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**CURRICULUM VITAE**


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NAME <b>Zhumur Ghosh, PhD</b>	POSITION TITLE & ADDRESS Assistant Professor		
HOME PAGE <a href="http://bicresources.jcbose.ac.in/zhumur/lab/">http://bicresources.jcbose.ac.in/zhumur/lab/</a>	Bose Institute, CoE in Bioinformatics P 1/12, CIT Scheme - VII M Kolkata - 700 054		
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EDUCATION/TRAINING ( <i>Begin with bachelor education and include all higher education and postdoctoral training.</i> )			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Calcutta, Kolkata, India	M.Sc	1999-2001	Physics
University of Calcutta, Kolkata, India	Post M.Sc	2001-2002	Bioinformatics
Indian Institute of Technology (IIT) Kharagpur, India	Trainee	2002-2002	Bioinformatics
Indian Association for the Cultivation of Science, Kol	PhD & Postdoc	2003-2009	RNA Genomics
Stanford University School of Medicine, CA, USA	Postdoc	2009-2010	Stem Cells, microRNA & regenerative therapy

**A. Area of Research:**

Stem Cells and RNA biology, Cancer Stem cells, Epigenetics and reprogramming of induced pluripotent stem cells and regenerative medicine, regulatory RNAs in disease networks & systems biology

**B. Positions and Honors****Positions and Employment:**

Jan 14-present      Assistant Professor, Bioinformatics Centre, Bose Institute, Kolkata, India  
 Nov 2010 – Jan 14      Faculty Fellow, Bioinformatics Centre, Bose Institute, Kolkata, India  
 June 2010 - Nov 2010      Assistant Professor, Indian Institute of Technology (IIT) Guwahati, India

**Honors:**

2011-2014      Associate Fellow, Indian Academy of Science  
 2011-      Editorial Board, Current Bioinformatics

**C. Selected publications****Books**

1. **Regulatory RNAs: Basics, Methods & Applications** (2012) Mallick B and **Ghosh Z** (Eds) *Springer-Verlag*, Heidelberg, Germany. ISBN-978-3-642-22516-1 (Hardcover).
2. **Bioinformatics-Principles and Applications** (2008) **Ghosh Z** and Mallick B. *Oxford University Press* (First Print: 2008; Second Print: 2009) [ISBN-9780195692303].  
 Website: [http://www.oup.co.in/search\\_detail.php?id=144561](http://www.oup.co.in/search_detail.php?id=144561).

**Chapters**

1. Ghosh Z and Mallick B (2012) Renaissance of RNA regulators. *In Ghosh/Mallick (Eds.) Regulatory RNAs: Basics, Methods and Applications, Springer-Verlag, 2011.*

**Journal Articles** (impact factors are provided in brackets)

1. Sarkar D, Maji R, Dey S, Sarkar A, **Ghosh Z** and Kundu P. Integrated miRNA and mRNA expression profiling reveals the response regulators of a susceptible tomato cultivar to early blight disease. *DNA Research* 2017 (Accepted) (IF 5.267)
2. Roy J, Sarkar A, Parida S, **Ghosh Z**, Mallick B. Small RNA sequencing revealed dysregulated piRNAs in Alzheimer's disease and their probable role in pathogenesis. *Mol Biosyst.* 2017. DOI: 10.1039/C6MB00699J. (IF 2.86)
3. Sen K, Sarkar A, Maji RK, **Ghosh Z**, Gupta S, Ghosh TC. Deciphering the cross-talking of human competitive endogenous RNAs in K562 chronic myelogenous leukemia cell line. *Mol Biosyst.* 2016;12(12):3633-3642. (IF 2.86)
4. Kundu M, Mahata B, Banerjee A, Chakraborty S, Debnath S, Ray SS, **Ghosh Z**, Biswas K. Ganglioside GM2 mediates migration of tumor cells by interacting with integrin and modulating the downstream signaling pathway. *Biochim Biophys Acta.* 2016; S0167-4889(16)30085-4. PMID: 27066976. (IF 5.128)
5. Liu J, Masurekar A, Johnson S, Chakraborty S, Griffiths J, Smith D, Alexander S, Dempsey C, Parker C, Harrison S, Li Y, Miller C, Di Y, **Ghosh Z**, Krishnan S, Saha V. Stromal cell-mediated mitochondrial redox adaptation regulates drug resistance in childhood acute lymphoblastic leukemia. *Oncotarget.* 2015; 6(40):43048-64. PMID: 26474278. (IF 6.359)
6. Halder P, Kumar R, Jana K, Chakraborty S, **Ghosh Z**, Kundu M, Basu J (2015). Gene expression profiling of *Mycobacterium tuberculosis* Lipoarabinomannan-treated macrophages: A role of the Bcl-2 family member A1 in inhibition of apoptosis in mycobacteria-infected macrophages. **IUBMB Life.** (doi: 10.1002/iub.1430) (IF 3.143)
7. Kumar M, Sahu SK, Kumar R, Subudhi A, Maji RK, Jana K, Gupta P, Raffetseder J, Lerm M, **Ghosh Z**, van Loo G, Beyaert R, Gupta UD, Kundu M, Basu J (2015). MicroRNA let-7 modulates the immune response to *Mycobacterium tuberculosis* infection via control of A20, an inhibitor of the NF- $\kappa$ B pathway. **Cell Host Microbe** 17(3):345-56 (IF 12.194)
8. Chakraborty S, Deb A, Maji R K, Saha S and **Ghosh Z** (2014). LncRBase: An Enriched Resource for lncRNA Information. **PLoS One** (DOI: 10.1371/journal.pone.0108010) (IF 3.5)
9. **Ghosh Z** and Mallick B (2014). Cancer stem cells and regulatory RNAs crosstalk: Fostering possibilities for cancer therapies. **BioScience** 64(12):1138-1149. [Advance Access: doi:10.1093/biosci/biu149] (IF 5.43)
10. Sarkar A, Maji RK, Saha S and **Ghosh Z** (2014). piRNAQuest: searching the piRNAome for silencers, *BMC Genomics* 15(1):555. [Epub ahead of print]. (IF 4.04)
11. Maji RK, Sarkar A, Khatua S, Dasgupta S and **Ghosh Z** (2014). PVT: An Efficient Computational Procedure to Speed up Next-generation Sequence Analysis. *BMC Bioinformatics* 15:167. (IF 2.67)
12. Kumar R, Halder P, Sahu SK, Kumar M, Kumari M, Jana K, **Ghosh Z**, Sharma P, Kundu M, Basu J (2012). Identification of a novel role of ESAT-6-dependent miR-155 induction during infection of macrophages with *Mycobacterium tuberculosis*. **Cell Microbiol.** 14(10):1620-1631. (IF: 5.45)
13. Hu S, Wilson KD, **Ghosh Z**, Han L, Wang Y, Lan F, Ransohoff KJ, Wu JC (2013). MicroRNA-302 increases reprogramming efficiency via repression of NR2F2. **Stem Cells.** 31(2):259-268. (IF: 7.78)
14. Mallick B, **Ghosh Z** (2012) Probing evolutionary biography of microRNAs and associated factors. **Curr Genomics.** 13(2):144-152.
15. Reddy S, Zhao M, Hu DQ, Fajardo G, Hu S, **Ghosh Z**, Rajagopalan V, Wu JC, Bernstein D (2012). Dynamic microRNA expression during the transition from right ventricular hypertrophy to failure. **Physiol Genomics.** 44(10):562-575. (IF: 2.73)
16. Mallick B, **Ghosh Z** (2011). A complex crosstalk between polymorphic microRNA target sites and AD prognosis. **RNA Biol.** 8(4):665-673. (IF: 5.56).
17. **Ghosh Z**, Huang M, Hu S, Wilson KD, Dey D, Wu JC (2011). Dissecting the oncogenic and tumorigenic potential of differentiated human induced pluripotent stem cells and human embryonic stem cells. **Cancer Res.** 71(14):5030-9. (IF: 7.85)

18. Pearl JI, Leveson-Gower DB, Lee A, Sun N, **Ghosh Z**, Negrin RS, Davis MM, Wu JC (2011) Inducing immunotolerance to pluripotent stem cells for long-term engraftment. **Cell Stem Cell** 8 (3):309-317. (IF: 25.421).
19. Li Z, Hu S, **Ghosh Z**, Han Z, Wu JC (2011). Functional comparison and expression profiling of human induced pluripotent stem cell- and embryonic stem cell-derived endothelial cells. **Stem Cells Dev.** 2011 Jan 14. [Epub ahead of print] PMID: 21235328. (IF: 4.146).
20. Mallick B, Chakrabarti J, **Ghosh Z** (2011) microRNA reins in embryonic and cancer stem cells. **RNA Biol.** 8(3):415-426. (IF: 5.56).
21. Hu S, Huang M, Li Z, Jia F, **Ghosh Z**, Lijkwan MA, Fasanaro P, Sun N, Wang X, Martelli F, Robbins RC, Wu JC (2010) MicroRNA-210 as a novel therapy for treatment of ischemic heart disease. **Circulation** 122(11 Suppl): S124-S31. (IF: 14.81).
22. Wilson KD, Hu S, Venkatasubrahmanyam S, Fu JD, Sun N, Abilez OJ, Baugh JJ, Jia F, **Ghosh Z**, Li RA, Butte AJ, Wu JC (2010) Dynamic microRNA expression programs during cardiac differentiation of human embryonic stem cells: role for miR-499. **Circ Cardiovasc Genet** 3(5): 426-435.
23. **Ghosh Z**, Wilson KD, Wu Y, Hu S, Quertermous T, Wu JC (2010) Persistent donor cell gene expression among human induced pluripotent stem cells contributes to differences with human embryonic stem cells. **PLoS One** 5(2): e8975. (IF: 4.35).
24. **Ghosh Z**, Mallick B, Gautheret D, Malhotra P, Sachidanandam R (2009) Regulatory RNomics and gene expression. **J Biomed Biotechnol**: 691286. [Editorial]
25. **Ghosh Z**, Mallick B, Chakrabarti J (2009) MicroRNome analysis unravels the molecular basis of SARS infection in bronchoalveolar stem cells. **PLoS One** 4(11): e7837. (IF: 4.35).
26. **Ghosh Z**, Mallick B, Chakrabarti J (2009) Cellular versus viral microRNAs in host-virus interaction. **Nucleic Acids Res.** 37(4): 1035-48. (IF: 8.026).
27. Mallick B, **Ghosh Z**, Chakrabarti J (2008) Structural determinants characteristic to AARS subclasses and tRNA-splicing endonuclease in eukaryotes. **J Biomol Struct Dyn.** 26(2): 223-34.
28. **Ghosh Z**, Mallick B, Chakrabarti J (2008) MicroRNA switches in *Trypanosoma brucei*. **Biochem Biophys Res Commun.** 372(3): 459-463. [Faculty 1000 Biology recommended]. (IF: 2.54).
29. Koehrer C, Srinivasan G, Mandal D, Mallick B, **Ghosh Z**, Chakrabarti J, Rajbhandary UL (2008) Identification and characterization of a tRNA decoding the rare AUA codon in *Haloarcula marismortui*. **RNA.** 14(1): 117-126. [Appeared on Cover page]. (IF: 5.19).
30. **Ghosh Z**, Chakrabarti J, Mallick B (2007) miRNomics-The bioinformatics of microRNA genes. **Biochem Biophys Res Commun.** 363(1): 6-11. (IF: 2.54).
31. Mallick B, Chakrabarti J, Sahoo S, **Ghosh Z**, Das S (2005) Identity elements of archaeal tRNA. **DNA Res.** 12(4): 235-246. (IF: 4.91).
32. **Ghosh Z**, Chakrabarti J, Mallick B, Das S, Sahoo S, Sethi HS (2006) tRNA-isoleucine-tryptophan composite gene. **Biochem Biophys Res Commun.** 339(1): 37-40. (IF: 2.54).
33. Das S, Chakrabarti J, **Ghosh Z**, Sahoo S, Mallick B (2005) A new measure to study phylogenetic relations in the brown algal order Ectocarpales: the 'codon impact parameter'. **J Biosci.** 30(5): 699-709. (IF: 1.70).

### **Conference Publications**

1. Ghosh Z (2012) Oncogenic potential of Stem Cell Derivatives- A road map towards safer regenerative therapy. **2<sup>nd</sup> International conference on perspectives of cell signaling and molecular medicine**, Bose Institute Kolkata.
2. **Ghosh Z**, Wilson KD, Wu Yi, Hu S, Quertermous T, and Wu JC (2010) Donor cell memory in human induced pluripotent stem cells. **International Society for Stem Cell Research 8th Annual Meeting** Sanfrancisco CA USA.

3. Mallick B, **Ghosh Z** and Chakrabarti J (2009) MicroRNAs in SARS-CoV Infection. **4<sup>th</sup> Medical Biotech Forum** (Theme: Translating Bio-Innovations into Industrialization), China.
4. Mallick B, **Ghosh Z** and Chakrabarti J (2008) MicroRNA Detection and Target Prediction in *Trypanosoma brucei*. **Proceedings of 2008 Miami Winter Symposium "Regulatory RNA in Biology and Human Health"-2008**. Volume 19, p-96.
5. **Ghosh Z**, Mallick B and Chakrabarti J (2008) Role of microRNA Regulators in Trypanosomiasis. **Proceedings of 2008 Miami Winter Symposium "Regulatory RNA in Biology and Human Health"-2008**. Volume 19, p-117.
6. **Ghosh Z**, Mallick B and Chakrabarti J (2008) Modulatory effects of RNA regulators on a complex system of host-parasite interaction in protozoal parasites. **Complex System 2008 "Complexity of Living Systems"**, March 2008, p-45.
7. **Ghosh Z**, Mallick B and Chakrabarti J (2007) MicroRNA Regulators in *Trypanosoma brucei*. **Indo-French Conference on 'RNAi in Genome Control'**, 2007. p-51.
8. Mallick B, **Ghosh Z** and Chakrabarti J (2007) microRNA identification in parasitic model organism. **Indo-French Conference on 'RNAi in Genome Control'**, 2007. p-59.
9. Mallick B, Ghosh Z, Chakrabarti J, Das S and Sahoo S (2007) Identity determinants for AARS and intron-splicing-endonucleases. **International Conference on Chromosomes to Neurons (ICCTN)**, 2007. p-37.
10. **Ghosh Z**, Mallick B, Chakrabarti J, Das S and Sahoo S (2007) New Proline-tRNA gene in *Methanococcus jannaschii*. **International Conference on Chromosomes to Neurons (ICCTN)**, 2007. p-58.
11. Köhrer C, Srinivasan G, Mandal D, **Ghosh Z**, Chakrabarti J and RajBhandary UL (2006) Alternative splicing of tRNA gene transcripts in archaea? Search for a tRNA corresponding to the rare isoleucine codon AUA in *Haloarcula marismortui*. **AARS2006, International Conference on Aminoacyl-tRNA Synthetases: From the Genetic Code to Human Diseases and Medicine**, San Diego, CA, USA, 2006.
12. Mallick B, **Ghosh Z**, Chakrabarti J, Das S and Sahoo S (2006) Substrate identities for tRNA-splicing-Endonucleases and AARS in Eukaryotes. **International Conference on Bioinformatics (InCoB 2006)**. p-161.
13. Das S, Sahoo S, Chakrabarti J, **Ghosh Z** and Mallick B (2006) tRNAs of nonstandard amino acids in *Sulfolobus acidocaldarius*. **International Conference on Bioinformatics (InCoB 2006)**. p-274.
14. Sahoo S, Mallick B, **Ghosh Z**, Das S and Chakrabarti J (2005) tRNA-scape in archaea. **21<sup>st</sup> International tRNA Workshop**, December 2005. p-168.
15. Mallick B, Chakrabarti J, **Ghosh Z**, Das S (2005) Bioinformatic identification of tRNA genes. **Workshop on Knowledge Discovery in Life Science-Bioinformatics Approaches**, March 16-18, 2005.
16. Chakrabarti J, Mallick B, **Ghosh Z**, Sahoo S and Das S (2004) Non-canonical introns in tRNA genes of archaea. **2<sup>nd</sup> RNA Group Meeting**, Dec 21-22, 2004.
17. Das S, **Ghosh Z**, Chakrabarti J, Sahoo S and Mallick B (2004) Codon Impact Parameter (CIP) scores. **Bioinformatics for Genome Analysis**, Jan 29-30, 2004.

### **Scientific Reports**

1. Mallick B and **Ghosh Z** (2007) RNAi-Silence even can speak further beyond.....**Advanced Biotech** 6(4), 31-34.
2. **Ghosh Z**, Mallick B and Chakrabarti J (2007). RNAi bioinformatics. **Bioinformatika** 2, 19-22.
3. Mallick B and **Ghosh Z** (2006) Bioinformatics-The rising sun. **Science Cruiser** 20(1), 44-50.
4. Mallick B and **Ghosh Z** (2006) Bio-Informatics, the soaring tide in the ocean of Biotechnology. **Advanced Biotech** 5(5), 23-29.

#### **D. Research Support**

A. Sanctioned projects:

1. Title of the project: Micro-regulatory networks in leukemia stem cells  
*Sponsor*: DBT, Govt. of India (2013-2016); *Principal Investigator*: Dr. Zhumur Ghosh
  
2. Title of the project: Epigenetic alteration inducing oncogenicity in stem cell derivatives  
*Principal Investigator*: Dr. Zhumur Ghosh
  
3. Title of the project: Systematic identification of regulatory networks in pluripotent cells  
intrigating coding and noncoding world  
*Principal Investigator*: Dr. Zhumur Ghosh and Dr. Sudipto Saha