Dr. Madhumita Roy

1. **Objective**-

Objective 1: To study the modulation of tumor markers by dietary phytochemicals sensitize cancer cells towards chemotherapeutic drugs

Objective 2: To elucidate the effect of green tea polyphenol, EGCG on Lipid Rafts and Caveolae in human breast cancer cells MCF-7 and MDA-MB-231cells.

Objective 3: Enhancement of imatinib sensitivity in drug resistant chronic myeloid leukemia cells K562 by curcumin via modulation of various signaling mechanism.

Objective 4: Prevention of 4NQO induced oral cell carcinoma in animal model by black tea by modulation of different protein tyrosine kinases and their phosphorylation status.

Objective 5: Determination of the constitutive expression of Aurora kinases A and B (AUR A and AUR B) in breast adenocarcinoma cell line MCF-7, highly metastatic breast cancer cell line MDA-MB-231 (triple negative). To follow the modulation of the same by curcumin.

Objective 6: Synchronization of estrus cycle and determination of exfoliated cell morphology in female Swiss albino mice.

Objective 7: Development of arsenic induced skin squamous cell carcinoma in Swiss albino mice and its prevention by black tea.

Objective 8: Comparative study of population chronically exposed to arsenic in two different demographic regions of Eastern India: Identification of responsible genes and susceptible population

2. Lab Members-

a. Ms Apurba Mukherjee, SRF
b. Mr Souvick Biswas, JRF
c. Ms Elizabeth Mahapatro, JRF
d. Mr Archismaan Ghosh, JRF
e. Mr Sunit Roy, Contingent worker

3. Brief description of the ongoing research work-

a. Intramural Projects :

Modulation of tumor markers by dietary phytochemicals sensitize cancer cells towards chemotherapeutic drugs
Role of tea in skin cancer: a mechanistic study
Isothiocyanate: Role in enhancing platinum accumulation in cervical cancer

b. Extramural Projects :

Modulation of Cytotoxicity and Genotoxicity of Arsenic compounds in Mammalian cells by Tea Extract and its Polyphenols	National Tea Research Foundation, TEA BOARD
Role of Tea Polyphenols on the Sensitivity of Human Leukemic Cells to apoptosis	National Tea Research Foundation, TEA BOARD
Induction of tumor cell apoptosis via modulation of protein kinase C and suppression of telomerase by natural polyphenols and isothiocyanates.	Dept of Science and Technology (DST)
Effect of Tea Polyphenols on Invasive Potential of Tumor Cells	National Tea Research Foundation, TEA BOARD
Cytotoxicity and Genotoxicity of Arsenic Compounds and their Modulation by Natural Factors	Indian Council of Medical Research
Role of Curcumin in protecting DNA damage in lymphocytes from human population chronically exposed to arsenic in West Bengal	Dept of Bio Technology
Modulation of heat shock proteins in tumor cells by natural isothiocyanates	Council of Scientific and Industrial Research
An investigation on the expression of various protein tyrosine kinases and their phosphorylated forms in different stages of the development of oral squamous cell carcinoma	DBT
Modulation of therapeutic targets Aurora kinases A and B by phytochemicals in breast cancer cells.	DST
Comparative study of population chronically exposed to arsenic in two different demographic regions of Eastern India: Identification of responsible genes and susceptible population	DBT

c. Projects for students :

Role of tea in mitigating arsenic toxicity- a detailed mechanistic study in Swiss albino mice.	Indian Council of Medical Research
Involvement of Caveolae and Caveolin-1 in EGCG mediated signaling mechanism in human breast cancer cells	DST-WOSA

Curcumin as supplement with conventional chemotherapeutic drugs in modulation of tumor markers in leukemia cell lines	DST-INSPIRE
Role of tea in squamous cell skin carcinogenesis in mice model	UGC NET

4. Publications-

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5. Academic activities-

- **I. Thesis awarded -3**
- **II. PhD students (registered to CU and JU) -5**
- **III. Short term training programme – More than 100 students from different institutions and universities were trained in the department for various time periods in the Department of Environmental Carcinogenesis & Toxicology**
- **IV. Coursework Topics covered-**
  - **a. Crystallography**
  - **b. Toxicology**
  - **c. Microscopy**
  - **d. Protein synthesis**
  - **e. Apoptosis**