Debamita Paul

Email: dp248@cornell.edu
Visiting Assistant Professor
Southwestern University, Austin, Texas
Mentor and Educator, Vector Institute of Physics, Kolkata

EDUCATION

June 2010 **Ph.D. in Chemistry and Chemical Biology**
Cornell University, Ithaca, NY
Thesis Title: Structural studies on enzymes in thiamine biosynthesis and pyrimidine salvage pathways
Advisor: Prof. Steven Ealick

July 2004 **M.Sc. in Chemistry Indian Institute of Technology**
Mumbai, Maharashtra, India

June 2002 **B.Sc. in Chemistry, with Honors University of Calcutta**
Kolkata, WB, India

PEER-REVIEWED PUBLICATIONS

1. **Paul, D**., O'Leary, S., Toms, A., Rajashankar, K., Bu, W., Settembre, E.C., Sanders, J., Begley, T.P., and Ealick, S.E. Glycal Formation in Crystals of Uridine Phosphorylase. *Biochemistry 49*, 3499-3509.
   Highlighted in Biochemistry website (04-14-10 to 04-21-10)

2. **Paul, D**., Chatterjee, A., Begley, T.P. and Ealick, S.E. Domain organization in *Candida glabrata* THI6, a Bifunctional enzyme required for Thiamin Biosynthesis in Eukaryotes. *Biochemistry 49*, 9922-9934.

3. Woodword, J., Abeydeera D., **Paul, D.,** Philips. K., Rapala-Kozik. M., Freeling. M., Begley, T.P., Ealick, S.E, McSteen, P. and Scanlon, M.J. A Maize Thiamin Auxotroph Is Defective in Shoot Meristem Maintenance. *The Plant Cell 22,* 3305- 3317.
4. Chandra, N., **Paul, D.,** Kar, S., Mobin, S.M., Datta, A., Puranik, G., Rao, K., and Lahri, G.K. (2005) Effect of 2-(2-Pyridyl)azole-based ancillary ligands (L1-4) on the electrophilicity of the nitrosyl function in [RuII(trpy)(L1-)4)(NO)]3+ [trpy = 2,2':6',2' –'Terpyridine]. Synthesis, structures and spectroscopic, electrochemical and kinetic aspects. *Inorg Chem.10*, 3499-511.

5. Ye, W., **Paul, D.,** Gao, L., Seckute, J., Sangaiah, R., Jayaraj, K., Kaminski, P.A., Ealick, S.E., Gold, A., Ball, L.M. Ethenoguanines undergo glycosylation by nucleoside 2´-deoxyribosyltransferases at non-natural sites. *Plos one* **9**:e115082.

6. Harriman G., Greenwood J., Bhat S., Huang X., Wang R., **Paul D.**, Tong L, Saha A.K., Kapeller R. and Harwood J.Jr. Acetyl-CoA carboxylase inhibition by ND-630 reduces hepatic steatosis, improves insulin sensitivity, and modulates dyslipidemia in diet-induced obese and Zucker diabetic fatty rats. *PNAS 113(13)*: e1796-805.

7. Chakraborty S., Steinbach P. J., **Paul D**., Jung-Hyun Min[3], Anjum Ansari. DNA Enhanced spontaneous DNA twisting/bending fluctuations unveiled by fluorescence lifetime distributions promote damage recognition by DNA-repair protein Rad4/XPC. *NAR 46(3)*, 1240-1255.

8. **Paul, D.,** Mu, H., Zhao, H., Jeffrey, P., Ouerfelli, O., Pavletich, N., Broyde, S., Min, J.H. Structure and mechanism of pyrimidine–pyrimidone (6-4) photoproduct recognition by the Rad4/XPC nucleotide excision repair complex. *Nucleic Acids Research*,47(12):6015-6028. **(Breakthrough Article)**

9. **Paul, D.,** Mu, H., Tavakoli, A., Dai, Q., Chen, X., Chakrabarty, S., He, C., Ansari, A., Broyde, S., Min, J.H. Tethering facilitated 'DNA opening' and complementary roles of beta-hairpin motifs in the Rad4/XPC DNA damage sensor protein. *Nucleic Acids Res*. 48, 12348-12364, doi:10.1093/nar/gkaa909 (2020).

10. **Paul, D.,** Mu, H., Dai, Q., Tavakoli, A., He, C., Broyde, S. & Min, J. H**.** Impact of DNA sequences in the DNA duplex opening by the Rad4/XPC nucleotide excision repair complex. BIORXIV/2020/909549 (2020). (Accepted in *DNA repair)*

11. Tavakoli, A., **Paul, D.,** Mu, H., Kuchlyan, J., Baral, S., Ansari, A., Broyde, S., Min. J.H. Light induced modulation of DNA recognition by Rad4/XPC damage sensor protein. *RSC Chemical Biology* 2, 523-536 (2021).

12. **Paul, D.,** Kolbanovskii, A., Mu, H., Tavakoli, A., Geacintov, N.E., Broyde, S., Min, J.H. Conformational landscape of benzo[a]pyrene adduct DNA lesions revealed by the intrinsic fluorescence of the adduct during lesion recognition in NER (Manuscript under preparation)

RESEARCH INTERESTS

- **Structural Biochemistry of DNA repair**
- **Structure based drug designing**
- **Host pathogen interaction**

TEACHING EXPERIENCE

Summer 2022 **Faculty Mentor in Chemistry**
Vector Institute of Physics, Kolkata, TX
- Chemistry to students at various level
- Offered career counselling service to STEM aspirants

Spring 2022 **Visiting Assistant Professor**
Southwestern University, Austin, TX
- General Biochemistry II
- Structural Biochemistry of DNA Repair Proteins
- Chemical Methods and Techniques Laboratory

Fall 2021 **Visiting Assistant Professor**
Southwestern University, Austin, TX
- Principles of Biochemistry
- Advanced Biochemistry Laboratory

Fall 2009 **Teaching Fellow**
Center for teaching excellence
Cornell University, Ithaca, NY

2005-2006 **Teaching Assistant**
Center for teaching excellence
Cornell University, Ithaca, NY
- General chemistry (Recitation and Lab)

2004-2005 **Teaching Assistant**
Center for teaching excellence
Cornell University, Ithaca, NY
- General chemistry (Recitation and Lab)

RESEARCH EXPERIENCE

2018- 2021 **Senior Postdoctoral Research Associate**
Baylor University, Waco, TX
Advisor: Professor Jung-Hyun Min

2015-2018 **Visiting Research Assistant Professor**
University of Illinois at Chicago, Chicago, IL
Advisor: Professor Jung-Hyun Min

2013-2015 **Visiting Scientist**
Bose Institute, Kolkata, India
Advisor: Professor Pinakpani Chakraborty

2010-2012 **Postdoctoral Research Associate**
Columbia University, New York City, NY
Advisor: Professor Liang Tong

2004-2010 **Graduate Research Assistant**
Cornell University, Ithaca, NY

Advisor: Professor Steven Ealick

2002-2004 **Undergraduate Research Assistant**
Indian Institute of Technology, Mumbai
Advisor: Professor G.K. Lahiri

ADVANCED SKILLS

- Maestro in Protein crystallography
- Specialist in Protein expression and purification
- Project leader with effective collaboration
- Excellent interpersonal, written & oral communication skills
- Experienced in structure-based drug design-bench to bedside research
- Expert in biophysical methods
- Adept presenter and educator

HONORS AND AWARDS

- Recipient of undergraduate scholarship for outstanding performance, Lady Brabourne College, Calcutta
- Awarded Parameshwar Godrej Scholarship in IIT Bombay for academic excellence
- Received Sundarlal award for outstanding academic record in Cornell University

CONFERENCES AND SEMINARS

- **Debamita Paul**, Hong Mu, Qing Dai, Amirrasoul Tavakoli, Chuan He, Suse Broyde and Jung-Hyun Min. Structural mechanism of DNA damage recognition by Rad4/XPC DNA repair complex
    - Genome Integrity Group Virtual Seminar, April 2021

- **Debamita Paul**, Hong Mu, Qing Dai, Amirrasoul Tavakoli, Chuan He, Suse Broyde and Jung-Hyun Min. Structural mechanism of DNA damage recognition by Rad4/XPC DNA repair complex
    - Gordon Research Seminar, Ventura, USA, March 2020

- **Debamita Paul**, Sagnik Chakrabarty, Qing Dai, Xuejing Chen, Chuan He, Anjum Ansari and Jung-Hyun Min. Structural insight into mechanism of DNA damage recognition by Rad4/XPC DNA repair complex
    - Young Investigators Annual Meeting, Chicago, USA, October 2016. Poster Session

- **Debamita Paul**, Tadhg P. Begley and Steven E. Ealick. The Crystal Structure of THI6, a Bifunctional Enzyme involved in Thiamin Biosynthesis of Eukaryotes.

    - American Crystallographic Association Annual Meeting, Toronto, Canada, July 2009. Poster Session

- **Debamita Paul**. Structural Studies on Thiamin Biosynthetic Enzyme THI6. Student Summer Seminar Series. Department of Chemistry and Chemical Biology, Cornell University, Ithaca, NY. 2008. Seminar Speaker

PROFESSIONAL MEMBERSHIP

- Member of American Crystallographic Association (ACA)
- Member of American Society of Biochemistry and Molecular Biology (ASBMB)