

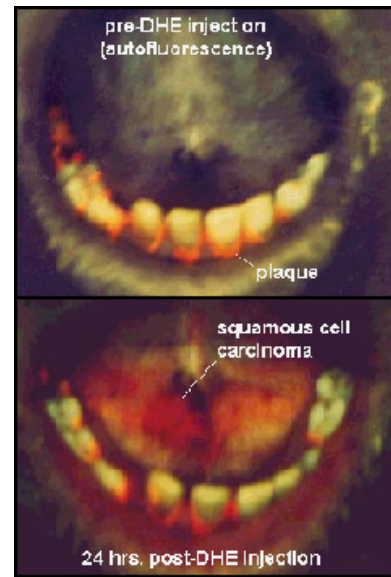
PhotoDynamic Therapy

In 1984 Bio-Medical Consultants began with a group of scientist and physician collaborators from the Midwest Bio-Laser Institute and the Wenske Laser Center, Chicago, IL. BMC, Inc. established and co-ordinated the PDT Clinical and Basic Research Program that conducted and evaluated the following clinical applications:

- Head and neck cancer
- Fluorescence detection of oral cancer
- Corneal neovascularization
- Gynecologic neoplasia

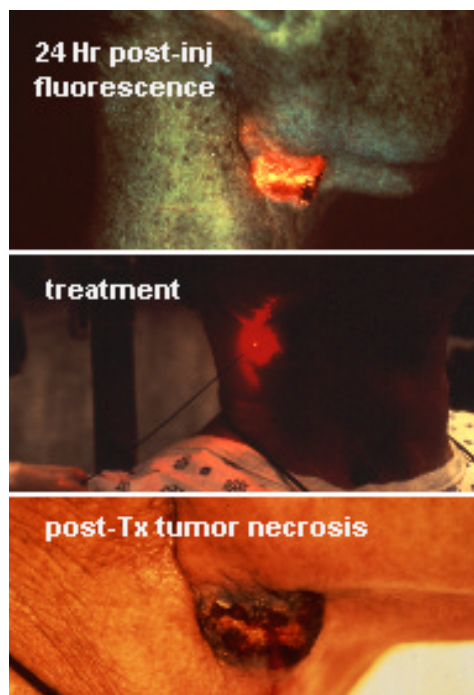
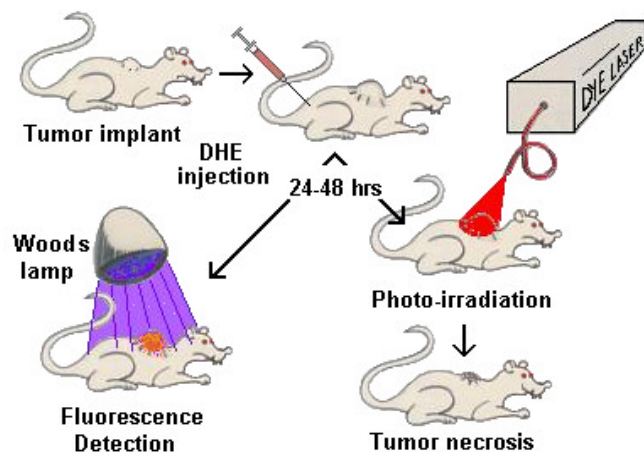
Photodynamic Therapy is a form of light-activated chemotherapy. The patient is administered a photosensitizing drug (dihematoporphrin ether: DHE) which accumulates selectively in cancerous tissues. The drug has no action unless activated by light. Light from a high power diode or laser is delivered via an optical fiber to activate the photo-sensitizer only where treatment is needed. Hence, the light activation controls the region of treatment. This form of chemotherapy is more surgical in nature (directed against a known site) than oncologic (directed systemically against unknown sites).

After the drug is localized, the area is irradiated with blue light (e.g., Wood's Lamp or laser) to reveal its location by fluorescence. Intense red light (dye laser or diode) is used to initiate a toxic photochemical reaction, destroying the host tissue, but leaving the surrounding tissue intact.



PDT TUMOR IMPLANT ANIMAL MODEL

Animal models (human squamous tumor xenografts in athymic mice and DMB-induced squamous cell carcinoma in hamster cheek pouch) were established to develop dosimetry for PDT for head and neck cancer, to develop techniques for tumor identification utilizing fluorescence detection, and to evaluate mechanisms of action.



PDT FOR HEAD AND NECK CANCER

The patient was injected with Photofrin® and after 24 hours the SCC tumor at the angle of the jaw is well defined by its fluorescence. An optical fiber is inserted into the center of the tumor mass and 630nm light from a dye laser is delivered. Twenty-four hours post-treatment, only the tumor tissue (defined by fluorescence) is necrotic.