Effect of hypomethylation on STAT3 activation in prostate cancer

HYPOTHESIS:

This is a continuation of last summer’s project. In differentiation therapy, drugs that hypomethylate or demethylate DNA apparently change the malignant phenotype of cancer cells to one more closely resembling benign cells. In some cancers, the same drugs induce apoptosis of the cancer cells. Our laboratory had previously identified activated STAT3 as an important element in governing the malignant phenotype of prostate cancer cells. We hypothesize that treating prostate cancer cell lines with hypomethylating drugs decreases STAT3 activation, thereby leading to apoptosis rather than the benign phenotype.

PROJECT DESCRIPTION (Include design, methodology, data collection, techniques, data analysis to be employed and interpretation methodology)

DU-145 human prostate cancer cells will be grown in 6-well plates. Cells will be treated with 5-azacytidine (0 – 100 μM) or vehicle for 18 hours. Harvested cells will be analyzed for activated STAT3 by immunoblot using anti-phospho-STAT3 antibodies. In some experiments, apoptosis will be measured using FITC-annexin V and 7-amino-actinomycin D and flow cytometry.

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http://mct.aacrjournals.org/cgi/content/full/7/6/1543

IS THIS PROJECT SUPPORTED BY EXTRAMURAL FUNDS?

Yes ☑ or No ☐

(IF YES, PLEASE SUPPLY THE GRANTING AGENCY’S NAME)

VA

THIS PROJECT IS: ☑Clinical ☐Laboratory ☐Behavioral ☐Other

THIS PROJECT EMPLOYS RADIOISOTOPES ☐

THIS PROJECT INVOLVES THE USE OF ANIMALS ☐

PENDING ☐ APPROVED ☑ IACUC PROTOCOL #
Summer Student Research Program
Project Description

THIS PROJECT INVOLVES THE USE OF HUMAN SUBJECTS ☐

PENDING ☐  APPROVED ☐  IRB PROTOCOL # M

WHAT WILL THE STUDENT LEARN FROM THIS EXPERIENCE?

_Student will learn aseptic technique, elements of cell culture of cancer cell lines, reading research literature, role of DNA methylation in cancer therapy, role of STAT3 in cancer progression, immunoblots, apoptosis assays, keeping accurate research notebook, preparing a scientific poster for presentation._