

SUBHENDU CHAKRABARTY, *Ph.D.*

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PRESENT POSITION

Assistant Professor & In-Charge

Department of Microbiology

M.U.C. Women's College (Affiliated to The University of Burdwan)

Burdwan, India-713104.

ACADEMIC DETAILS

2018 – 2020 **Research Associate**, Department of Biotechnology, University of Calcutta.
2009 – 2018 **Ph.D. (Biotechnology)** from University of Calcutta.
2007 – 2009 UGC-UPE Research Fellow of Department of Biotechnology, University of Calcutta.
2004 – 2006 **M.Sc. (Microbiology)** from University of Calcutta.
2001 – 2004 **B.Sc. (Honours in Microbiology)** from University of Calcutta.

Others:

2007 **NET** (National Eligibility Test) in Life Sciences.
2007 **GATE** (Graduate Aptitude Test in Engineering) in Life Science.
2019 **Post-doctoral fellowship** from Texas Tech University Health Science Center, Texas, USA.

RESEARCH EXPERIENCE

Present Research: My present research focuses on how microtubule targeted anticancer compounds regulate cellular autophagy in cancer cells. Initially we observed in our lab that some natural and synthetic microtubule inhibitors induce autophagic cell death in cancer cells like cervical, lung, breast cancer cells. Thus management of cellular autophagy can be a therapeutic target for cancer prevention. I found that these compounds induce death promoting autophagy by inhibiting PI3K/Akt/mTOR pathway. Based on these observations I intrigued to investigate novel microtubule inhibitors in promoting cellular autophagy leading to cancer cell death and the role of PI3K/Akt/mTOR signaling in it. Furthermore, I am also investigating the effect of these microtubule inhibitors on epithelial to mesenchymal transition (EMT) and cancer stemness in metastatic breast and lung cancer models.

Ph.D. Research: Research work for Ph.D. degree done at University of Calcutta in the Department of Biotechnology under the supervision of *Dr. Gopal Chakrabarti*.
(2009 – 2018) My Ph.D. research focused on screening of natural and synthetic anticancer compounds which inhibit tubulin-microtubule dynamics as potential target in cancer cells. I have investigated the interaction of novel compounds with tubulin-microtubule system both in cells and in cell free system and studied related signaling pathways leading to cancer cell apoptosis.

Title of Thesis: ***“Study of Interaction of Tea Polyphenols with Tubulin-Microtubule System for the Development of Potential Microtubule Inhibitors in Cervical Cancer Cells.”***

Instruments &
Techniques
Handled :

- Cell culture techniques, *in vivo* cancer models in Mouse, Cancer Stem Cell culture
- Microscopy (Phase contrast, Fluorescence, Confocal)
- Flow Cytometer based assays of cellular apoptosis and autophagy
- SDS-PAGE, Western Blot, Immunohistochemistry, Ultra-centrifuge, TLC
- Enzyme assays by spectroscopic methods
- Ligand-Protein interactions by Spectroscopic methods (Absorbance and Fluorescence)
- Isothermal Titration Calorimetry (ITC)
- Determination of Kinetic and Thermodynamic parameters of Ligand-Protein binding by Fluorescence spectroscopic methods.

PUBLICATIONS

Selected Research Articles:

- Saraffin RS, Bhattacharjee A, Kar B, Kapuria A, Ghosh M, Chakrabarty S, Chakrabarti G, Dutta K. Schottky-junction plasmonic nanocomposite: A non-hazardous excellent visible light photocatalyst for industrial waste management. ***Journal of Molecular Structure*** 2024 January; 1295(1): 136733. doi: 10.1016/j.molstruc.2023.136733. [Thomson Reuter Impact factor **3.84**]
- Das A[#], Chakrabarty S[#], Nag D, Paul S, Ganguli A, Chakrabarti G. Heavy water (D₂O) induces autophagy-dependent apoptotic cell death in non-small cell lung cancer A549 cells by generating reactive oxygen species (ROS) upon microtubule disruption. ***Toxicology In Vitro*** 2023 December; 93: 105703. doi: 10.1016/j.tiv.2023.105703. (# Equal contribution). [Thomson Reuter Impact factor **3.2**]
- Paul S, Chakrabarty S, Ghosh S, Nag D, Das A, Dastidar DG, Dasgupta M, Dutta N, Kumari M, Pal M, Chakrabarti G. Targeting cellular microtubule by phytochemical apocynin exhibits autophagy-mediated apoptosis to inhibit lung carcinoma progression and tumorigenesis. ***Phytomedicine***. 2019 Dec 19; 67:153152. doi: 10.1016/j.phymed.2019.153152. [Thomson Reuter Impact factor **7.9**]
- Das A, Narayanam MK, Paul S, Mukherjee P, Ghosh S, Dastidar DG, Chakrabarty S, Ganguli A, Basu B, Pal M, Chatterjee U, Banerjee SK, Kumar D, Chakrabarti G. A novel triazole NMK-T-057 induces autophagic cell death in breast cancer cells by inhibiting γ -secretase-mediated activation of Notch-signaling. ***Journal of Biological Chemistry*** 2019 Apr 26;294(17):6733-6750. doi: 10.1074/jbc.RA119.007671. [Thomson Reuter Impact factor **5.48**]
- Chakrabarty S, Nag D, Ganguli A, Das A, Dastidar DG, Chakrabarti G. Theaflavin and Epigallocatechin-3-gallate Synergistically Induce Apoptosis Through Inhibition of PI3K/Akt Signaling Upon Depolymerizing Microtubules in HeLa Cells. ***Journal of Cellular Biochemistry*** 2019 Apr;120(4):5987-6003. doi: 10.1002/jcb.27886. [Thomson Reuter Impact factor **4.48**]
- Joshi RS, Mukherjee DD, Chakrabarty S, Martin A, Jadhao M, Chakrabarti G, Sarkar A, Ghosh SK. Unveiling the Potential of Unfused Bichromophoric Naphthalimide to Induce Cytotoxicity by Binding to Tubulin: Breaks Monotony of Naphthalimides as Conventional Intercalators. ***Journal of Physical Chemistry B*** 2018 Apr 12;122(14):3680-3695. doi: 10.1021/acs.jpcc.7b10429. [Thomson Reuter Impact factor **3.46**]

- Chakrabarty S, Ganguli A, Das A, Nag D, Chakraborti G. Epigallocatechin-3-gallate shows anti proliferative activity in HeLa Cells targeting tubulin-microtubule equilibrium. ***Chemico-Biological Interactions*** 2015 Nov 7; 242: 380-389.
doi: 10.1016/j.cbi.2015.11.004. [Thomson Reuter Impact factor **5.19**]
- Das A, Bhattacharya A, Chakrabarty S, Ganguli A, Chakrabarti G. 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***. 2013 Jul 11; 8(7).
doi: 10.1371/journal.pone.0068224. [Thomson Reuter Impact factor **3.7**]
- Das A, Choudhury D, Chakrabarty S, Bhattacharya A, Chakrabarti G. Acenaphthenequinone induces cell cycle arrest and mitochondrial apoptosis *via* disruption of cellular microtubules. ***Toxicology Research*** 2012 Jun 24, 1, 171-185.
doi: 10.1039/C2TX00013J. [Thomson Reuter Impact factor **2.6**]
- Chakrabarty S, Das A, Bhattacharya A, Chakrabarti G. Theaflavins depolymerize microtubule network through tubulin binding and cause apoptosis of cervical carcinoma HeLa cells. ***Journal of Agricultural & Food Chemistry*** 2011 Mar 9; 59(5):2040-8.
doi: 10.1021/jf104231b. [Thomson Reuter Impact factor **6.2**]
- Das A, Chakrabarty S, Choudhury D, Chakrabarti G. 1,4-Benzoquinone (PBQ) induced toxicity in lung epithelial cells is mediated by the disruption of the microtubule network and activation of caspase-3. ***Chemical Research in Toxicology*** 2010 Jun 21; 23(6):1054-66.
doi: 10.1021/tx1000442. [Thomson Reuter Impact factor **4.1**]

Book Chapters:

- Chowdhury SR[#], **Chakrabarty S[#]**, Chakraborti M, Das A. Impacts of viral pathogenesis and vaccine immunization on the host humoral immune response in SARS-CoV-2 and associated variants of concern (VOCs) infection (chapter 22) of Book titled 'Viral, Parasitic, Bacterial, And Fungal Infections'. ***Academic Press (Elsevier)*** 2023. (# contributed equally).
- Das A, Paul S, **Chakrabarty S**, Dasgupta M, Chakrabarti G. 'Microtubule Targeting Agents Induced ROS-Mediated Apoptosis In Cancer' of Book Title 'Handbook Of Oxidative Stress And Cancer: Mechanistic Aspects'. ***Springer Publication*** 2021.

TEACHING EXPERIENCE

2016 – present	Assistant Professor (Stage II), Department of Microbiology, M.U.C. Women's College, Burdwan, India- 713104.
2010 – 2016	Assistant Professor (Stage I), Department of Microbiology, M.U.C. Women's College, Burdwan, India- 713104.
2006 – 2010	Guest Lecturer, Department of Microbiology, Ramakrishna Mission Vidyamandira, Belur Math, India-711202.

Academic duties:

- Member of UGBS (Biochemistry) of The University of Burdwan.
- Conducting examinations as Chairman /convener of Microbiology courses at UG level.
- Teaching Microbiology, Molecular Biology, Immunology, Biochemistry and Biophysics Courses as per academic curriculum of The University of Burdwan.
- Examiner of both theory and Practical Examinations of University of Burdwan.
- External Examiner at Vidyasagar University, Ramakrishna-Vivekananda University and TECHNO University.
- Paper setter for University Examinations of undergraduate level.

Administrative duties:

- Head of the Department of Microbiology (2010 – 2014 and 2018 – present).
- Convener of 'Purchase Committee' (from July 2021 to June 2023) of the institution.
- Convener of 'Service Book' (since 2013) committee of the institution.
- Convener of 'Fixation & HRMS' committee of the institution.
- Convener of 'Lab committee (Infrastructure & Upgradation)' of the institution.
- Member of 'CAS & Promotion' committee.

INTERNATIONAL CONFERENCES ATTENDED

- Presented scientific research poster in International Conference on Drug Discovery organized by Schrodinger at BITS Pilani, KK Birla Goa Campus during 10-11 November, 2022.
- Presented research paper in 14th The Cytometry Society Annual Conference, organized at University of Hyderabad during 15-16 October 2022.
- Presented e-Poster in 13th Annual Conference-cum-Workshop of The Cytometry Society TCS-2021, organized by PGIMER, Chandigarh during 22-23 October 2021.
- Presented scientific paper in 4th Global cancer Summit International Collaborative Conference held virtually from Biogenesis Health Cluster Bangalore on 24th April 2021.
- Presented research poster in '37th Annual Convention of Indian Association for Cancer Research (IACR) held at Bose Institute, Kolkata during February 23-25, 2018.
- Presented research poster in "3rd International Conference on Perspective of Cell Signaling & Molecular Medicine" held at Bose Institute, Kolkata, India, during January 8-10, 2017.
- Presented research poster in '35th Annual Convention of Indian Association for Cancer Research' & '12th International Conference of Asian Clinical Oncology Society' held at The Hotel Ashok, New Delhi, during April 8-10, 2016.
- Presented research poster in 'Global Cancer Summit 2015' held at Indian Institute of Science (IISc), Bangalore, during November 18-20, 2015.
- Presented research poster in '30th Annual Convention of Indian Association for Cancer Research and International Symposium on Signaling Network and Cancer' held at Indian Institute of Chemical Biology, Kolkata, during February 6-9, 2011.
- Presented poster in 'the International Conference on Perspectives of Cell Signaling and Molecular Medicine' held at Bose Institute, Kolkata, during November, 27-29, 2008.

PROJECTS PERFORMED

- “Single Nucleotide Polymorphism (SNP) of Toll-Like Receptor-9 (*tlr-9*) gene in different population of India.”
Duration: 6 months (June, 2005-December, 2005)
Supervisor: Dr. Keya Chaudhuri
Institute: Indian Institute of Chemical Biology (IICB), Kolkata.

PERSONAL DETAILS

Date of Birth 2nd January, 1983.
Permanent Address R-6/2, Prantika Sarkari Abasan, Sarangabad, Budge Budge, Kolkata, India-700137.
Languages Known English, Hindi & Bengali.