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SUMMARY

Grant # DMAD 17-94-J-4376

"Positron emitter I^{124} iododeoxyuridine as a tracer to follow DNA metabolism on scans and in tumor samples in advanced breast cancer."

The objectives of this study are: (1) to determine whether the biologic activity of locally advanced Stage III breast cancer as measured by ^{124}I-iododeoxyuridine (IUdR) uptake on positron emission tomography (PET) scans pre and post chemotherapy can be correlated with the clinical response as determined by physical examination and conventional radiographic studies, (2) to demonstrate that incorporation of IUdR is into the DNA contained within the tumor and that it correlates with the subsequent tumor response and proliferative activity of the tumor, (3) to further assess the biologic activity of tumor sites and clinical response by using a program which fuses PET scan images on computed tomography (CT) scans, magnetic resonance imaging (MRI) or SPECT bone scans.

Patients with Stage III breast cancer will have a complete extent of disease evaluation including routine radiographic studies. A PET scan with IUdR will be obtained within 2 weeks prior to therapy and after 4 cycles of chemotherapy. Whole body emission scans will be performed 24 hours after intravenous injection of 8 mCi of IUdR. Tumor biopsies will be obtained on the day of the PET scan and assessed for incorporation of IRdR into DNA. Flow cytometry and Ki-67 stains will also be obtained. Fusion imaging will generate resliced PET images that correspond to appropriate original CT, MRI or SPECT bone scan images.

There has been an unforseen delay in the construction of the site for the positron emission tomography (PET) scan. It is expected that the PET scan will be operational in November 1995.