

PROFORMA - 2



UNIVERSITY OF CALCUTTA

Re : Updating University Website

ACADEMIC DEPARTMENT

FACULTY ACADEMIC PROFILE/ CV

1. **Full name of the faculty member:** Dr. Gopal Chakrabarti
2. **Designation:** Head and Assistant Professor
3. **Specialisation :** Protein structure-function, Biophysical Chemistry, and Cancer Cell Biology
4. **Passport size photograph :**



5. **Contact information :**
Department of Biotechnology and Dr.B.C. Guha Centre for Genetic Engineering And Biotechnology, University of Calcutta, 35 Ballygunge Circular Road, Kolkata, WB 700 019, India.
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Email :gbcg@caluniv.ac.in; gopal_chakrabarti@yahoo.co.in
6. **Academic qualifications:**
Please mention here the degrees (graduation onward):

College/ university from which the degree was obtained	Abbreviation of the degree
Department of Chemistry (Organic Chemistry), University of Calcutta	M.Sc.
Bose Institute-Jadavpur University	Ph.D.

7. **Positions held/ holding:**

Feb,1997 - April,2000 : Post-Doctoral Research

Dept. of Molecular Biosciences, University of Kansas, USA.

June, 2000-November, 2003: Senior Post-Doctoral Research Associate,

Dept. of Molecular Physiology and Biophysics, University of Vermont,
Burlington, USA.

Dec., 2003-Nov., 2007: Lecturer, Department of Biotechnology, Univ. of Calcutta

Dec. 2007-Nov, 2012 : Senior Lecturer, Department of Biotechnology, Univ. of Calcutta

Dec. 2017-Present: Assistant Professor (stage-3), Department of Biotechnology, Univ. of Calcutta.

8. **Research interests:**

- Development of anti-tumor agent from natural compounds targeting tubulin-microtubule system, a major cytoskeleton protein.
- Investigation of mechanism of drug-resistance in cancer and development of its therapeutic implication
- Tubulin-Microtubule is the prime target for various environmental pollutants and toxicants in cell
- Study of bacterial cytoskeleton protein FtsZ (*V. cholerae*) and its associated proteins for development of antibacterial agents:

9. **Research guidance :**

Number of researchers awarded M.Phil/ Ph.D degrees : 6 (Ph.D.), 1 (MDS-Oral Pathology)

Number of researchers pursuing M.Phil/ Ph.D : 7 (Ph.D.)

10. **Projects :**

Completed projects :

Sno.	Title of Project	Funding Agency	From Date	To Date	Approved Cost
1	Expression of mammalian tubulin in baculovirus-insects cell system and the elucidation of the mechanism of resistance to some anti-tumor drugs.	CSIR, Govt. of India	07/01/2005	12/31/2008	16.73 lacs
2	Expression of plasmodium falciparum tubulin in baculovirus-insect cell system for development of anti-malarial drug .	BRNS/ DAE, Govt. of India	07/01/2007	06/30/2009	14.92 lacs

3	Investigation of role of tubulin isotypes using expressed individual isotype	DST, Govt. of India	04/01/2009	03/31/2012	34.50 lacs
4	Investigation of Role of miRNA in Tubulin-Microtubule Targeting Drug Resistance Cancer Cells and its Therapeutic Implications	DBT, Govt. of India	06/16/2010	06/15/2013	63. 44 lacs
5.	Production and characterization of a tubulin-microtubule targeting anti-cancer drug paclitaxel loaded solid lipid nano-particle for delivery through oral route	Centre for Research in Nanoscience and Nanotechnology, University of Calcutta.	27-10-2009	26-10-2010	20 lacs

Current projects :

1.	Targeted drug development: screening of compounds against major cell division protein FtsZ and its associated protein FtsA of <i>V. cholerae</i> for development of novel lead compound against cholera	DBT, Govt of West Bengal	Recommended		26 lacs
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11. Select list of publications:

1. Acharya, B. R., Bhattacharyya, B., & **Chakrabarti, G.** (2008). The natural naphthoquinone plumbagin exhibits antiproliferative activity and disrupts the microtubule network through tubulin binding. *Biochemistry*, 47(30), 7838-7845. doi: 10.1021/bi800730q
2. Das, A., Sinha, S., Acharya, B. R., Paul, P., Bhattacharyya, B., & **Chakrabarti, G.** (2008). Deuterium oxide stabilizes conformation of tubulin:a biophysical and biochemical study. *BMB Rep*, 41(1), 62-67.

3. Acharya, B. R., Choudhury, D., Das, A., & **Chakrabarti, G.** (2009). Vitamin K3 disrupts the microtubule networks by binding to tubulin: a novel mechanism of its antiproliferative activity. *Biochemistry*, *48*(29), 6963-6974. doi: 10.1021/bi900152k
4. Bandhu, A., Ganguly, T., Chanda, P. K., Das, M., Jana, B., **Chakrabarti, G.**, & Sau, S. (2009). Antagonistic effects Na⁺ and Mg²⁺ on the structure, function, and stability of mycobacteriophage L1 repressor. *BMB Rep*, *42*(5), 293-298.
5. Das, A., Bhattacharya, A., & **Chakrabarti, G.** (2009). Cigarette smoke extract induces disruption of structure and function of tubulin-microtubule in lung epithelium cells and in vitro. *Chem Res Toxicol*, *22*(3), 446-459. doi: 10.1021/tx8002142
6. Chanda, P. K., Bandhu, A., Jana, B., Mondal, R., Ganguly, T., Sau, K., **Chakrabarti, G.**, Sau, S. (2010). Characterization of an unusual cold shock protein from Staphylococcus aureus. *J Basic Microbiol*, *50*(6), 519-526. doi: 10.1002/jobm.200900264
7. Das, A., Chakrabarty, S., Choudhury, D., & **Chakrabarti, G.** (2010). 1,4-Benzoquinone (PBQ) induced toxicity in lung epithelial cells is mediated by the disruption of the microtubule network and activation of caspase-3. *Chem Res Toxicol*, *23*(6), 1054-1066. doi: 10.1021/tx1000442
8. Mukherjee, S., Acharya, B. R., Bhattacharyya, B., & **Chakrabarti, G.** (2010). Genistein arrests cell cycle progression of A549 cells at the G(2)/M phase and depolymerizes interphase microtubules through binding to a unique site of tubulin. *Biochemistry*, *49*(8), 1702-1712. doi: 10.1021/bi901760d
9. Choudhury, D., Das, A., Bhattacharya, A., & **Chakrabarti, G.** (2010). Aqueous extract of ginger shows antiproliferative activity through disruption of microtubule network of cancer cells. *Food Chem Toxicol*, *48*(10), 2872-2880. doi: 10.1016/j.fct.2010.07.020
10. Chakrabarty, S., Das, A., Bhattacharya, A., & **Chakrabarti, G.** (2011). Theaflavins depolymerize microtubule network through tubulin binding and cause apoptosis of cervical carcinoma HeLa cells. *J Agric Food Chem*, *59*(5), 2040-2048. doi: 10.1021/jf104231b
11. Chakraborti, S., Das, L., Kapoor, N., Das, A., Dwivedi, V., Poddar, A., **Chakrabarti, G.**, Bhattacharyya, B. (2011). Curcumin recognizes a unique binding site of tubulin. *J Med Chem*, *54*(18), 6183-6196. doi: 10.1021/jm2004046
12. Acharya, B. R., Bhattacharyya, S., Choudhury, D., & **Chakrabarti, G.** (2011). The microtubule depolymerizing agent naphthazarin induces both apoptosis and autophagy in A549 lung cancer cells. *Apoptosis*, *16*(9), 924-939. doi: 10.1007/s10495-011-0613-1
13. Deb, T., Choudhury, D., Guin, P. S., Saha, M. B., **Chakrabarti, G.**, & Das, S. (2011). A complex of Co(II) with 2-hydroxyphenyl-azo-2'-naphthol (HPAN) is far less cytotoxic than the parent compound on A549-lung carcinoma and peripheral blood mononuclear cells: Reasons for reduction in cytotoxicity. *Chem Biol Interact*, *189*(3), 206-214. doi: 10.1016/j.cbi.2010.11.007
14. Das, A., Choudhury, D., Chakrabarty, S., Bhattacharya, A., & **Chakrabarti, G.** (2012). Acenaphthenequinone induces cell cycle arrest and mitochondrial apoptosis via disruption of cellular microtubules. *Toxicology Research*, *1*(3), 171-185. doi: Doi 10.1039/C2tx00013j
15. Choudhury, D., Ganguli, A., Dastidar, D. G., Acharya, B. R., Das, A., & **Chakrabarti, G.** (2013). Apigenin shows synergistic anticancer activity with curcumin by binding at different sites of tubulin. *Biochimie*, *95*(6), 1297-1309. doi: 10.1016/j.biochi.2013.02.010
16. Choudhury, D., Xavier, P. L., Chaudhari, K., John, R., Dasgupta, A. K., Pradeep, T., & **Chakrabarti, G.** (2013). Unprecedented inhibition of tubulin polymerization directed by gold nanoparticles inducing cell cycle arrest and apoptosis. *Nanoscale*, *5*(10), 4476-4489. doi: 10.1039/c3nr33891f

17. Das, A., Bhattacharya, A., Chakrabarty, S., Ganguli, A., & **Chakrabarti, G.** (2013). Smokeless tobacco extract (STE)-induced toxicity in mammalian cells is mediated by the disruption of cellular microtubule network: a key mechanism of cytotoxicity. *PLoS One*, *8*(7), e68224. doi: 10.1371/journal.pone.0068224
18. Sarkar, K., Chatterjee, A., **Chakrabarti, G.**, & Kundu, P. P. (2013). Blood compatible N-maleyl chitosan-graft-PAMAM copolymer for enhanced gene transfection. *Carbohydr Polym*, *98*(1), 596-606. doi: 10.1016/j.carbpol.2013.06.035
19. Bhattacharya, S., Kumar, N. M., Ganguli, A., Tantak, M. P., Kumar, D., & **Chakrabarti, G.** (2013). NMK-TD-100, a novel microtubule modulating agent, blocks mitosis and induces apoptosis in HeLa cells by binding to tubulin. *PLoS One*, *8*(10), e76286. doi: 10.1371/journal.pone.0076286
20. Chakrabarti, S., Dhar, G., Dwivedi, V., Das, A., Poddar, A., **Chakrabarti, G.**, Bhattacharyya, B. (2013). Stable and potent analogues derived from the modification of the dicarbonyl moiety of curcumin. *Biochemistry*, *52*(42), 7449-7460. doi: 10.1021/bi400734e
21. Polley, S., Jana, B., **Chakrabarti, G.**, & Sau, S. (2014). Inhibitor-Induced Conformational Stabilization and Structural Alteration of a Mip-Like Peptidyl Prolyl cis-trans Isomerase and Its C-Terminal Domain. *PLoS One*, *9*(7), e102891. doi: 10.1371/journal.pone.0102891
22. Acharya, B. R., Chatterjee, A., Ganguli, A., Bhattacharya, S., & **Chakrabarti, G.** (2014). Thymoquinone inhibits microtubule polymerization by tubulin binding and causes mitotic arrest following apoptosis in A549 cells. *Biochimie*, *97*, 78-91. doi: 10.1016/j.biochi.2013.09.025
23. Ganguli, A., Choudhury, D., & **Chakrabarti, G.** (2014). 2,4-Dichlorophenoxyacetic acid induced toxicity in lung cells by disruption of the tubulin-microtubule network. *Toxicology Research*, *3*(2), 118-130. doi: 10.1039/C3tx50082a
24. Chatterjee, A., Chattopadhyay, D., & **Chakrabarti, G.** (2014). miR-17-5p downregulation contributes to paclitaxel resistance of lung cancer cells through altering beclin1 expression. *PLoS One*, *9*(4), e95716. doi: 10.1371/journal.pone.0095716.
25. Chatterjee, A., & **Chakrabarti, G.** (2014). Dimethyl sulphoxide and Ca stimulate assembly of Vibrio cholerae FtsZ. *Biochimie*, *105*, 64-75. doi: 10.1016/j.biochi.2014.06.013.
26. Chatterjee A, Chattopadhyay D, and **Chakrabarti G.** (2015) miR-16 targets Bcl-2 in paclitaxel-resistant lung cancer cells and overexpression of miR-16 along with miR-17 causes unprecedented sensitivity by simultaneously modulating autophagy and apoptosis. *Cell Signal* *27*, 189-203.
27. Chakrabarty S, Ganguli A, Das A, Nag D, and **Chakrabarti G.** (2015) Epigallocatechin-3 gallate shows anti-proliferative activity in HeLa cells targeting tubulin-microtubule equilibrium. *Chem-Biol Int.* *214*, 380-389.
28. Bhattacharya S, Das A, Datta S, Ganguli A and **Chakrabarti, G.** (2016) Colchicine induces autophagy and senescence in lung cancer cells at clinically admissible concentration: potential use of colchicine in combination with autophagy inhibitor in cancer therapy. *Tumor Biology* DOI 10.1007/s13277-016-4972-7, published online Feb 11, 2016.
29. Ganguli A, Das A, Nag D, Bhattacharya S, and **Chakrabarti, G.**, (2016) Potential role of autophagy in smokeless tobacco extract-induced cytotoxicity and in morin-induced protection in oral epithelial cells. *Food and Chem Toxici* *90*, 160-170.

30. Das Mukherjee D, Maruthi K N, Tantak M K, Das A, Ganguli A, Datta S , Kumar D, and Chakrabarti, G (2016) *Biochemistry*, published online 25th April, 2016.

12. **Membership of Learned Societies:**

- i) Life Member, Indian Science Congress.
- ii) Life Member, Society of Biological Chemists, India

13. **Patents :**

14. **Invited lectures delivered :**

- Invited speaker in a symposium “Recent Trends in Biotechnology” On March 27, 2006 at Biotechnology Department, Haldia Institute of Technology, Haldia, WB.
- Invited speaker in a symposium on “Global Challenges In Biology: The Journey From genes To Diseases”, on December 18, 2009, West Bengal State University.
- Invited speaker in “Second World Congress in Cancer 2010 (WCC-2010)”, 3-5th Sept., 2010, At Kottayam, Kerala.
- Invited speaker in “International Conference on Chemistry of Phytochemicals: Health, Energy and Environmental Perspective” Nov. 4-6, 2011 at Agra.
- Invited speaker in “3rd International Cancer Research Symposium” , 18-21 December, 2012, Swiss Hotel, Kolkata.
- Delivered a talk in The 73rd Annual Meeting of the Japanese Cancer Association held from September 25 to 27, 2014 in Yokohama, Japan.

15. **Awards :**

16. **Other notable activities :**

- **Act as a group leader for Biomedical Sciences group** (Drug development and nano-based drug drug delivery) DBT- Calcutta University Interdisciplinary Life Science Programme (2010-2017) , 13.5 Crores (Total Grant).
- **Reviewer Job:** Act as a reviewer of manuscript from International Journals: *Nanomedicine* (Elsevier), *Bioorganic and Biomedical Chemistry* (Elsevier), *BBA* (Elsevier), *ABB* (Elsevier), *Journal of Ethnopharmacology* (Elsevier), *ACS Nano and J. Medicinal chemistry* (American Chemical Society), *Food and Chemical Toxicology* (Elsevier), *Toxicology letters* (Elsevier), *Ecotoxicity and Environment safety* (Elsevier), *Physical review and Research International* (Science Domain International), *Scientific Reports* (Nature Group), *PLoS ONE*, *Tumor Biology* (Springer), *J. Cellular Biochemistry* (Wiley), *BMC Biochemistry* (BMC Group), *BMC Cancer* (BMC group), *Oncotarget* (nature group)

Signature of the faculty member

Date: