Genome Nucleosome Sequencing, Genome-wide Nucleosome Reconstitution, Sequencing Library Preparation.

Molecular Biology and Biochemistry: DNA extraction from bacteria and plants, Cloning, Transformation, Protein expression and purification, Pull Down Assay, Protein Crystallization, Western Blotting, Silver Staining, Chromatography- paper, gel, ion-exchange, TLC and HPLC, Gel Filtration assay, ATPase and Transcription assays, Enzyme Kinetic studies, Biochemical assays for proteins, sugars, lipids and nucleic acids.

Others: ELISA, Immunoelectrophoresis, Immunodouble diffusion, Enzyme immobilization, UV and visible light spectroscopy.

RELEVANT COURSE WORK

Bioinformatics Data Analysis

Bioinformatics

Biostatistics and Research

OTHER INTERESTS

College Coordinator, **Biospark** -Intercollegiate Biochemistry Symposium, Deshbandhu College, Delhi University, 2004.

President, Student's Academic Society for Biochemistry, 2004-2005.

Vice President, Student's Academic Society for Biochemistry, 2003-2004.

Worked with "**Help Care Society of India**", an NGO for needy girl child.

Practicing yoga, listening to music, enjoy working in groups.