

Dr. Agneyo Ganguly

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- Assistant Professor, Department of Biotechnology, IIT Kharagpur (December 2013-Till date)
- Assistant Professor, Department of Biotechnology, Presidency University, Kolkata (March 2013- November 2013)
- Postdoctoral Fellow (July 2011-March 2013), Institute of Physical Chemistry, University of Muenster, Germany.
- Postdoctoral Fellow (September 2008-June 2011), Biozentrum, University of Basel, Switzerland. (*Marie Curie IIF Fellow*)
- PhD in Biochemistry and Molecular Biology (2008), Indian Institute of Chemical Biology, Kolkata under supervision of Dr. Hemanta K. Majumder.
Thesis Title: *Structural and functional studies of eukaryotic topoisomerase I with reference to Leishmania type I topoisomerase.*
- Master of Technology (Biotechnology) 2002, Jadavpur University, Kolkata
- Bachelor of Pharmaceutical Technology, 2000, Jadavpur University, Kolkata.

PERSONAL DETAILS:

- Date of Birth: November 1st, 1978
- Nationality: Indian
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AWARDS AND RECOGNITIONS:

- **Marie Curie Long term International Incoming Fellowship** (IIF, June 2009-June 2011) by the European Commission for carrying out postdoctoral research.
- **INSA Young Scientist Award** in year 2008 from Indian National Science Academy, New Delhi.
- **NASI Young Scientist Award** in year 2008 from National Academy of Sciences, Allahabad.
- **Best Thesis Award** from Indian Institute of Chemical Biology in the year 2008.
- **University Medal** for standing **First** in order of merit in the M.Tech (Biotechnology) Final Examination 2002, from Jadavpur University.

RESEARCH EXPERIENCES:

- **Postdoctoral Research (under supervision of Prof. Dagmar Klostermeier)**
Towards understanding the mechanism of positive supercoiling by reverse gyrase from *T.maritima* using cutting edge biophysical techniques.
- **Doctoral Research (under supervision of Dr. Hemanta K.Majumder)**
Title: Structural and functional studies of eukaryotic topoisomerase I with reference to Leishmania type I topoisomerase.
- **Master's Thesis (M.Tech) (under supervision of Dr. Hemanta K.Majumder)**
Title: Plant derived compounds as novel inhibitors of eukaryotic DNA topoisomerase I and Effect of dihydrobetulinic acid on the morphology of *Leishmania donovani* promastigotes

TEACHING EXPERIENCES:

- Participated as teaching assistant in Block-course Practical training programme in University of Basel, Switzerland, 2009.
- Participated as teaching assistant in Master-module Practical training programme in University of Muenster, Germany 2012 and 2013.
- Assistant Professor, Department of Biotechnology, Presidency University, Kolkata (March 2013- November 2013)
- Assistant Professor, Department of Biotechnology, IIT Kharagpur (December 2013-Till date)

COURSES TAUGHT:***Spring semester***

1. Downstream Processing
2. Immunology
3. Recombinant DNA Technology
4. Cell and Molecular Biology Laboratory
5. Bioinformatics Laboratory
6. Science of Living System (School of Bioscience)

Autumn semester

1. Bioseparation Technology / Bioseparation
2. Bioprocess Technology
3. Biochemical reaction engineering and Bioenergetics
4. Biochemistry Laboratory
5. Analytical Biochemistry Laboratory
6. Science of Living System (School of Bioscience)

MENTORSHIP:

1. Two PhD students enrolled. One of the PhD students is under joint supervision and enrolled in School of Biosciences, IIT Kharagpur.
2. One post-doctoral fellow (DBT-RA)
3. Two M.Tech students are presently working (M.Tech project).
4. Two B.Tech students are doing projects (B.Tech project).
5. 4 summer students have completed summer internship during May-July 2014, 2015.

OTHER RESPONSIBILITIES:

1. Research Scholar Coordinator, Department of Biotechnology, IIT Kharagpur.
2. Seminar Incharge, Department of Biotechnology, IIT Kharagpur
3. Member/Examiner for Departmental PhD admission tests 2014.
4. Member/Examiner for M.Tech admission test 2014.
5. Member/ Examiner for PhD admission tests in School of Biosciences, IIT Kharagpur.
6. Member, Purchase committee, School of Biosciences, IIT Kharagpur.

PUBLICATIONS:

Research Articles

- 1 Del Toro Duany Y, **Ganguly A**, Klostermeier D (2014) Differential contributions of the latch in *Thermotoga maritima* reverse gyrase to the binding of single-stranded DNA before and after ATP hydrolysis. *Biol Chem.* 395(1):83-93.
- 2 Rudolph MG, Del Toro Duany Y, Jungblut SP, **Ganguly A**, Klostermeier D (2013) Crystal structures of *Thermotoga maritima* reverse gyrase: inferences for the mechanism of positive DNA supercoiling. *Nucleic Acids Res.* (In Press)
- 3 **Ganguly A**, Del Toro Duany Y, Klostermeier D (2013) Reverse Gyrase Transiently Unwinds Double-Stranded DNA in an ATP-Dependent Reaction. *J Mol Biol.* 425(1):32-40.
- 4 Sengupta S, **Ganguly A**, Roy A, Bosedasgupta S, D'Annessa I, Desideri A and Majumder HK. (2011). ATP independent type IB topoisomerase of *Leishmania donovani* is stimulated by ATP: an insight into the functional mechanism. *Nucleic Acids Res.* 39(8): 3295-3309
- 5 **Ganguly A**, Del Toro Duany Y, Rudolph MG and Klostermeier D. (2011). The latch modulates nucleotide and DNA binding to the helicase-like domain of *Thermotoga maritima* reverse gyrase and is required for positive DNA supercoiling. *Nucleic Acids Res.* 39(5):1789-800.
- 6 Mazumder S, **Ganguly A**, Ali N. (2010) The effect of C-terminal domain deletion on the catalytic activity of *Leishmania donovani* surface proteinase GP63: Role of Ser446 in proteolysis. *Biochimie.* 92(12):1876-85.
- 7 **Ganguly A**, Sengupta S, Bosedasgupta S, Roy A, Majumder HK. (2009) Mutational studies reveal lysine 352 on the large subunit is indispensable for catalytic activity of bi-subunit topoisomerase I from *Leishmania donovani*. *Mol Biochem Parasitol.* 165(1):57-66.
- 8 Roy A, BoseDasgupta S, **Ganguly A**, Jaisankar P, Majumder HK. Topoisomerase I gene mutations at F270 in the large subunit and N184 in the small subunit contribute to the resistance mechanism of the unicellular parasite *Leishmania donovani* towards 3,3'-diindolylmethane. (2009) *Antimicrob Agents Chemother.* 53(6):2589-98.
- 9 Roy A, **Ganguly A**, BoseDasgupta S, Das BB, Pal C, Jaisankar P, Majumder HK. (2008) Mitochondria-dependent reactive oxygen species-mediated programmed cell death induced by 3,3'-diindolylmethane through inhibition of F0F1-ATP synthase in unicellular protozoan parasite *Leishmania donovani*. *Mol Pharmacol.* 74(5):1292-307.
- 10 BoseDasgupta S, Das BB, Sengupta S, **Ganguly A**, Roy A, Dey S, Tripathi G, Dinda B, Majumder HK. (2008) The caspase-independent algorithm of programmed cell death in *Leishmania* induced by baicalein: the role of LdEndoG, LdFEN-1 and LdTatD as a DNA 'degradesome'. *Cell Death Differ.* 15(10):1629-40.
- 11 BoseDasgupta S, **Ganguly A**, Roy A, Mukherjee T, Majumder HK. A novel ATP-binding cassette transporter, ABCG6 is involved in chemoresistance of *Leishmania*. (2008) *Mol Biochem Parasitol.* 158(2):176-88.
- 12 **Ganguly A**, Das BB., Roy A., Sen N., BoseDasgupta S., Mukhopadhyay S. and Majumder HK. (2007) Betulinic acid, a catalytic inhibitor of topoisomerase I inhibits ROS mediated apoptotic topo I-DNA cleavable complex formation in prostate cancer cells but does not affect the process of cell death. *Cancer Res.* 67(24):11848-58.
- 13 BoseDasgupta S., **Ganguly A**, Das BB., Roy A., Khalkho NVM. and Majumder HK. (2007) The large subunit of *Leishmania* topoisomerase I functions as the 'molecular steer' in type IB topoisomerase. *Mol Micro* 67(1):31-46.
- 14 Bosedasgupta S, Das BB, Sengupta S, **Ganguly A**, Roy A, Tripathi G and Majumder HK. (2007) Amino acids 39-456 of large subunit and 210-262 of small subunit constitute the minimal, functionally interacting fragments of the unusual heterodimeric topoisomerase IB of *Leishmania*. *Biochem J.* 409(2):481-9.

- 15 Roy A, Das BB, Ganguly A, Bosedasgupta S, Khalkho NV, Pal C, Dey S, Giri VS, Jaisankar P, Dey S and Majumder HK. (2007) An insight into the mechanism of inhibition of unusual bi-subunit topoisomerase I from *Leishmania donovani* by 3,3'-diindolylmethane, a novel DNA topoisomerase I poison with a strong binding affinity to enzyme. **Biochem J.** 409(2):611-22.
- 16 Das BB, Bose Dasgupta S, Ganguly A, Mazumder S, Roy A and Majumder HK (2007) *Leishmania donovani* bisubunit topoisomerase I gene fusion leads to an active enzyme with conserved type IB enzyme function. **FEBS J.** 274:150-63.
- 17 Sen. N., Banerjee, B., Das, B. B., Ganguly, A., Sen, T., Pramanik, S., Mukhopadhyay, S. and Majumder, H. K. (2007) Apoptosis is induced in leishmanial cells by a novel Protein Kinase Inhibitor Withaferin A and is facilitated by Apoptotic Topoisomerase I DNA Complex. **Cell Death & Differ** 14, 358-67.
- 18 Sen N, Banerjee B, Gupta SS, Das BB, Ganguly A and Majumder HK (2007) *Leishmania donovani*: dyskinetoplastid cells survive and proliferate in the presence of pyruvate and uridine but do not undergo apoptosis after treatment with camptothecin. **Exp Parasitol.**;115:215-9.
- 19 Ganguly A, Das BB, Sen N, Roy A, Dasgupta SB and Majumder HK. (2006) 'LeishMan' topoisomerase I: an ideal chimera for unraveling the role of the small subunit of unusual bi-subunit topoisomerase I from *Leishmania donovani*. **Nucleic Acids Res.** 34:6286-97.
- 20 Sen. N., Das, B. B., Ganguly, A., Banerjee, B., Sen, T. and Majumder, H. K. (2006) *Leishmania donovani*: Intracellular ATP level regulates apoptosis like death in Luteolin induced dyskinetoplastid cells. **Experimental Parasitol** 114, 204-14.
- 21 Das, B. B., Sen, N., Roy, A., Dasgupta, S. B., Ganguly, A., Mohanta, B. C., Dinda, B. and Majumder, H. K (2006) Differential induction of *Leishmania donovani* bi-subunit topoisomerase I – DNA cleavage complex by selected flavones and camptothecin : Activity of flavones against camptothecin resistant topoisomerase I. **Nucleic Acids Res.** 34, 1121-32.
- 22 Das, B.B., Sen, N., Dasgupta, S. B., Ganguly, A., Majumder, H. K. (2005) N-terminal region of the large subunit of *Leishmania donovani* bi-subunit Topoisomerase I is involved in DNA relaxation and interaction with smaller subunit. **J. Biol. Chem.** 280(16), 16335-44.
- 23 Sen, N., Das, B. B., Ganguly, A., Mukherjee, T., Bandopadhyay, S., Majumder, H. K. (2004) Camptothecin-induced imbalance in intracellular cation homeostasis regulates programmed cell death in unicellular hemoflagellate *Leishmania donovani*. **J Biol Chem.** 279, 52366-75.
- 24 Sen, N., Das, B. B., Ganguly, A., Mukherjee, T., Tripathi, G., Bandopadhyay, S., Rakshit, S., Sen, T. and Majumder, H. K. (2004) Camptothecin induced mitochondrial dysfunction leading to programmed cell death in unicellular hemoflagellate *Leishmania donovani*. **Cell Death & Differentiation.** 11, 924-936.
- 25 Das, B. B., Sen, N., Ganguly, A. and Majumder, H. K. (2004) Reconstitution and functional characterization of the unusual bisubunit type I DNA Topoisomerase from *Leishmania donovani*. **FEBS.Letts.** 565, 81-88.
- 26 Chowdhury A. R., Mandal, S., Goswami, A., Ghosh, M., Mandal, L., Chakraborty, D., Ganguly, A., Tripathi, G., Mukhopadhyay, S., Bandyopadhyay, S. and Majumder, H. K. (2003) Dihydrobetulinic acid induces apoptosis in *Leishmania donovani* by targeting DNA topoisomerase I and II: implications in antileishmanial therapy. **Mol. Med.** 9, 26-36.

- **Reviews and Book Chapters:**

1. Das BB, Ganguly A, Majumder HK. (2008) DNA topoisomerases of Leishmania: the potential targets for anti-leishmanial therapy. *Adv Exp Med Biol.* 625:103-15. *Book Chapter.*
2. Das BB*, Sengupta T*, Ganguly A* and Majumder HK. (2006) Topoisomerases of kinetoplastid parasites: why so fascinating? *Mol Microbiol.* **62**: 917-27(* Contributed equally) *Review.*
3. Das BB, Sen N, Dasgupta SB, Ganguly A, Das R and Majumder HK (2006) Topoisomerase research of kinetoplastid parasite Leishmania, with special reference to development of therapeutics. *Indian J Med Res.*; **123** :221-32. *Review.*