Departments of Biology and Molecular Biosciences Seminar Series

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“Complex DNA Damaged from Chemotherapeutic Agents”

The combination of Adriamycin (doxorubicin) and cyclophosphamide (AC chemotherapy) is used widely for the clinical treatment of breast cancers. Although both drugs target DNA, they are believed to work independently, with doxorubicin inhibiting topoisomerase II and cyclophosphamide reacting with DNA to form interstrand cross-links. The utility of this clinical regiment is limited by severe side effects, including chemotherapy-induced secondary cancers by cyclophosphamide and cardiotoxicity by doxorubicin. Chemical evidence for a possible new mechanism action will be presented, in which doxorubicin and cyclophosphamide act synergistically. If realized, this new mechanism could reduce undesired side effects by altering the treatment regimen.