

SCIENCE NEWS of the week

Diet and Cancer: Timing Makes a Difference

Breast cancer, the second leading cause of female cancer deaths, strikes about one in 10 U.S. women at some time in their lives. Though animal studies have linked high-fat diets with development of this disease, human data have proved less than conclusive. New research suggests that while animal fats may indeed increase breast cancer risk, other foods may decrease it. The study's provocative results also suggest that a woman's breast-disease status when she eats a potentially cancer-fostering or cancer-protecting food has an influence on whether that food will affect her future risk.

Between 1983 and 1985, researchers with the Vancouver Center of the Canadian National Breast Screening Study administered mammograms or physical breast exams to more than 9,300 women aged 40 to 59. Of these, 75 percent volun-

teered to fill out a questionnaire on risk factors.

The new study focuses on some 450 risk-surveyed women whose first-visit exams revealed a "lump" and led to its total removal. After excluding women with either cancer or no breast disease, T. Gregory Hislop and his colleagues at the Cancer Control Agency of British Columbia had a study group of 403 women with some form of benign breast disease.

From tissue analyses, the researchers divided the women into three groups: those with proliferative breast disease, characterized by abnormal, rapidly dividing cells; those with "severe atypias," a subset of the proliferative group that appeared far more cancer-like; and those with nonproliferative breast disease. Of these benign diseases, only the two proliferative types are known to increase a woman's risk of breast cancer.

Hislop's team matched each of the 403 patients with one or more volunteers of the same age who showed no evidence of breast disease in the screening. They then compared the women's diets. In the February *AMERICAN JOURNAL OF EPIDEMIOLOGY*, the researchers report signs of an apparent dietary influence over just two types of breast disease — the ones with established links to an increased risk of breast cancer.

Vitamin A supplements and frequent consumption of green vegetables — often rich in vitamin A and related anticancer carotenoids (SN: 11/4/89, p.294) — appeared to protect women against the more general proliferative breast disease, apparently lowering a woman's cancer risk by more than half. Even heavy consumption of fat did not appear to influence the development of this abnormality, though it did increase the risk of developing severe atypias — thereby tripling these patients' breast cancer risk. However, eating vitamin A or green vegetables did nothing to limit severe atypias and their associated cancer risk.

Hislop says the more general proliferative category of breast disease tends to develop into severe atypias before maturing into a cancer. He concludes, therefore, that "vitamin A may play a role in the earlier stages of [precancerous] disease, and dietary fat later on."

"The design of this study is nice," says Meir Stampfer at Brigham and Women's Hospital in Boston. He notes that administering a questionnaire prior to cancer development — in this case during the benign phase — limits diet-recall errors, a common concern in similar studies. However, he adds, the new data do "little to support the fat hypothesis" because the dietary-fat links in women with severe atypias "are far from statistically significant."

Norman F. Boyd at the Ontario Cancer Institute's Princess Margaret Hospital in Toronto offers another view. He notes the small number of women with severe atypias (32) makes it nearly impossible to achieve statistical significance in analyzing the risks associated with each of the study's four levels of meat-fat consumption. Boyd points out, however, that a related analysis in which the team shows an increasing risk with increasing fat consumption is statistically significant — and "is generally more sensitive than the test applied to individual [consumption categories]." Still, he cautions, it's too early to draw sweeping conclusions about diet and this cancer.

Hislop concurs, saying, "We view this as a hypothesis-generating study, not a hypothesis-testing one." — J. Raloff

Collaring the gene for impurrfect ears

It started in 1981, when a stray black cat with funny ears mooched a meal from a family in Lakewood, Calif., and moved in. From that simple encounter, and the birth of some kittens, grew a worldwide debate about the genetics behind those curly ears — a debate that appears closer to resolution with a newly released research report.

Since 1983, cat fanciers have bred the unusual mutants — now called American curl cats — with an eye toward developing a show breed. In analyzing data on 81 litters (383 kittens), Roy Robinson of the St. Stephens Road Nursery in London, England, has confirmed that the ear-curling gene is autosomal dominant. That means any cat with even one copy of the gene will show the trait.

But some breeders have wondered whether other genes might modify the expression of the curl gene and thus the appearance of the curl itself — a complication that would slow efforts to establish a new breed. And some worry that the curl, like other ear mutations in cats, may bring with it a risk of unwanted abnormalities. Some cats with genes for forward-flopping ears, for example, have stubby tails, swollen feet and lethargic natures.



In the November/December 1989 *JOURNAL OF HEREDITY*, Robinson reports finding no such defects in any of the crosses he has analyzed. He cautions that a final judgment of the curl gene, which apparently codes for a slight overproduction of cartilage along the inner lining of the ear, will require data from more cats carrying dual copies of the gene. But cat breeders say it looks as if the curl mutation has provided a new and healthy breed — and one with an outstanding temperament.

One cat association has already accepted the curl cat as an official breed, and another has granted it probationary status, says breeder Bradley L. Mayer of Somerville, N.J. To pass the probationary muster, he says, the candidates "walked across the conference table, sat in each of the directors' laps, kissed them, and that was it." — R. Weiss

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