



1.1 Name: **Dr. Kuladip Jana**

M.Sc., M.S., Ph.D., Postdoc. (U.S.A.), FRE, FSASS, FNESA, FARAI, FIARA

1.2 Designation and Department/Division:

Scientist-F [Equivalent to Professor]

Department of Biological Sciences

Scientist In-Charge, Centre for Translational Animal Research (CTAR)

Bose Institute, EN 80, Sector-V, Salt Lake City, Kolkata-700 091, India.

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2. Date of birth: 3rd day of April, 1975.

3. Full details of Academic qualifications: (Bachelor's degree onwards with awarding University/Institute, year, specialization, if any):

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|-------------|---|
| 1996 | B.Sc. (Hons), Physiology (major), Zoology & Botany (minor), Vidyasagar University, Midnapur, West Bengal, India, 1st class. |
| 1998 | M.Sc., Human Physiology with Community Health (specialization: Immunology & Microbiology), Vidyasagar University, Midnapur, West Bengal, India, 1st class. |
| 2004 | Ph.D., in Physiology (Reproductive Toxicology, Endocrinology & Drug Development) from Vidyasagar University, Midnapur, West Bengal. |
| 2006 | Post-doctorate in Drug Development & Aging from Garrison Institute of Aging, Texas Tech University of Health Sciences Centre, Texas, USA. |
| 2024 | Pursuing D.Sc. (Science) in "The Molecular Interplay in Reactive Oxygen Species (ROS), Mitochondrial Dysfunctions and Apoptosis with Natural Product Derived Small Molecules in Health and Diseases (Jadavpur University). |

Professional Course: M.S. in Psychotherapy & Counselling from the Institute of Psychotherapy & Management Sciences, Mumbai, 2005.

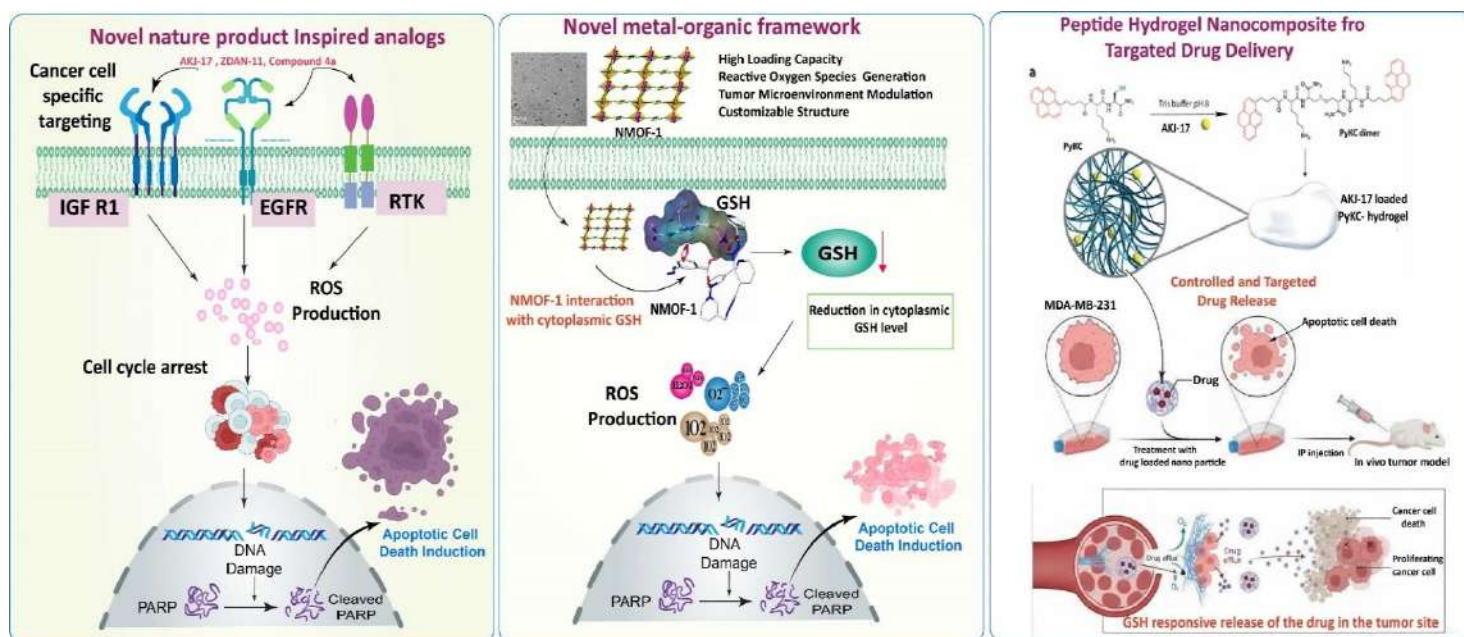
4. Details and nature of present and previous employment (Positions held, employer/place of work, duration):

- | | |
|-------------|---|
| 2005 | Research Associate in a NIH (U.S.A.) project, Immunology and Vaccine Development Unit, National Institute of Cholera & Enteric Diseases (NICED), Kolkata, India, |
| 2006 | Postdoctoral Research Associate in a NIH (U.S.A.) project, Garrison Institute on Aging, Texas Tech University Health Sciences Center, Lubbock, Texas, USA. |
| 2009 | Research Associate III, Crystallography & Molecular Biology Division, Saha Institute of Nuclear Physics, Kolkata. |
| 2010 | Scientist-C, Division of Molecular Medicine, Bose Institute, Kolkata, India. |
| 2014 | Senior Scientist, Division of Molecular Medicine, Bose Institute, Kolkata, India. |
| 2018 | Principal Scientist, Division of Molecular Medicine, Bose Institute, Kolkata, India. |
| 2025 | Principal Scientist (Scientist-E), Department of Biological Sciences, Bose Institute, Kolkata, India. |
| 2026 | Scientist-F [Equivalent to Professor], Department of Biological Sciences, Bose Institute, India |

5. Research Focus:

Integrative Research in Tumor Targeting and Responsive Drug Delivery:

- ✚ “Therapeutic Targets” of tumor growth, progression, and metastasis
- ✚ “Targeted Delivery of Chemotherapeutics” for Cancer Chemoprevention



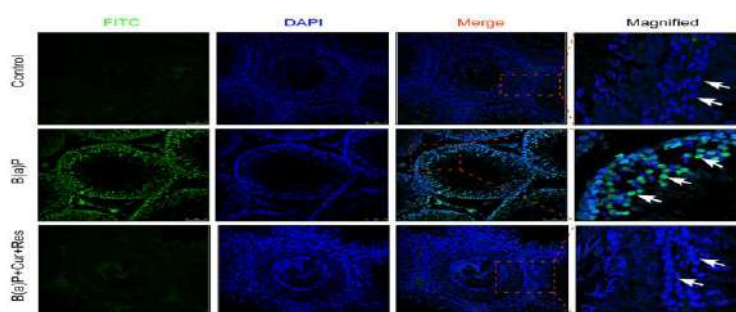
RESEARCH HIGHLIGHTS:

- ❖ Asp855-targeted EGFR modulator (AKJ-17)
- ❖ PDL-1 Immunomodulator (AKJ-12)
- ❖ Glutathione Responsive N-MOF-1 and Peptide Hydrogel for targeted Cancer Therapy

6. Research interest:

(A) Molecular signaling involved in patho-physiological action of common air pollutant “Benzo(a)pyrene” in Germ cell DNA damage and apoptosis in connection to male infertility: possible protection by natural aryl hydrocarbon receptor antagonists

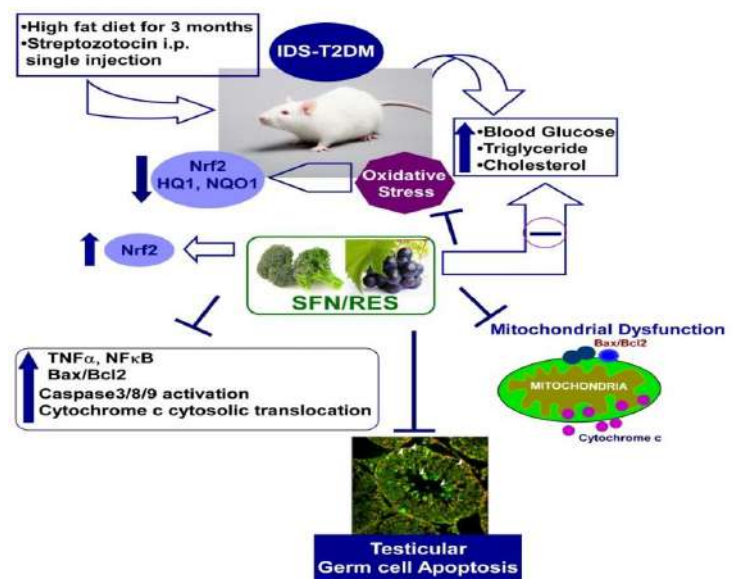
Benzo(a)pyrene (B(a)P) is an environmental toxicant that alters the steroidogenic profile of testis and induces testicular dysfunctions. In spite of the magnitude of the problem, the precise molecular and cellular mechanism of B(a)P mediated testicular damage, and possible protective measures still remain



unexplored. In the present study, we have investigated the molecular signalling of B(a)P and the ameliorative potential of the natural aryl hydrocarbon receptor (AhR) antagonist and antioxidant- 3,5,4'-trihydroxy-*trans*-stilbene (Resveratrol) on B(a)P induced male reproductive toxicity. Studies carried out in adult male Wistar rats significantly showed that B(a)P treatment resulted in p38 MAPK activation and increased iNOS production along with testicular apoptosis and steroidogenic dysfunction. Our study also highlighted that resveratrol co-treatment maintained testicular redox potential, increased serum testosterone level and enhanced major testicular steroidogenic proteins (CYPIIA1, StAR, 3 β HSD, 17 β HSD) expression and subsequent onset of apoptosis. Resveratrol co-treatment also showed significant inhibition of protein and mRNA levels of testicular cytochrome P4501A1 (CYP1A1), which is the major B(a)P metabolizing agent for BPDE-DNA adduct formation. Resveratrol also significantly decreased the B(a)P-induced AhR protein levels, its nuclear translocation and subsequent promoter activation, thereby decreasing the expression of CYP1A1. Resveratrol down-regulates B(a)P-induced testicular iNOS production through suppressing the activation of p38 MAPK and ATF2 thereby improving the oxidative status of the testis and inhibiting apoptosis. Our findings thus cumulatively suggest that resveratrol exhibits both anti-initiating effects of B(a)P by modulating the transcriptional regulation of CYP1A1 and acting as an antioxidant thus preventing B(a)P-induced oxidative stress and testicular apoptosis.

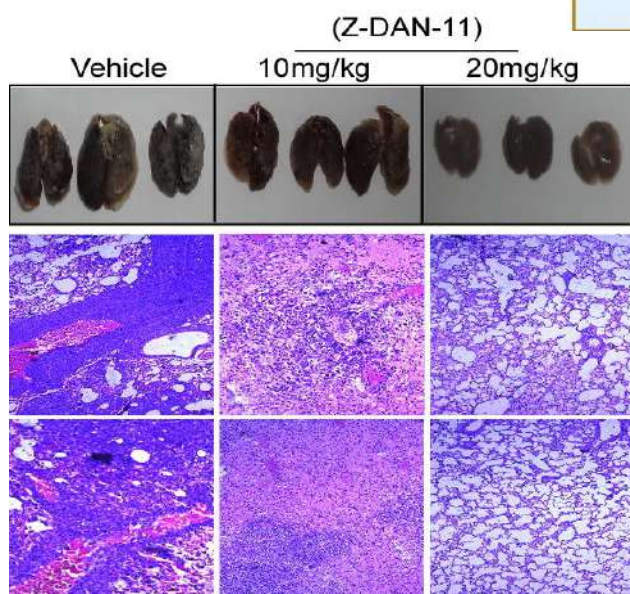
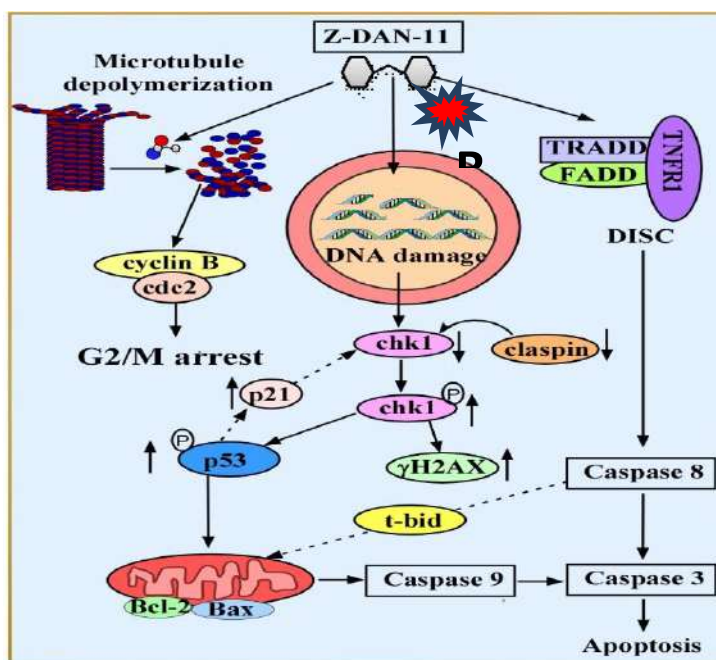
(B) Insulin-defective stage of type 2 Diabetes (IDS-T2DM) induced testicular Germ cell death/apoptosis in association with the up-regulation of Nrf2 expression: Ameliorative potential of sulforaphane (SFN) and resveratrol (RES)

Diabetes-induced testicular cell death is due predominantly to oxidative stress. Nuclear factor (erythroid-derived 2)-like 2 (Nrf2) is an important transcription factor in controlling the anti-oxidative system and is inducible by sulforaphane (SFN) and resveratrol (RES). To test whether SFN/RES prevents diabetes-induced testicular germ cell death/apoptosis, an insulin-defective stage of type 2 diabetes (IDS-T2DM) was induced in mice. This was accomplished by feeding them a high-fat diet (HFD) for 3 months to induce insulin resistance and then giving one intraperitoneal injection of streptozotocin to induce hyperglycemia while age-matched control mice were fed a normal diet (ND). IDS-T2DM and ND-fed control mice were then further subdivided into those with or without 3 months of SFN/RES treatment. IDS-T2DM induced significant increases in testicular germ cell death/apoptosis presumably through receptor and mitochondrial pathways, shown by an increased ratio of Bax/Bcl2 expression and cleavage of caspase-3 and caspase-8 without significant change of endoplasmic reticulum stress (GRP78/CHOP). Diabetes also significantly increases testicular oxidative damage and inflammation (TNF α and NF κ B). All of these diabetic effects were significantly prevented by SFN/RES treatment with up-regulated Nrf2 expression. These results suggest that IDS-T2DM induces testicular germ cell death/apoptosis presumably through caspase-8 activation and mitochondria-mediated cell death pathways, and also by significantly down-regulating testicular Nrf2 expression and function. SFN/RES up-regulates testicular Nrf2 expression and its target antioxidant expression, which was associated with significant protection of the testis from IDS-T2DM-induced germ cell death.



(C) A microtubule dynamics interfering trans-stilbene derivative compound G drives G2/M arrest, apoptosis, and impedes cancer progression.

Resveratrol, a *trans*-stilbene polyphenolic compound and its synthetic analogs have been widely used bioactive molecules due to their remarkable chemopreventive potential. Here, we have identified a novel resveratrol analog, compound G ((Z)-3-(3, 4-dimethoxyphenyl)-2-(3, 4, 5-trimethoxyphenyl) acrylonitrile (Z-DAN-11), which inhibits the proliferation of several cancer cell lines in vitro through microtubule depolymerization that induces G2/M arrest and consequently leads to apoptotic cell death. Importantly, compound G shows limited cytotoxicity to normal cells as compared to cancer cells. Moreover, insight into the molecular and mechanistic detailed studies, we reasoned that compound G induces an increase in the



novel *trans*-stilbene derivative compound G has tremendous anti-tumorigenic potential and can be added to the current regimes of chemotherapy.

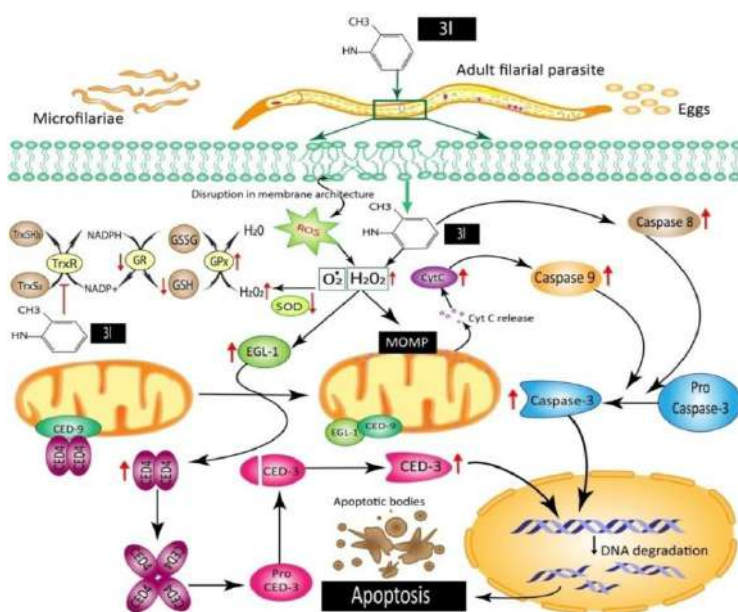
(D) A novel sulforaphane derivative impedes cancer cell growth progression through G2/M arrest and ROS mediated caspase independent apoptosis.

Sulforaphane, a naturally occurring isothiocyanate has gained attention due to its tremendous anti-cancer potential. Thus, an array of sulforaphane analogs were synthesized and evaluated for their cytotoxic potentials on a wide range of malignant cell lines. Among these derivatives, compound 4a displayed exceptional potency in inhibiting the proliferation of cancer cell lines and negligible effect on normal cell lines through G2/M phase arrest. The lead compound induced reactive oxygen species (ROS)-mediated mitochondrial dysfunction, leading to apoptosis. Further mechanistic

Due to the insolubility of the as-synthesized **MOF 1**, a green hand grinding methodology has been adopted to scale down the particle size to a nano regime keeping its structural integrity intact. The nanoscale metal-organic framework (**NMOF 1**) adopts discrete spherical morphology as affirmed by scanning electron microscopic (SEM) analysis. The photoluminescence studies revealed that **NMOF 1** is highly luminescent, enhancing its bio-medical proficiency. Initially, the affinity of the synthesized **NMOF 1** for proteins like Glutathione and GSH-reduced has been evaluated by various physicochemical techniques. **NMOF 1** inhibits the proliferation of cancer cells *in vitro* by inducing G2/M arrest and consequently leads to apoptotic cell death. More significantly, compared to cancer cells, **NMOF 1** exhibits less cytotoxicity against normal cells. It has been demonstrated that **NMOF 1** interacts with GSH, causing a drop in cellular GSH levels and the production of intercellular ROS. It's quite intriguing that we discovered that **NMOF 1**-mediated ROS generation aids in significantly modifying the mitochondrial redox status, which is a key factor in apoptosis. According to mechanistic research, **NMOF 1** increases the production of pro-apoptotic proteins and lowers the expression of anti-apoptotic proteins, which significantly aids in the activating caspase 3 and the subsequent cleavage of PARP1 and cell death via intrinsic apoptotic pathways. Finally, an *in vivo* investigation using immuno-competent syngeneic mice demonstrates that **NMOF 1** can stop tumor growth without causing adverse side effects. As a result, we discovered a novel synthetic derivative of **NMOF 1** with anti-tumorigenic potential, which could be extremely helpful in developing possible therapeutic strategies for cancer.

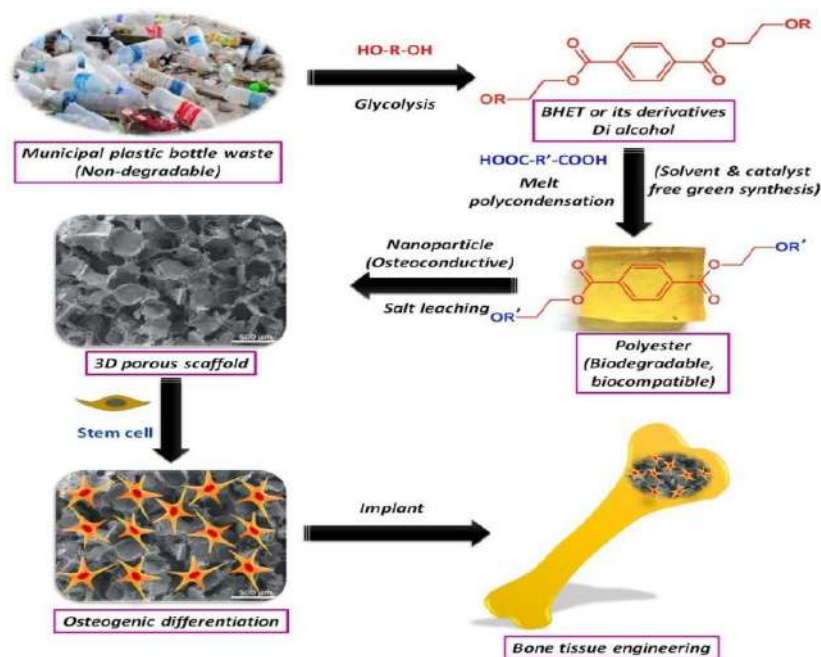
(F) Evaluation of anti-filarial efficacy of the novel piperine derivative through disruption of redox homeostasis with synchronized activation of apoptosis.

A series of novel piperine derivatives were synthesized and were evaluated for its anti-filarial potential against the bovine filarial parasite *Setaria cervi*. One of the piperine derivative (**3I**) showed the highest efficacy among the selected other compounds. The antifilarial activities it exhibited were clearly fuelled by the disparity of the internal redox homeostasis as evidenced from the alterations in the enzymatic and non-enzymatic antioxidants level which ultimately shifted towards activation of pro-apoptotic signaling cascade, eventually leading to the death of the parasites. The ability of the compound **3I** to bind thioredoxin reductase (TrxR) and CED-3 protein are the key finding of this study. The present study supported with several biological experiments is, therefore, a maiden report on the antifilarial effectiveness of these novel piperine derivatives.



(G) Plastic Waste Derived Biodegradable and Biocompatible Polyester for Bone Tissue Engineering (In collaboration with Dr. K. Sarkar, Dept. of Polymer Sciences, Univ. Of Calcutta)

It is widely believed that engineered tissues could revolutionize medicine and offer promising new treatments for many debilitating diseases. In tissue engineering, a scaffold should ideally be non-toxic, biodegradable, and highly porous with interconnected architecture to support cell attachment, proliferation and extra-cellular matrix (ECM) production to ultimately facilitate tissue generation. In addition, it should possess optimal mechanical and physical properties. The currently available library of such materials is limited and expensive adding to the already high costs of these emerging therapies. There is a need for biomedical polymers derived from low cost, renewable sources and recycled waste that could offer cost effective solutions.



The use of polyethylene terephthalate (PET) has greatly increased because of its widespread application in packaging of food and drinks. This has resulted in an ever-growing volume of post-consumer municipal PET waste. Therefore, recycling of waste PET has become a significant global challenge. PET can be recycled by various techniques such as glycolysis, aminolysis and hydrolysis to get useful monomer such as bis-hydroxyethylene terephthalate (BHET) or its derivatives which may be used as one of the good source of monomer for the

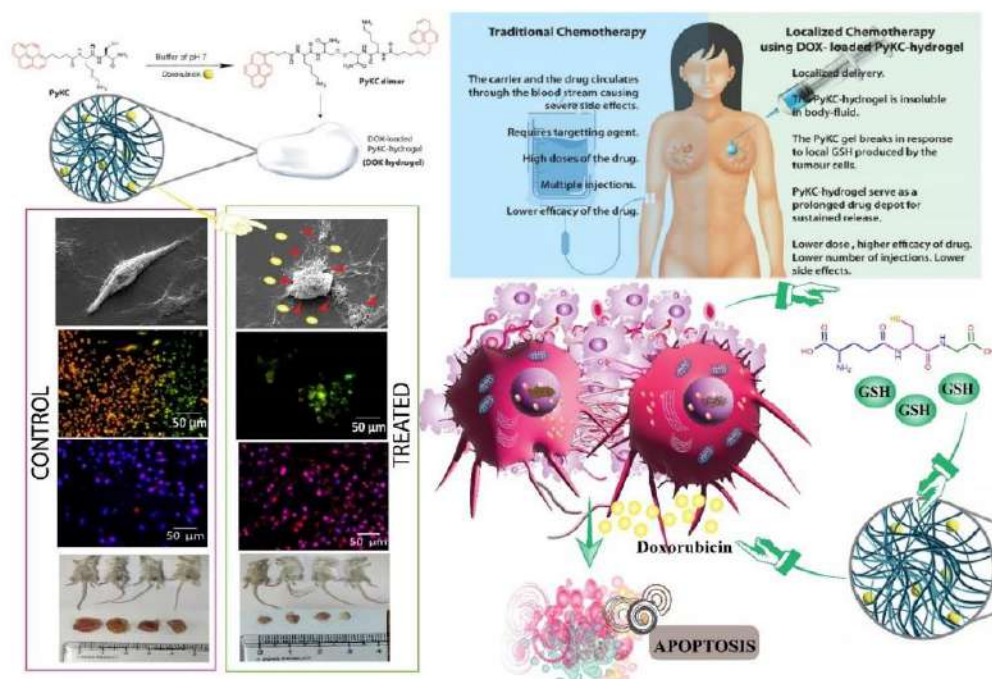
synthesis of polyester. Therefore, a large volume of PET municipal waste may be a potential source of low cost polymers.

The hypothesis of the proposed proposal consists of the following points (Scheme 1):

- ✚ Recycling of municipal plastic PET waste by glycolysis technique to get BHET or its derivatives.
- ✚ Synthesis of a library of biodegradable and biocompatible polyester by solvent and catalyst free melt polycondensation technique by using recycled BHET and its derivatives.
- ✚ Fabrication of 3D porous scaffold by salt leaching technique containing inorganic nanoparticle as osteoconductive and reinforcing material.
- ✚ In vitro biocompatibility and bone formation study by seeding human mesenchymal stem cell (hMSC).
- ✚ In vivo implantation for bone formation.

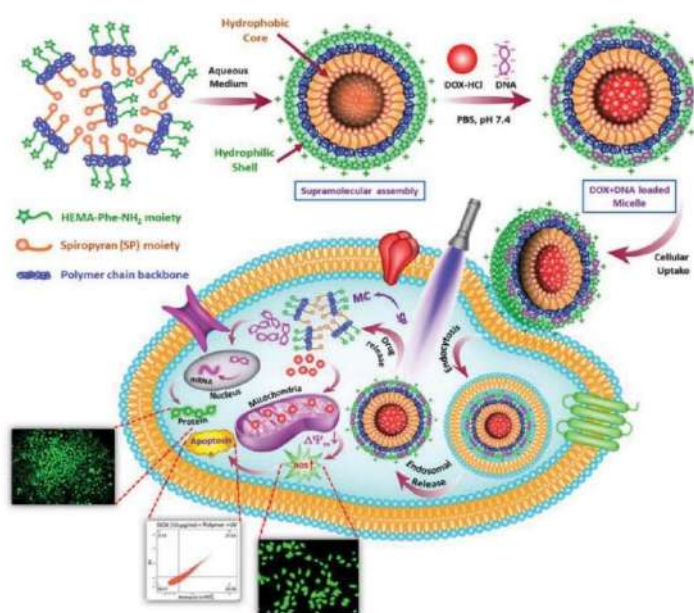
(H) Targeted and Precise Drug Delivery Using a GSH-Responsive Ultra-Short Peptide-Based Injectable Hydrogel for Breast Cancer Cure (In collaboration with Prof. D. Das, IIT-G)

Harnessing the potential of hydrogel-based localized drug delivery systems holds immense promise in mitigating systemic side effects associated with conventional cancer therapies. However, the development of such systems demands the fulfillment of multiple stringent criteria, including injectability, biocompatibility, and controlled release. Herein, we present an ultra-small peptide-based hydrogel for the sustained and targeted delivery of doxorubicin in a murine model of breast cancer. The hydrogel evades dissolution and remains stable in biological fluids, serving as a reliable drug reservoir. However, it reacts specifically to the high levels of glutathione (GSH) in the tumor microenvironment and releases drugs in a controlled manner over time for consistent therapeutic benefits. Remarkably, administration of a single dose of doxorubicin-loaded hydrogel elicits superior tumor regression (~75% within 18 days) compared to conventional doxorubicin treatment alone. Furthermore, the persistent presence of the drug-loaded hydrogel near the tumor site for up to 18 days after administration highlights its enduring effectiveness. Importantly, this localized delivery strategy demonstrates minimal off-target effects on healthy tissues, underscoring its clinical potential. Our findings underscore the efficacy of this smart peptide-hydrogel platform and pave the way for developing next-generation localized drug delivery systems with enhanced therapeutic outcomes in cancer treatment.



(I) Highly Efficient Photo-switchable Smart Polymeric Nano-vehicle for Gene and Anticancer Drug Delivery in Triple-Negative Breast Cancer

Over the past few decades, there has been significant interest in smart drug delivery systems capable of carrying multiple drugs efficiently, particularly for treating genetic diseases such as cancer. Despite the development of various drug delivery systems, a safe and effective method for delivering both anticancer drugs and therapeutic genes for cancer therapy remains elusive. In this study, we describe the synthesis of a photoswitchable smart polymeric vehicle comprising a photoswitchable spiropyran moiety and an

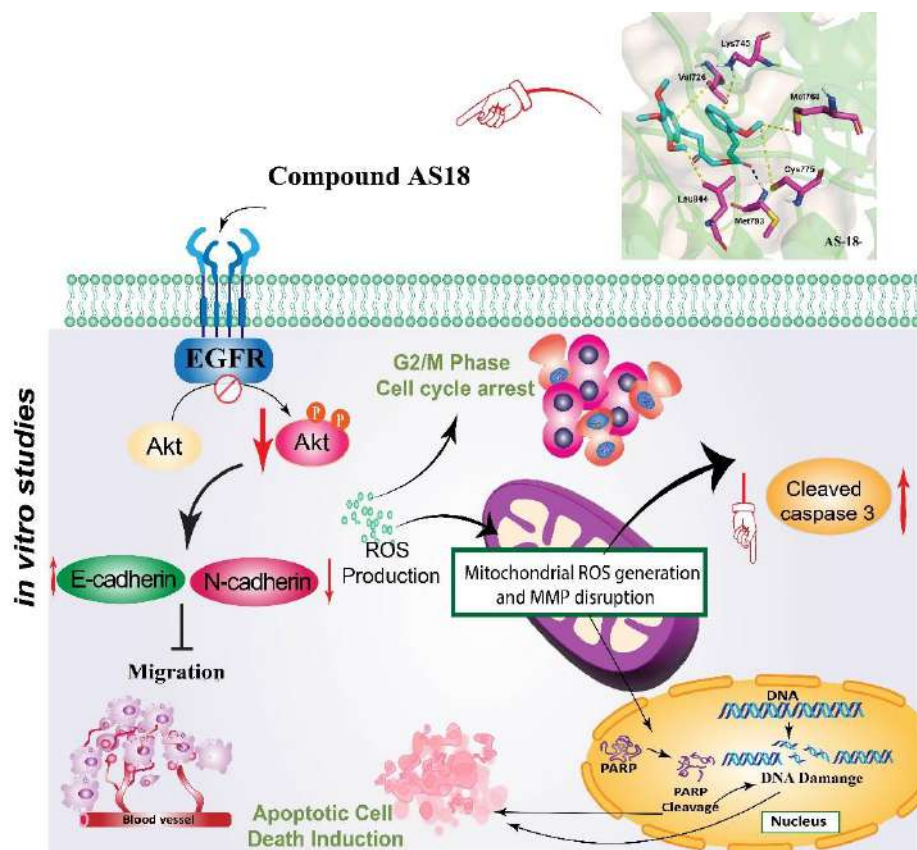


amino-acid-based cationic monomer-based block copolymer using reversible addition–fragmentation chain transfer (RAFT) polymerization. This system aims at diagnosing triple-negative breast cancer and subsequently delivering genes and anticancer agents. Triple-negative breast cancer patients have elevated concentrations of Cu^{2+} ions, making them excellent targets for diagnosis. The polymer can detect Cu^{2+} ions with a low limit of detection value of 9.06 nM. *In vitro* studies on doxorubicin drug release demonstrated sustained delivery at acidic pH level similar to the tumor environment. Furthermore, the polymer exhibited excellent blood compatibility even at the concentration as high as 500 $\mu\text{g/mL}$. Additionally, it displayed a high transfection efficiency of approximately $82 \pm 5\%$ in MDA-MB-231 triple-negative breast cancer cells at an N/P ratio of 50:1. It is observed that mitochondrial membrane depolarization and intracellular reactive oxygen species generation are responsible for apoptosis and the higher number of apoptotic cells, which occurred through the arrest of the G2/M phase of the cell cycle were observed. Therefore, the synthesized light-responsive cationic polymer may be an effective system for diagnosis, with an efficient anticancer drug and gene carrier for the treatment of triple-negative breast cancer in the future.

(G) Evaluation of Anti-Proliferative and Anti-Metastatic Potentials of Natural Product-Inspired Small Molecules

Discovery of drugs from natural sources is emerging as a highly promising strategy for identifying novel anticancer agents. More than 70% of anticancer drugs have their roots in natural products.

Curcumin, derived from the *Curcuma longa*, exhibits anti-inflammatory, anticancer, antidiabetic, antimicrobial, and antioxidant properties. Besides curcumin, turmeric has several other bioactive components, such as bisacurone, furanodiene, curdione, turmerin, turmerone, elemene, cyclo-curcumin, β -sesquiphellandrene, and germacrone that also exhibit anticancer and anti-inflammatory potential. Calebin A (4-[3-methoxy-4-hydroxyphenyl]-2-oxo-3-enebutanyl 3-[3-methoxy-4-hydroxyphenyl]



propenoate) one of such a novel compound that was derived from *Curcuma longa*. While the anti-inflammatory and anticancer potential of curcumin, which is derived from turmeric *Curcuma longa*, has been studied extensively, very little is known about Calebin A, another novel compound from the

same source. Thus for our current study Calebin A has been selected as an inspired molecule and a series of Calebin A analogs (namely AS-1 to AS-28) have been synthesized and are subjected to biological studies where in vitro chemotherapeutic potential of all the analogs were tested using MDA-MB-231, MCF-7, HeLa, PC3, MDA-MB-468, A549, HCT-116 and HepG2 as cancer cell line and NKE and WI-38 as normal cell line, where it was found that of these 28 analogs, AS-11, AS-13 and AS-18 shows cytotoxicity in all of the cancer cell lines especially showing lesser IC50 values in breast cancer specific cell line MDA-MB-231 and MCF-7. Further it was found that AS-18 shows lesser cytotoxicity against the normal cell line NKE and WI-38 in comparison to the AS-11 and AS-13. Thus AS-18 have been selected for the further studies in MDA-MB-231 and MCF-7 cancer cell lines. AS-18 resulted in the down-regulation of the expression of proteins involved in tumor cell survival, proliferation, inflammation, and metastasis. Furthermore, AS-18 inhibited proliferation and induced apoptosis in MDA-MB-231 and MCF-7 cell lines, as examined by various assays. AS-18 treatment also suppressed NF- κ B activation induced by various stimuli. Further mechanistic studies established the interaction of the compound AS-18 with the epidermal growth factor receptor (EGFR) and blocking of the Akt pathway. This led to suppression of nuclear factor erythroid 2-related factor 2 (NRF-2) protein expression thus increasing the ROS in the tumor cells. Moreover, AS-18 potentiates ROS mediated apoptosis in cancer cells; thus, it has a potential in cancer treatment.

Translational Animal Research works:

More than 20 years of experience in animal handling, breeding, experimentation as well as more than 100 International publications related to small and large animals. Worked with StAR and COX-2/3xTG/iNOS knockout mouse as well as COX-2 over expressed Transgenic mouse in Garrison Institute on Aging, Texas Tech University of Health Sciences Centre, Texas, USA. Attended, participated and organized several rat and mouse Bio-methodology workshops.

I am established myself as a highly motivated and vibrant Animal Research Scientist as well as Molecular Reproductive Biologist and Endocrinologist as well as Cancer Biologist at Div. of Mol. Medicine, Bose Institute, Kolkata. I have taken a pioneer role to establish the State of the Art and world class Centre for Translational Animal Research (CTAR), a Central Animal House and Research Facility in North Eastern Part of India and did innovative research in the areas of Modern Laboratory Animal Sciences. I have a significant and unique experience in the maintenance and management of knockout/transgenic & Xenograft mouse facility. I am well versed with the Laws or guidelines that permit and control the use of non-human animals for scientific experimentation. I worked several years in USA in close association with Jackson Laboratories. I was participated in several seminars, workshops related with the experiments on animals and drug testing. I am the member in several National & International Committees related with animal welfare. I am well versed with the Guide for the Care and Use of Laboratory Animals in Bio-medical Research in USA, UK, and Canada etc. I have more than 20 years of experience on Standard Operating Procedures (SOP) for Institutional Animal Ethics Committee (IAEC) of the CPCSEA.

8. Development of the Animal Research Facility at Bose Institute.

I am serving as a **Scientist- In-Charge, Centre for Translational Animal Research (CTAR)** as well as in **"Institutional Animal Ethics Committee (IAEC)"** & takes prime role to establish and maintenance of **"Central Animal House & Research Facility"(CTAR)** at Bose Institute. This is a *state-of-the-art* world class environmentally controlled "Central Animal House and Research Facility" for Developmental and Toxicology Research" with all facilities for breeding, maintenance, experimentation on small laboratory animals and it has been exclusively developed in a plinth area of 15,000 sq. ft. This Animal facility will be utilized for experimental research in accordance with the principles of good laboratory practices and CPCSEA, Ministry of Environment, Forest & Climate Change, Government of India guidelines. Further, it facilitates research and development in partnership with academic Institutions, Industries and funding agencies for drug discovery-cum-validation and devices of translational medical research with the basic objective of advancement of biological knowledge which is useful for saving the lives and /or alleviating the suffering of human being, animals and plants. However, such experiments are performed with due care so as to minimize the pain inflicted on animals. The Centre is also involved in skilled manpower development through education and training in laboratory animal care and experimental techniques. The main objective of the Centre is to supply defined strains of laboratory animals like mice, rats, guinea pigs, hamsters and rabbits for Bio-medical Research to the scientific community of the Eastern and North-eastern part of India.



Future Planning:

- ✓ *Maintenance of Knockout mouse, Xenograft mouse for biological research*
- ✓ *Maintenance of NOG (NOD/Shi-Scid/IL-2R γ^{null})/NSG (NOD.Cg-Prkdc^{scid} IL2rg^{tm1Wjl}/SzJ) Mouse*
- ✓ *Humanized mouse model will be maintained for biological & medical research for human therapeutics*



9. Collaborators:

1. Prof. Goutam Brahmachari, Visva Bharati, Santiniketan
2. Prof. Jayati Basu & Manikuntala Kundu, Bose Institute
3. Prof. Pallab K Halder, Jadavpur University.
4. Prof. Kishore Sarkar, University of Calcutta
5. Prof. Gaurisankar Sa, Bose Institute
6. Prof. Tanya Das, Bose Institute
7. Prof. Chittaranjan Sinha, Jadavpur University
8. Prof. Debasish Das, University of Calcutta

9. Prof. Anup Kumar Misra, Bose Institute
10. Prof. Debapratim Das, IIT, Guwahati
11. Prof. mahotosh mandal, IIT, Kharagpur
12. Dr. Pravat K parida, IISER, Berhampur

10. Awards/Honor Received:

1. The Biography included in Americas "Who's Who in Medicine & Healthcare", 2008-2009.
2. DST-Fast-Track Young Scientist Scheme Award, 2010.
3. Young Scientist Travel Award, 2010 from ACC&D (Portland, Oregon, U.S.A.)
4. Young Investigator Research Award, 2011 from Parsemus Foundation (San Francisco, California, USA).
5. Nominated as "International Scientist of the Year, 2011" by International Biographical Centre, Cambridge, U.K.
6. Scientific Award of Excellence for 2011" by American Biographical Institute, San Francisco, California, U.S.A.
7. Young Scientist Travel Award, 2012, from International Congress on Animal Reproduction (ICAR)", Vancouver, British Columbia, Canada.
8. Selected and Trained as a CPCSEA Nominee, Ministry of Environment & Forests, Govt. of India.
9. Young Scientist Travel Award, 2013 from ACC&D (Portland, Oregon, U.S.A.)
10. Young Scientist Award, 2014 from Parsemus Foundation, Berkley, California, U.S.A.
11. Outstanding Scientist Award, 2015 from Venus International Foundation, India.
12. Bharat Bikas Award, 2017, for outstanding contribution in Molecular Medicines (Institute of Self-Reliance. ISR-India)
13. Rastriya Gaurav Award, 2018
14. Fellow of "Scholars Academic and Scientific Society" (FSASS), 2021
15. Honorary Rosalind Member of London Journal Press
16. Honorary Member, Society for Redox Biology & Medicine, USA, 2021
17. Fellow of Reproduction & Endocrinology (FRE) from SRBCE, 2021
18. Fellow of National Environmental Science Academy (FNESA), 2021
19. Outstanding Scientist Award 2022, INSO International Scientist Award on Engineering, Science & Medicines.
20. Eminent Scientist of the Year Award 2022 from National Environmental Science Academy (NESA)
21. Scientists of the Year Award SASE 2023@BHU, Varanasi, 2023.
22. Fellow of the Association of Researchers & Academicians, India (FARAI), 2024
23. Fellow of the Indian Academic Researchers Association (FIARA), India, 2024
24. S Ramanujan Award 2024 for Outstanding Scientists from ARAI, India
- 25 Prof. K. C. Bose Gold Medal Award, 2024 from NESA, New Delhi
26. Editor of Distinction Awards 2026 from Springer-Nature [Discover Oncology]

11. Editors/Editorial Board:

- | | |
|---|---|
| 1. Translational Medicine | 5. Annals of Translational Medicine & Epidemiology |
| 2. Journal of Translational Medicine and Epidemiology. | 6. Frontiers in Endocrinology |
| 3. Current Medicine | 7. International Journal of Obstetrics and Gynecology |
| 4. Journal of Cancer Research and Molecular Medicine | |

8. *Austin Endocrinology & Diabetes case Reports.*
9. *American Journal of Medical & biological research*
10. *Journal of Molecular Genetics & Medicine*
11. *Current Clinical Pharmacology*
12. *World Journal of Preventive Medicine*
13. *Advances in Pharmaceutical Sciences*
14. *Journal of Biomedical Research & Environmental Sciences*
15. *Current Reviews in Clinical and Experimental Pharmacology*
16. *Journal of Cancer Biology*

17. *Current Indian Science (Section Editor, Biochemistry)*
18. *Exploration of Biomat-X*
19. *Discovery Oncology (Springer Nature)*

Editor in Special Issue:

Emerging Trends in Cancer Biology: Therapeutic Targets towards Future Precision Medicines
(Discovery Oncology Journal, Springer Nature)

12. Reviewer:

1. *Journal of Endocrinology/Endocrinology* 2. *Molecular Cellular Endocrinology* 3. *Toxicological Sciences* 4. *Andrology* 5. *Asian Journal of Andrology* 6. *Food & Chemical Toxicology* 7. *Ecotoxicology & Environmental Safety* 8. *Fertility & Sterility* 9. *Contraception* 10. *Reproductive Toxicology* 11. *Molecular Cellular Biochemistry* 12. *Molecular Reproduction & Development* 13. *Journal of Trace Elements in Medicine & Biology* 14. *Molecular Human Reproduction* 15. *Life Sciences* 16. *Reproduction* 17. *Frontiers in Nutrition* 18. *Frontiers in Immunology* 19. *Frontiers in Endocrinology and* 20. *Cell Death & Disease etc.*

13. Membership of Scientific Bodies:

1. *The Science Advisory Board, USA*
2. *Society for the Study of Reproduction and Fertility*
3. *Society for Reproductive Biology and Comparative Endocrinology.*
4. *The Physiological Society of India.*
5. *Indian Society for Translational Research*
6. *DNA Society of India*
7. *Scholars Academic and Scientific Society*
8. *National Environmental Science Academy*
9. *National Academy of Biological Sciences*
10. *Honorary Rosalind Member of London Journal Press 2021*

14. Ph.D. guidance:

Ten 10) have already been awarded, one (1) is preparing his thesis, and two students (SRFs) have already been registered under the Ph.D. Programme in the University of Calcutta/Jadavpur University, where I am acting as a Supervisor/Joint-Supervisor. One DBT-RA and one CSIR-Project RA also worked under my supervision.

15. Teaching activities:

Taught special paper classes in Biochemistry (Cell signalling, hormone action, cancer signalling, and Immunology) and Reproductive Biology (Reproduction, Endocrinology, Reproductive and endocrine disorders, etc.) of M.Sc. (Physiology) students of the University of Calcutta and Ram Mohan College, as well as Integrated M.Sc.-Ph.D. classes at Bose Institute.

16. CPCSEA, Ministry of Environment, Forest & Climate Change, Govt. Of India Nominee:

Serving as a **"CPCSEA Nominee"** in different Institutes like Visva Bharati, Chittaranjan National Cancer Institute, Indian Institute of Chemical Biology (IICB), Indian Association for the Cultivation of Science (IACS), Jadavpur University, Vidyasagar University, Institute of Post-Graduate Medical Education & Research (IPGMER), Institute of Reproductive Medicine, School of Tropical Medicine, All India Institute of Hygiene & Public Health, IQ City Medical College, Krish Biotech Research Pvt. Ltd. etc.

17. Advisor (Honorary)

Serving as an Advisor (Honorary) at WBLDCL, Govt. of West Bengal, for the Establishment of a State-of-the-art Preclinical Animal Research Centre (CRO/State Centre for Laboratory Animal Sciences (SCLAS)) funded by the Govt. of India.

18. List of Extramural Funded Projects:

1. SERC Fast Track Proposals for Young Scientist Research Scheme Entitled "Molecular Signalling Involved in patho-physiological Action of Common Air Pollutant Benzo(a)pyrene in Testicular DNA Damage and Apoptosis in Connection to Male Infertility: Possible Protection by Natural Aryl Hydrocarbon Receptor antagonists" from DST, Govt. of India. (PI: Dr. Kuladip Jana). (Completed on 31st March, 2015, 17.14 lakh)

2. "Targeted delivery of nano-conjugated Methylglyoxal to cancer cells and understanding the bioenergetics difference between normal and malignant cells at molecular level" from DST, Govt. of India. (PI: Prof. Manju Ray; Co-PI: Dr. Kuladip Jana), (Project started from 01 January, 2014 with an appointment of a JRF and a R.A., 39.85 lakh).

3. "Assessment of the anti-cancer effect of Methylglyoxal in combination with conventional anti-cancer drugs at metronomic doses with special reference to cancer stem cells" from CSIR, Govt. of India (PI: Prof. Manju Ray; Co-PI: Dr. Kuladip Jana), (Project funded on 10/05/2016, 21.78 lakh).

4. "Development of Recombinant Vaccine for Aspergillus-related Asthma and Allergic Broncho-Pulmonary Aspergillosis" from The Wellcome Trust/DBT India Alliance (PI: Dr. Gaurab Sirkar; Co-Investigator: Dr. Kuladip Jana), (Project funded on 01 April, 2019, Rs. 1, 69, 16,460/- at Visva Bharati University).

5. "Assessment of safety & efficacy of Ayurvedic Formulations as an adjuvant therapy for prevention of hepatotoxicity caused by anti-tubercular drugs in clinical study" funded by Department of Science and Technology and Biotechnology, Government of West Bengal (Dr. Amit Kumar Taraphdar, I.P.G.A.E. & R., Kolkata PI, Dr. Kuladip Jana, (Project funded on 21/03/2022 Co-PI, Rs. 30.00 lakhs)

6. "Local thyroid hormonal state and early life epigenetic programming of pathological aggressive behaviour across generations" from The Wellcome Trust/DBT India Alliance (PI: Arpita Konar, Institute of Health Sciences, Presidency University, Collaborator: Dr. Kuladip Jana) (Project funded on December, 2023, Rs. 3, 80, 00,000/-)

19. Attended National and International Conferences:

Attended several National and International conferences in India and abroad, and delivered lectures and chaired sessions.

20. Skill Development & Rural Development Programme:

I have actively participated in and contributed to skill development initiatives focused on animal-based research across various institutes, serving as a nominee from the CCSEA, Government of India. I am also actively associated with "Intervention, cultivation & formulation development of Medicinal Plants for the rural farmers" as an

Honorary Advisor, which is organized by Jadavpur University (Funded by National Medicinal Plant Board, Govt. of India).

21. List of Important research publications: (Citations: 5620; H index: 38)

1. Patra R, Halder S, Saha R, **Jana K***, Sarakar K. Multifunctional Smart Injectable Triblock Copolymer Hydrogel for Highly Efficient Dual Drug–Gene Delivery in Triple-Negative Breast Cancer. **ACS Applied Bio Materials**, 2026, 9: 3855-3877 (**Impact Factor 4.8**)
2. Mandal B, Halder S, Brandao P, Bera S, Bera P, **Jana K***, Bera P. Metal coordination of thiazole-benzothiazole derivatives improves the antiproliferative efficacy against various human cancer cells: Synthesis, X-ray structures and in silico studies. **European Journal of Medicinal Chemistry**, 2026, 315: 118957 (**Impact Factor: 7.088**).
3. Ghosh, T., Chaudhuri, N.R., Datta, S.P., Mandal, P., Patra, N., Ghosh Dastidar, S., **Jana, K.**, Ganguly, S. and Sarkar, S. (2026), The minimal vesicular trafficking machinery of Giardia has two NSF paralogues. **FEBS Lett**, 600: 612-630. (**Impact Factor: 3.8**).
4. Kumar G, Halder S, Acharya A, Majumder C, **Jana K***, Guchhait SK. Natural product inspired scaffold hopping strategy: Identification of potent anticancer 2-arylpyridopyrimidinones that induce cytoplasmic and mitochondrial ROS and G2/M arrest. **Bioorganic Chemistry**, 2026, 172: 109595 (**Impact Factor 4.5**).
5. Debnath U*, Halder S, Majumder C, Rahaman SKB, Manna A, Parida PK, Misra AK, **Jana K***. Design, synthesis, and mechanistic insights of quinoline-1(3H)-one derivatives as selective DNA intercalating agent targeting triple-negative breast cancer, **Bioorganic Chemistry**, 2026, 169: 109398 (**Impact Factor 4.5**).
6. Chatterjee, A., K. Jana, S. Ganguly, and S. Sarkar. Evolutionarily Diverged TRAPP Components in *Giardia lamblia* That Lacks a Classical Golgi. **Molecular Microbiology** 2026, 125: 216–232 (**Impact Factor 2.6**).
7. Halder S, Das T, Kushwaha R, Misra AK, **Jana K***, Das D*. Targeted and Precise Drug Delivery Using a GSH-Responsive Ultra-Short Peptide-Based Injectable Hydrogel for Breast Cancer Cure. **Materials Horizons**, 2025, 12: 987- 1001 (**Impact Factor 12.2**)
8. De S, Roy S, Ghosh S, Halder S, **Jana K**, Mandal SC, Pal M. Polyphenol-rich fraction of *Bergenian ligulata* regresses colon and breast cancer metastasis by cell-type specific mechanism. **Phytomedicine**, 2025, 5: 157129 (**Impact Factor 8.3**)
9. Ghosh T, Chaudhuri NR, Datta SP, Mandal P, Patra N, Ghosh Dastidar S, **Jana K**, Ganguly S, Sarkar S. The minimal vesicular trafficking machinery of Giardia has two NSF paralogues. **FEBS Letters**. 2025 Nov 17. doi: 10.1002/1873-3468.70225 (**Impact Factor: 3.8**).
10. Shit M, Mahapatra M, Halder S, Samanta A, Anas M, **Jana K***, Sinha C. Carboxylato-O and Pyridyl-N Hybrid Bridging Zn(II)-Based Two-Dimensional Fluorescent Coordination Polymers as Anticancer Drugs. **ACS Applied Bio Materials** 2025, 8: 6132-6144 (**Impact Factor 4.8**)
11. Majumder C, Manna A, Halder S, Roy S, Mandal SC, **Jana K**, Pal M. Indole-alkaloid rich fraction of *Ervatamia coronaria* leaf extract regresses breast cancer by inducing apoptotic cell death. **Biotechnology Reports** 2025, 49: e00937 (**Impact Factor 4.8**).
12. Ghosh S, Paul S, Halder S, Shit M, Banerjee KK, Sahoo P, Jana K, Maity J, Sinha C. AIE-active naphthyl-hydrazine Schiff base chemosensor and its multi-ion sensing activities in the living cells. **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy** 2025, 346: 126909 (**Impact Factor 4.6**).
13. Pal D, **Jana K**, Hazra S, Mitra D, Ghosh D. Spermiological injuries of humans and rats in diabetes linked oxidative stress: A curative approach by ex vivo study using aqueous-

- ethanol extract of Aloe vera (L.). **JBRA Assisted Reproduction** 2025, doi: 10.5935/1518-0557.20250034 (**Impact Factor 1.9**)
14. Ghosh B, Das T, Verma A, Mukherjee A, Sakar A, Sengupta P, **Jana K**, Ghosh Z. Parental Non-Coding RNA expression dynamics across sperm, oocyte and zygote. **NAR Genomics and Bioinformatics** 2025, 7: lqaf136 (**Impact Factor 2.8**)
 15. Banik D, Maiti A, Halder S, Ghosh P, Banerjee S, Mandal D, **Jana K**, Mahapatra AK. A Light-Up Fluorescent Probe for Detection of Reactive Oxygen Species and a Nerve Gas Simulant: Applications in Environmental, Cellular, and Vapor Phases. **Chem Asian J.** 2025, 0: e00747 (**Impact Factor 3.3**)
 16. Dutta A, Chakraborty S, Bhattacharya A, Basak U, Pati S, Mukherjee S, Guha D, Banerjee S, Ray Chaudhuri N, Sarkar DK, Jana K, Sa G, Ghosh Dastidar S, Das T. Cross-regulation between FOXC1 and OCT4/SOX2 ensures acquisition of chemoresistance in breast cancer stem cells: Amendment by hsa-miR-5688. **Molecular Therapy Oncology** 2025, 33:200982. (**Impact Factor 5.3**)
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 20. Basak U, Chakraborty S, Mukherjee S, Pati S, Khan P, Ghosh S, Adhikary A, Jana K, Sa G, Das T. Breast cancer stem cells convert anti-tumor CD4⁺ T cells to pro-tumor T regulatory cells: Potential role of exosomal FOXP3. **Cellular Immunology** 2025, 409-410:104931 (**Impact Factor 3.7**)
 21. Rahaman SKB, Halder S, Roy KP; Halder PK, Debnath U, **Jana K***. Discovery of new 4-aminoquinoline-thiazolidinone hybrid analogues as anti-proliferative agents inhibiting TLR4-LPS-mediated migration in triple-negative breast cancer cells. **Chemical Biology & Drug Design.** 2025, 105: e70089 (**Impact Factor 3.2**)
 22. Chowdhury K, Shit M, Halder S, Samanta A, Dutta B, Ali Md. A, Jana K, Sinha C. Structure of Protonated Baclofen [AuCl₄], Theoretical Elucidation and Biological Studies. **Applied Organometallic Chemistry** 2025, 39: 10.1002/aoc.70142 (**Impact Factor: 4.072**)
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- ROS mediated caspase independent apoptosis. **ACS Pharmacology & Translational Science** 2024, 7: 195-211 (**Impact Factor: 6.0**).
26. Rana A, Halder S, Chakraborty R, Debnath U, **Jana K***, Misra AK. Novel aryl (dithioglycosyl) methane derivatives as anti-proliferative agents. **Bioorganic Chemistry** 2024, 154: 108030 (**Impact Factor 4.5**)
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 32. Maiti A, Manna SK, Halder S, Ganguly R, Karak A, Ghosh P, **Jana K**, Mahapatra AK. Near-Infrared Fluorescent Turn-On Probe for Selective Detection of Hypochlorite in Aqueous Medium and Live Cell Imaging. **ACS Chemical Research in Toxicology**, 2024, 37:1682-1690 (**Impact Factor: 3.8**).
 33. Pariary R, Shome G, Dutta T, Roy A, Misra AK, **Jana K**, Rastogi S, Senapati D, Mandal AK, Bhunia A. Enhancing amyloid beta inhibition and disintegration by natural compounds: A study utilizing spectroscopy, microscopy and cell biology. **Biophysical Chemistry** 2024, 313: 107291 (**Impact Factor: 3.3**).
 34. Roy S, Roy S, Halder S, **Jana K**, Ukil A. Leishmania exploits host cAMP/EPAC/calciueurin signaling to induce an IL-33-mediated anti-inflammatory environment for the establishment of infection. **The Journal of Biological Chemistry** 2024, 300: 107366 (**Impact Factor: 5.486**).
 35. Patra R, Halder S, Saha R, **Jana K***, Sarkar K* Highly Efficient Photoswitchable Smart Polymeric Nanovehicle for Gene and Anticancer Drug Delivery in Triple-Negative Breast Cancer. **ACS Biomaterials Science & Engineering** 2024, 10: 2299–2323 (**Impact Factor: 5.8**)
 36. Sengupta P, Dutta A, Suseelaa YV, Roychowdhury T, Banerjee N, Dutta A, Halder S, **Jana K**, Mukherjee G, Cattopadhyay S, Govindaraju T, Chatterjee S. G-quadruplex structural dynamics at MAPK12 promoter dictates transcriptional switch to determine stemness in breast cancer. **Cellular and Molecular Life Sciences** 2024, 81: 33 (**Impact Factor: 9.261**)
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38. Banerjee S, Banik D, Halder S, Karak A, Ghosh P, **Jana K**, Mahapatra AK. A ratiometric small-molecule fluorescent probe for the selective detection of hypochlorite by an oxidative cyclization reaction: application to commercial disinfectants and live cells. **Organic & Biomolecular Chemistry** 2024, 22: 1662-1670. **(Impact Factor: 3.2)**
39. Sengupta P, Roy A, Roy L, Bose D, Halder S, **Jana K**, Mukherjee G, Chatterjee S. Long non-coding intergenic RNA, LINC00273 induces cancer metastasis and stemness via miRNA sponging in triple negative breast cancer. **International Journal of Biological Macromolecules**. 2024, 274:132730 **(Impact Factor: 7.7)**
40. Tapias BB, Halder S, Mendiola MA, Sinha C, **Jana K***, Lopez-Torres E* New tin(IV) and organotin(IV) complexes with a hybrid thiosemicarbazone/hydrazone ligand: synthesis, crystal structure and antiproliferative activity. **Bioinorganic Chemistry and Applications** 2024, 2024: 1-16 **(Impact Factor: 4.7)**
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43. Maiti A, Banik D, Halder S, Manna SK, Karak A, **Jana K**, Mahapatra AK. Near-infrared fluorescent turn-on probe for hydrazine detection: environmental samples and live cell imaging. **Organic & Biomolecular Chemistry** 2023, 21: 6046-6056. **(Impact Factor: 3.2)**
44. Karak A, Banerjee S, Halder S, Mandal M, Banik D, Maiti A, **Jana K**, Mahapatra AK. Visual and ratiometric fluorescent probe via an intramolecular charge transfer for detection of a nerve agent simulant in solutions and in the gas phase. **New Journal of Chemistry** 2023, 47: 16756-16763. **(Impact Factor: 3.3)**
45. Banik D, Karak A, Halder S, Banerjee S, Mandal M, Maiti A, **Jana K**, Mahapatra AK. A turn-on fluorescent probe for selective detection of H₂S in environmental samples and bio-imaging in human breast cancer cells. **Organic & Biomolecular Chemistry** 2023, 21: 8020-8030 **(Impact Factor: 3.2)**
46. Karim S, Halder S, Mukherjee S, Debnath U, Misra A, **Jana K***, Das D*. Glutathione Depleting a Chemoselective Novel Pro-Oxidant Nano Metal-Organic Framework Induced G2/M Arrest and ROS Mediated Apoptotic Cell Death in Human Triple Negative Breast Cancer Cell Line. **ACS Applied Materials & Interfaces** 2023, 15: 26442-26456. **(Impact Factor: 10.383)**
47. Shit M, Halder S, Dey A, Dutta B, Chanthapally A, **Jana K***, Sinha C* Pyridyl-isonicotinoyl Hydrazone Bridged Zn (II) coordination framework with Thiophenedicarboxylato link: Structure, Biological activity and Electrical Conductivity. **Inorganic Chemistry** 2023, 62: 19937-19947 **(Impact Factor: 5.436)**
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- copolymers. **Journal of Materials Chemistry B** 2023, 11: 3617-34. (**Impact Factor: 7.571**)
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