Many Directions in Tissue Engineering Research

Johns Hopkins researchers are exploring tissue engineering—using cartilage and bone—to replace missing structures in a patient's body. This is an early-stage study, explains researcher Kofi Boahene, but success could lead to techniques to use a patient's own cells to form new bone to replace bone removed because of cancer, for example. Traditional methods commonly take bone from the patient's fibula or scapula to refill such areas.

Researchers also are studying the treatment of keloids, or excessively thick scars. They hope to find a way to engineer proteins to help improve scar formation.

A third area of scientific study is engineering mechanisms that would inject fillers into the facial area as a way of reconstructing deformities without open surgery. An abstract describing this work, *Tissue Engineering with Photofillers*, was well received at the Triological Society Annual Meeting in Chicago, April 2006.

Treating Precancerous Lesions of the Mouth, Throat and Voice Box

Johns Hopkins researchers are leading a one-of-a-kind international, multi-institutional trial of the biological agent Cetuximab to treat aggressive precancerous conditions of the mouth, throat and voice box. The study is ideal for patients who have had recurrent precancerous lesions, who cannot be treated by surgery or who have had previous head or neck cancer.

Patients eligible for the study have unresectable, diffuse high-grade dysplasia; previously treated head and neck squamous cell carcinoma with persistent or recurrent high-grade dysplasia; and lesions with such high-risk molecular features as 3p and 9p chromosomal loss. These patients have a risk of progressing to malignancy that ranges from 40 percent to 70 percent over a five- to 10-year interval.

Although traditional treatments have included complete surgical excision, many patients cannot be treated effectively with conventional surgical therapy. In this study, supported by a National Cancer Institute SPORE grant, as well as funding from Zila Inc., and Bristol Myers Squibb, physicians are using Cetuximab to block the epidermal growth factor receptor and assessing the response of patients to this novel agent.

For more information on this study, call Joseph Califano, principal investigator, at 410-955-6420.