CURRICULUM VITAE

Dr. Asit Kumar Chakraborty, MSc, PhD. (Biochemistry)

Date of Birth: 19th June, 1958.

Nationality: Indian.

Marital status: Married to Anjana Chatterjee (children : Anindita & Anupama)

Present Position

Associate Professor of Biochemistry.

Oriental Institute of Science & Technology,

Post Graduate Department of Biotechnology & Biochemistry

VIH Campus, Rangamati, Midnapore-721102, West Bengal, India.

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466, **Garfa Main Road, Aditi Apts. Flat No. 6, Jadavpur, Kolkata- 700075, INDIA. Mobile: (91) 7679154141. EMail: chakraakc@gmail.com.**

Research Interest:

- Genetic mechanisms of multi-drug resistance in superbugs.
- Herbal Drug development against Multidrug resistant bacteria.
- Phyto-antibiotics targeting RNA polymerases, DNA topoisomerases and TFs of Pathogens.

Educational Qualification:

- Ph. D., Biochemistry, 1990, University of Calcutta, India.
- M. Sc., Biochemistry (Ist Class), 1981, University of Calcutta, India.
- B. Sc., Chemistry Hons. (2nd Class), 1979, University of Calcutta, India.

CSIR-NET Research Fellow (1995-90) and CSIR Scientist Fellow (1995-98)

Molecular Biological studies on kinetoplast hemoflagellate *Leishmania donovani* with reference to the enzymes (DNA topoisomerases/RNA Polymerases) involved in nucleic acid metabolism. Molecular Parasitology Laboratory (Dr Hemanta Majumder), Indian Institute of Chemical Biology (CSIR), Kolkata.

Postdoctoral Training (1990-1995)

Retroviology & Protooncogenes at UC Berkeley, Virus Laboratory, USA. (Prof Peter Duesberg)

Gene Therapy Technologies at Creighton Cancer Center, Omaha, USA. (Dr Clague Hodgson)

Novel Transcription Factors at Hollings Cancer Center, Charleston, SC, USA. (Prof Takis Papas)

Research/Teaching Position Held

- ***2006- 2016. Sr Lecturer of Biochemistry.*** OIST, VU affiliated college.
- ***March 2004- January 2006: Research Scientist-II (SRO, ICMR).*** *GB Pant Hospital, New Delhi.*
- **Visiting Faculty at Johns Hopkins University School of Medicine; Dept of Clinical Pharmacology, Baltimore, MD, USA (3 months).**
- **November 1995-1998**: ***Quick Hire Scientist*** : Indian Institute of Chemical Biology, Calcutta- 700032.
- **1990-1995. Postdoctoral Fellow**. UC Berkeley, Creighton University and MUSC, USA
- **1985-1990. CSIR**-NET Fellow, Indian Institute of Chemical Biology.

RECENT PUBLICATIONS

1. Chakraborty AK (2020) Corona Virus ORF1ab-Derived Nsp9 and Nsp10 Non-Structural Proteins have Homologies to S8/S10 Ribosomal Proteins as well as RlmG/ErmDrRNAMethyltransferases and may Inhibit Host Mitoribosome Assembly and Protein Synthesis. Virol Mycol. 9:186. DOI: 10.35248/2161-0517.20.09.186.

2.Poria K, Bhatta S, Das S, Dey M, Chakraborty AK, et al. (2020) Mechanism of multi-resistant bacterial pathogenesis: MDR genes are not so deadly unless plasmid-mediated toxin, virulence and regulatory genes are activated. Open J Bacteriology 4(1): 8-19. DOI. https://dx.doi.org/10.17352/ojb.000013.

3. Chakraborty AK (2020) Coronavirus Nsp2 Protein Homologies to the Bacterial DNA Topoisomerase I and IV Suggest Nsp2 Protein is an Unique RNA Topoisomerase with Novel Target for Drug and Vaccine Development.Virol Mycol. 9:185. DOI: 10.35248/2161-0517.20.09.185.

4. Chakraborty AK. (2020) Multi-Alignment Comparison of Coronavirus Non-Structural Proteins Nsp13-Nsp16 with Ribosomal Proteins and other DNA/RNA Modifying Enzymes Suggested their Roles in the Regulation of Host Protein Synthesis. Int J Clin Med Info 2020: 3(1) 7-19. Doi:https://doi.org/10.46619/ijcmi.2020.1024

5. Chakraborty AK (2020) Clinical, Diagnostic and Therapeutic Implications of Coronavirus ORFab Polyprotein Associated Nsp16 Protein-A Bioinformatics Approach. *Acta Scientific Medical Sciences* 4 (5): 97-103. DOI: 10.31080/ASMS.2020.04.0629.

6. Chakraborty, AK. (2020). Multi-Alignment Comparison of Coronavirus Non-Structural Proteins Nsp13-16 with Ribosomal proteins and other DNA/RNA modifying Enzymes Suggested Their Roles in the Regulation of Host Protein Synthesis. IndiaRxiv May 1, doi: 10.35543/osf.io/qrxc5.

7. Chakraborty, AK. (2020) Coronavirus ORF1ab Polyprotein Associated Nsp16 Protein is a RlmE Methyltransferase and May Methylate 21S Mitochondrial rRNA of Host Cells Inhibiting Protein Synthesis. Preprints 2020, 2020040213. doi:10.20944/preprints202004.0213.v1.

8. Chakraborty AK and Roy A.K. (2020) High Prevalence of Metal Resistant Genes in Salmonella enterica

MDR Plasmids Correlates Severe Toxicities of Water with higher Typhoid AMR. Preprints 2020, 2020040358. doi: 10.20944/preprints202004.0358.v1.

9. Chakraborty, AK. (2020) Coronavirus Nsp2 Protein Homologies to the Bacterial DNA Topoisomerase I and IV Suggest Nsp2 Protein Is a Unique RNA Topoisomerase with Novel Target for Drug and Vaccine Development. OSF Preprints. April 17. doi:10.31219/osf.io/tc9us.

10. Chakraborty AK. (2020) Chemical Toxicities of Both Intestine and Environmental Water Caused Genetic Recombination in Bacteria with the Creation of MDR Genes and Drug Void. *EC Pharmacology and Toxicology* 8(3): 1-14.

11. Chakraborty AK, Poria K, Nandi SK (2020) Universal Primer Design for the Detection of Diverged CTX-M ExtendedSpectrum β-Lactamases (ESBL) That Give Penicillin and Cephalosporin Resistance During Superbug Infections. In book " Biotechnological Applications in Human Health" Editors: Sadhukhan & Premi, Springer-Nature Singapore Pte Ltd, Chapter 6, https://doi.org/10.1007/978-981-15-3453-9_6.

12. Chakraborty AK and Nandi SK (2019) A method of universal primer design for the detection of diverged CTX-M beta-lactamases in multi-drug resistant superbugs. *Res & Rev: J Biotechnol.* **9**(2): 1-10.

13. Chakraborty AK (2019) Conceptual Drug Discovery and Societal Status may not be Sufficient to Combat Multidrug-Resistant Infections. Pharmaceut Reg Affairs 7: 213. doi: 10.4172/2167-7689.1000213.

14. Chakraborty AK (2019) Heterogeneous phyto-antibiotics and other future therapeutics against multi-drug resistant bacteria. *Adv Biochem*. **7**(2):34-50. Doi:10.11648/j.ab.20190702.11.

15. Chakraborty AK (2019) Current status and unusual mechanism of multi-resistance in Mycobacterium tuberculosis. J Health Med Informatics. 10(1): 328. Doi: 10.4172/2157-7420.1000328.

16. Chakraborty AK, Pradhan S, Das S, Maity M, Sahoo S, Poria K. (2019) Complexity of OXA Beta-Lactamases involved in Multi-Resistance. *British J Bio-Medical Res*. **3** (1): 772-798. Doi: 10.24942/bjbmr.2019.424.

17. Chakraborty AK. (2019) Heterogeneous phyto-antibiotics may solve the horror of multidrug-resistant infections. Altern Integr Med, Vol.8, PP.43. doi: 10.4172/2327-5162-C1-060.

- 18. Chakraborty AK, Poira K, Saha D, Halder C, Das S. (2018) Multidrug- Resistant Bacteria with activated and diversified MDR Genes in Kolkata Water: Ganga Action Plan and Heterogeneous Phyto-Antibiotics tackling superbug spread in India. *American J Drug Deli Therapeutics.* **5** (1):2 (Pp.1-9). DOI: 10.13140/RG.2.2.17947.52001.

19. Chakraborty AK (2018) Poor correlation of diversified MDR genes in *Gonococci* plasmids: Does alteration in chromosomal DEGs, PBP2 and Target Mutations sufficient to widespread multi-resistance in *Neisseria gonorrhoeae*? *J Health Med Informat* **9**: 310. Pp. 1-8. doi: 10.4172/2157-7420.1000310.

20.Chakraborty AK. (2018) Nucleic-Acids Based Nanocarriers, in "*Nanocarriers for Drug Delivery*". eds. Mahapatra et al. chapter-**5**; pp.155-172, Elsevier Press, Amsterdam. ISBN:978012814.

21. Chakraborty AK. (2018) Superbugs spread and problems of multidrug-resistant infections during surgery. *Int J Sur Inv Procedures,* 1(1): 6-13.

22. Chakraborty AK, Muneim GE, Pradhan S and Adhikari A. (2018) Superbug horror and its relations to antibiotics, probiotics and vitamins. *J Pharm Toxicol.* 1(1), 8-13.

23. Chakraborty AK. (2018e) Huge Genetic Inclusion during conversion of R-Plasmids into MDR Conjugative Plasmids in Multidrug-Resistant Bacteria. *Cohesive J Microbiol Infect Dis* . 1(4): Pp.1-3.

24. Chakraborty AK, Nandi SK. (2018) Generation of blaNDM-1 super MDR gene by multiple rearrangement of other metallo-beta-lactamases like GIM-1, IMP-1 and VIM-2 including many IS-elements. *J Microbiol Biotechnol Rep*. 2(1):17-21.

25. Chakraborty AK (2018) Rise of multidrug-resistant bacteria in global water: Ganga action plan, phage therapy and heterogeneous phyto-antibiotics may be the best hope for India tackling superbug spread. Adv Biochem Biotechnol. 3(4):48. Doi:10.29011/2574-7258-C1-007.

26. Chakraborty AK (2017). Multi-drug resistant bacteria from Kolkata Ganga River with heterogeneous MDR genes have four hallmarks of cancer cells but could be controlled by organic phyto-extracts. *Biochem Biotechnol Res,* **5**(1): 11-23.

27. Chakraborty AK, Maity M, Patra S, Mukherjee S and Mandal T (2017). Complexity, heterogeneity and mutational analysis of antibiotic inactivating acetyl transferases in MDR conjugative plasmids conferring multi-resistance. *Res Rev: J Microbiol Biotechnol.* **6** (2): 28-43.

28. Chakraborty AK. (2017) Ganga action plan, heterogeneous phyt-antibiotics and phage therapy are the best hope for India tackling superbug spread and control. Ind J Biol Sci 23: 34-51.

29. Chakraborty AK (2017) MDR Genes are created and transmitted in plasmids and chromosomes to keep normal intestinal microbiota alive against high dose antibiotics- A Hypothesis. J Mol Med Clin Appl 2(1): 109, Pp. 1-9. Doi: http://dx.doi. org/10.16966/2575-0305.109.

30. Chakraborty AK. (2017). Diversified mdr genes in bacterial plasmids and chromosomes inactivate hundred drugs with huge superbug spread in sea, river and rain water. J Pharmacovigil. 5(4 suppl):29. Doi:10.417/2329-6887-C1-029.

31. Chakraborty AK. (2017) Enzybiotics, A New Class of Enzyme Antimicrobials Targeted against Multidrug-Resistant Superbugs. Nov Appro Drug Des Dev. 2(4) : 555592.

32. Chakraborty AK. (2016) Multi-drug resistant genes in bacteria and 21st Century problems associated with antibiotic therapy. *Biotechnol Ind J.* 12(12): 114 (pp. 1-20).

33. Chakraborty AK, Roy T and Mondal S. (2016) Development of DNA nanotechnology and uses in molecular medicine and biology. *Insights Biomed.* 1(2):13.

34.Chakraborty AK, Khatoon A, Maity M, Nandi SK, Maity U. (2016) Screening of some clinically important anti-bacterial phyto-extracts as described in Chiranjibi Bonoushadhi targeting Kolkata superbugs. In: Health, Nutrition and Hygiene: The Dynamics of social Ecology in India (edi. Sinha, Patsa, Das, Samanta), Chapter 30, pp. 260-278, 2016. ISBN:978-81-930138-1-6.

35. Chakraborty AK. (2016) Complexity, heterogeneity, 3-D structures and transcriptional activation of multi-drug resistant clinically relevant bacterial beta-lactamases. *Trends Biotechnol*-open access. 2(1), 1-001. (Pp. 1-19).

36. Chakraborty AK. (2016) In silico analysis of multidrug resistant bacterial KPC-1 and NDM-1 beta-lactamases that confers severe MDR phenotypes. *Biochem Biotechnol Res.* 4(1): 17-26.

37. Chakraborty AK. (2015) High mode contamination of multi-drug resistant bacteria in Kolkata: mechanism of gene activation and remedy by heterogeneous phyto-antibiotics. *Indian J. Biotechnol.* 14**:** 149-159.

38. Chakraborty AK, Bhattacharya S. & Nandi SK. (2015) Cloning, sequencing and Blast analysis of kDNA minicircles of Leishmania *donovani* AG83. *Indian J Applied Res*. 5(2): 43-45.

39. Chakraborty AK. (2014) Structure and functions of the rodent identifier retroposon located in c-Ha-ras oncogene the far upstream regulatory region. Current Science, 107: 1832-1841.

Other Outstanding Publications (Phd and Postdoctoral)

1.Boldly AL, Chakraborty AK, Xie X, Burri C and Shapiro TS. (2003) An unusal type IB topoisomerase from African trypanosomes. Proc. Natl Acad. Sci. USA **100**: 7539-7544.

2.Chakraborty AK, Zink MA, Boman BM and Hodgson CP. (1993) Synthetic Retrotransposon vectors for Gene Therapy. FASEB J. **7**: 971-977.

3.Chakraborty AK, Zink MA and Hodgson CP: (1995) Expression of VL30 vectors in human cells that are targets for gene therapy. *Biochem Biophys Res Commun.* **209** (2) 677-683.

4.Chakraborty AK, Cichutek K and Duesberg PH. (1991) Transforming function of proto-ras genes depends on heterologous promoters and is enhanced by specific point mutations. Proc. Natl. Acad. Sci. USA. **88**: 2217-2221.

5.Chakraborty AK and Majumder HK. (1988) Mode of action of pentavalent antimonials: Specific inhibition of type I DNA topoisomerase from Leishmania donvani. *Biochem Biophys Res Commun*. **152** (2): 605-611.

6.GenBank Publications:Accession Nos.: DQ219811, AY289755, AF062996, M61016, KU899560, KU898253, KY769875-KY769883.

References:

1. **Dr Samit Adhya**, Dept. of Genetic engineering
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