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## Synthesis and biological evaluation of some exquisite molecules towards mutagenesis and anticancer activities

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Chloro and bromo vinyl aldehydes have been used as starting material for the synthesis of different small ring heterocyclic systems with exo-cyclic functionalities. Highly regioselective direct alkylation/arylation methods have also been developed to functionalize the heterocyclic compounds. Core and fine tuning of structural motifs generated interesting host molecules to embrace neutral guest in the cavity by weak electrostatic interactions. Carbocyclic frame works have also been achieved from bromo vinyl aldehydes by Pd catalysed Ullmann cross coupling reactions have been utilized to synthesise bio-active natural products and designed molecules. Annulated bromovinyl aldehydes were converted to 5-7 member cyclic ketones by Heck-type reaction. Shortest synthesis of Cuparene from bromoaldehydes has also been achieved. The uses of the methodology developed have been explored for the synthesis of bioactive natural and designed molecules including some compounds having mutagenic activities viz terminal thiophene diol epoxides first example of this class of compounds and we have also observed removing the dihydrodiol moiety with pyranone fused polycycles totally different activities like anticancer properties. Thus Qualitative Structure Activity (QSAR) relationship has been established, and it has been observed that in tetracyclic frame works of poly carbo and hetero cyclic compounds the introduction of diol epoxide moiety in the terminal ring induces mutagenic activities whereas replacement of Diolepoxide moiety by pyranone produces anti carcinogenic effects. The method is useful to generate functionality in the polycyclic frame works. The stereo controlled chemo and region selectivity have recently been developed. Mechanistic details will also be presented.

### Biography

Jayanta K Ray has completed his PhD at the age of 26 years from Calcutta University and Postdoctoral studies from University of Chicago and Drexel University, Philadelphia. He served as Chairman, Department of Chemistry, Indian Institute of Technology, Kharagpur, a premier Institute. He has published more than 125 papers in reputed journals.

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