

WINTER 2005 SEMINAR SERIES

F21C BIOPROCESSING & BIOSENSING CENTER

• DIVISION OF FOOD SYSTEMS & BIOENGINEERING •

PRESENTER

Dr. Paul Dale, Chief, Surgical Oncology, Department of Surgery, University of Missouri-Columbia

TITLE

Biomedical Engineering and Treating Cancer

ABSTRACT

This talk will focus on new surgical techniques used to treat our patients with cancer. This will be directed toward new technical tools, introduced through biomedical engineering principals and innovation. We will discuss the management and treatment of three cancers, melanoma, breast and liver.

The incidence of melanoma is rapidly on the increase. This deadly form of skin cancer requires rapid diagnosis, staging and surgical treatment. The orderly spread of primary melanoma to the regional lymphatics and then hematogenously enabled the introduction of the Sentinel Node Biopsy Technique. This technique has revolutionized the staging of many forms of cancer. We will review this technique and what obstacles need to be overcome to treat our patients with melanoma.

Breast cancer treatment has evolved dramatically over 100 years from the Halstead radical mastectomy to our patient segmental mastectomy and axillary staging. This 100 year progression has been made possible by the introduction of better surgical techniques and instrumentation. We will review technological innovations which allow patients to have immediate breast reconstruction, avoid axillary dissection with the Sentinel Node Biopsy and reduce postoperative radiation times from 6 weeks to 5 days.

Liver tumors, although relatively rare are often not curable. Whether primary in the liver or metastatic from other organs, only 5 % of liver tumors are surgically resectable at the time of diagnosis. The advances in ablation techniques and chemotherapy delivery systems have made a dramatic impact in treating these patients. We will review the biomedical advances in ablative therapy including Cryotherapy and Radiofrequency ablation. Implantable infusion pumps allow a concentrated delivery of chemotherapy to the liver and show promise for improved survival. Our discussion will look at these advances and areas where help is needed.

Technological, biomedical engineering, advances are needed to improve our surgical techniques, staging and treatment of cancer patients. Discussion of these cancers will allow the audience better insight into the historical treatment of cancer, the technological advances which have gotten us this far, and perhaps stimulate ideas of biomedical advances for tomorrow.

DATE • TIME • LOCATION

**Tuesday, February 22, 4:00pm
Ag Eng Bldg 105 • Refreshments**