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International Cancer News

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From the Globe

Microdissection of Cells From Tissue Laser and Sticky-tape

Laser capture microdissection can pull out small clusters of precancerous cells from a tissue sample in approximately 8 seconds. The technique makes it easier to confirm that unusual cells are precancerous.

Dr M. Emmert-Buck and colleagues report that laser capture microdissection has successfully extracted cells in all tissues in which it has been tested [1]. These include kidney glomeruli, *in situ* breast carcinoma, atypical ductal hyperplasia of the breast, prostatic interepithelial neoplasia, and lymphoid follicles. From these cells they were able to amplify DNA or RNA and recover enzymes.

According to Dr Lance Liotta at the National Cancer Institute and senior author of the paper, the direct access to cells should lead to a revolution in the understanding of the molecular basis of cancer and other diseases, and so help in more precise disease detection. "Laser capture microdissection gives us access to the disease, in a sense, while the crime is still in the planning stages, and that's really powerful information to have in designing strategies to halt the disease process," he said.

The technique works as follows:

- The scientist looks through a microscope at a tissue biopsy.
- A button is pressed to activate the laser when a group of cells is selected.
- The laser light passes through plastic film placed about the tissue sample as it strikes the targeted cells. The beam heats the plastic making it sticky. The cells then stick to the plastic directly above them and can be extracted for analysis.

Said Dr Richard Klausner, NCI director, "The NCI recognises that it has a commitment to place powerful, new research tools into the hands of scientists to catalyse the discovery process. And, the NCI will make every effort to do so with laser capture microdissection."

1. Emmert-Buck M, Bonner R, Smith P, *et al. Science* 1996, **275**, pp. 998–1001.

Smoking and Drinking Could Contribute to Beta Carotene Lung Cancer Risk

Alcohol consumption and smoking probably contribute to the adverse effect of beta carotene seen in two large lung cancer prevention trials, according to subgroup analysis to explain the increased incidence of lung cancer in people taking beta carotene supplements in these trials [1].

Both trials—the AlphaTocopherol, Beta-Carotene Cancer (ATBC) Prevention Trial [2] and the Beta Carotene and Retinol Efficacy Trial (CARET) [3]—were testing whether vitamin supplements would prevent lung cancer among people at high risk for the disease, and unexpectedly found a greater incidence of lung cancer among participants taking high-dose beta carotene supplements.

"The public health message of these new analyses remains unchanged - beta carotene supplements do not lower the risk of lung cancer in a population of long-term cigarette smokers, or asbestos-exposed populations, and may even cause harm," commented investigator Dr Demetrius Albanes from the Division of Cancer Prevention and Control at NCI.

In the current analysis of the ATBC study of cigarette smokers—which involved 29,133 Finnish male smokers—the authors show that the adverse effects of beta carotene appear stronger in men with a modest alcohol intake, 11 g/day (less than one drink a day) compared with those with a lower intake, and stronger in those smoking at least 20 cigarettes daily compared to those smoking less.

In the current analysis of the CARET study of 18,314 U.S. men and women at elevated risk for lung cancer found that in the group taking supplements, current smokers are at much greater risk for lung cancer than former smokers and raise the possibility that vitamin supplements in former smokers may have a protective effect. Investigator Dr Gilbert Omenn also found a greater incidence of lung cancer in those with the highest alcohol intake >50 g/day (over three drinks a day).

Dr Omenn commented "CARET and ATBC provide definite evidence of no benefit and substantial evidence of harm from beta carotene, both for lung cancer incidence and for cancer, cardiovascular, and total mortality."

1. Albalones D, Heinonen OP, Taylor PR, *et al. J Natl Cancer Inst* 1996, **88**, 1560–1570.
2. Omenn GS, Goodman GE, Thornquist MD, *et al. J Natl Cancer Inst* 1996, **88**, 1550–1559.
3. Omenn GS, Goodman GE, Thornquist MS, *et al. N Engl J Med* 1996, **334**, 1150–1155.