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This Week

Research Notes

Articles

Cover: Studies have shown that men at high risk of testicular cancer carry abnormal cells in their testes — probably from birth. Shown here as unusually large, often quasi-ovoid, purple-stained rings along the inside edges of at least six affected seminiferous tubules, these abnormal, carcinoma in situ (CIS) cells resemble aberrant fetal cells. Indeed, studies now suggest, such CIS cells may trace to fetal exposures to drugs or environmental toxicants with estrogenic properties. (Photo: Skakkebaek)

Departments

Science Service, which publishes SCIENCE NEWS, is a nonprofit corporation founded in 1921. It gratefully accepts tax-deductible contributions and bequests to assist its efforts to increase the public understanding of science, with special emphasis on young people. More recently, it has included in its mission increasing scientific literacy among members of underrepresented groups. Through its Youth Programs it administers the International Science and Engineering Fair, the Science Talent Search for the Westinghouse Science Scholarships, and publishes and distributes the *Directory of Student Science Training Programs for Precollege Students.*

Letters

Seeming citrus risk due to bias?

We wish to expand and clarify your coverage of our research on the origin of lung cancer among nonsmokers ("Saturated fats may foster lung cancer," SN: 12/4/93, p.373).

Fruits and vegetables in the diet do confer some protection against developing lung cancer among smokers, but the best protection by far is smoking cessation. Among nonsmokers, the evidence for a beneficial effect of fruits and vegetables is more equivocal. In our article, we point out that the apparent risk associated with citrus fruit and juice may be due to a reporting bias in the research and should not be interpreted as etiologically meaningful.

Second, since total fats, saturated fats, and cholesterol are highly correlated in the diet, we do not believe our findings contradict early work that indicated a link between cholesterol and lung cancer. All three nutrients were associated with lung cancer in our study, with saturated fat showing the strongest effect.

Third, although future studies may find that heterocyclic aromatic amines (HAAs) in foods account for some forms of cancer, it is noteworthy that both red meat and dairy products contributed to the excess risk of lung cancer in our study. Dairy products are not an important source of HAAs, as are well-done meats.

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Eyeing photonic crystals

When I looked at the stack of crisscrossed rods that forms a photonic crystal ("A novel architecture for excluding photons," SN: 9/25/93, p.199), I was struck by the similarity it has to two structures in the cornea.

The bulk of the cornea (the stroma) is formed of rod-like collagen fibers arranged in layers. Each layer consists of parallel arrays of collagen fibers. The arrays in the different layers are perpendicular to each other, like the direction of cellulose fibers in alternate layers of plywood. This is quite similar to the illustration of the crisscrossed rods.

Attached to the inside of the stroma is a thin membrane called Descemet's membrane, a multilayered lattice. Each layer resembles a hexagonal array of marbles connected by matchsticks. This structure develops with age and is not organized in young individuals.

These similarities raise several questions. Does either or both of these layers serve as photonic crystals, exhibiting band gaps at visible, infrared, or ultraviolet wavelengths? What photonic characteristics would models of these structures have? If Descemet's membrane functions as a photonic crystal, why does it only get organized as one ages? Are there some developmental or physiological needs for certain wavelengths of light during early or later periods of life? How might all of this affect the future of radial keratotomy operations?

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