

Passive smoking Conflicting results

Can passive smoking — involuntary exposure to cigarette smoke — cause lung cancer? Research by Takeshi Hirayama, chief epidemiologist of the National Cancer Center Research Institute in Tokyo, suggests that it can. A study he reported last January found that wives of cigarette smokers are twice as likely to die from lung cancer as are wives of nonsmokers (SN: 1/24/81, p. 53). However, research by Lawrence Garfinkel, vice president for epidemiology and statistics at the American Cancer Society in New York City, refutes these results. His study, reported in the *JUNE JOURNAL OF THE NATIONAL CANCER INSTITUTE*, shows that the nonsmoking wives of men who smoke are no more likely to die from lung cancer than are the nonsmoking wives of men who do not smoke.

Garfinkel analyzed data obtained from an American Cancer Society Human Living Habits Study conducted between 1960 and 1972 to determine the effects of passive cigarette smoking on nonsmoking wives. He identified 177,000 nonsmoking women who were married either to men who had never smoked, to men who currently smoked regularly but less than 20 cigarettes a day or to men who currently smoked 20 or more cigarettes a day. He then computed the number of lung cancer deaths among the three groups of women for the 1960 to 1972 period without adjusting for possibly confounding factors such as age, race, education or residence and

found no statistically significant differences among them. He then compared lung cancer deaths among the three groups once more, this time taking into account possibly confusing factors. Again there were no statistically significant differences among the three groups. So, "compared to nonsmoking women married to nonsmoking husbands, nonsmokers married to smoking husbands showed very little, if any, increased risk of lung cancer," Garfinkel concludes.

Garfinkel admits, though, that because of flaws in study design neither Hirayama's study nor his definitively answers the question of whether passive smoking can cause lung cancer. For instance, neither investigation took into consideration the possibility that nonsmoking wives might be exposed to cigarette smoke from sources other than their husbands. And recently the Tobacco Institute in Washington (the trade association for U.S. cigarette manufacturers) had three statisticians—Nathan Mantel of George Washington University (whose statistical test was used by Hirayama in his study), Alvan R. Feinstein of Yale University and Chris P. Tsokos of the University of South Florida — check the calculations Hirayama used in his study. The institute reported on June 15 that all three concur that Hirayama made a serious mathematical error — he used a whole number instead of the square root of the number at an important point in his calculations — and that this error invalidates his study's results. Yet on June 17 Hirayama replied that he stands by his findings: "Either his [Mantel's] original formula is wrong, or he made a mistake. There is no other possibility." □

Cancer and coffee: Concern percolates

People torn between a groggy morning without caffeine and the growing list of health risks associated with it may be cheered by criticisms made in the June 25 *NEW ENGLAND JOURNAL OF MEDICINE*. They say that a study linking coffee and cancer of the pancreas may be flawed.

"The data presented in this otherwise excellent paper may be flawed in one critical way, writes Steven Shedofsky of the Veterans Administration Hospital in White River Junction, Vt. He questions the comparison of pancreatic cancer patients with persons hospitalized for noncancerous diseases of the digestive system.

"Patients who had stopped drinking coffee because of disease may have been inadvertently included in the control group," write Ian Higgins of Community Health Service in Ann Arbor, Mich., and colleagues in another *JOURNAL* letter.

Preliminary results of the original study published by Brian MacMahon and colleagues at Harvard University indicated that coffee drinkers might have double or triple the risk of developing pancreatic cancer, the fourth most common cause of

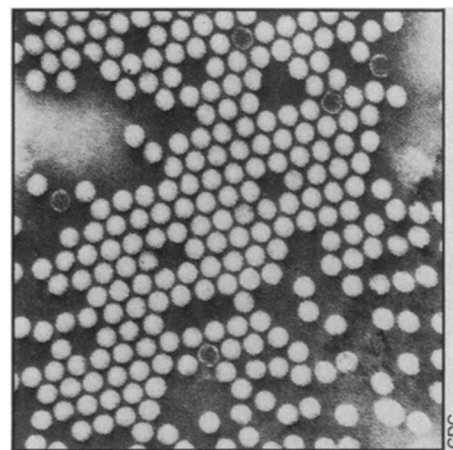
U.S. cancer deaths (SN: 3/21/81, p. 181).

Thomas C. Chalmers, president of the Mount Sinai Medical Center and dean of its medical school, voiced concern that the researchers who questioned patients about their coffee habits knew in advance which subjects had cancer and possibly biased their results unintentionally. Other critics noted that cigarette smoking and the use of sweeteners and nondairy creamers might confound study results.

MacMahon and colleagues defended their study, calling concern about the large number of gastrointestinal patients in the control group "reasonable," but noting a correlation between daily coffee consumption and cancer of the pancreas in all control groups.

An unintentional introduction of bias into the study was unlikely, they said, because none of the interviewers hypothesized coffee as a culprit until 86 percent of the data had been analyzed. The authors cautioned, however, in their original report that other data must be evaluated before a causal relation between coffee and cancer can be established. □

Poliovirus read from start to finish



Powerful techniques of analyzing genetic material are allowing scientists to decipher a variety of genes and simple viruses. Now a large group of researchers report the exact sequence of the 7,433 nucleotide subunits that make up the virus that causes poliomyelitis. Although vaccines have successfully controlled this disease for more than 20 years in the industrialized nations, it still threatens much of the world. The new knowledge of the genetic sequence is expected to contribute to improved vaccines and to antiviral drugs.

The poliovirus is the first of its kind to be analyzed so exhaustively, say Naomi Kitamura, Eckard Wimmer and ten colleagues in the June 18 *NATURE*. It is an animal-infecting virus that uses RNA instead of DNA as its genetic material and can reproduce in a cell without the aid of other viruses. Poliovirus is unusual in that its genetic material is attached at one end to a small protein molecule. Also, it synthesizes a single, long chain of amino acids and then it cleaves that chain into the various viral proteins.

The nucleotide sequence confirms poliovirus's unusual biology. A set of 6,621 nucleotides comprising 89 percent of the total sequence can be translated without encountering a stop signal. This stretch includes the genetic information for the twelve viral polypeptides the scientists have analyzed. They find that most of the cleavages of the precursor occur between the amino acids glutamine and glycine.

This research, done at the State University of New York at Stony Brook, may aid in development of new vaccines by construction of viral strains permanently incapable of causing polio and by production of fragments of the virus in bacteria, via genetic engineering, to provoke an immune response. In addition, the new knowledge about the specific sites where the viral precursor polypeptide is cleaved may lead scientists to construct specific inhibitors to use as novel antiviral pharmaceuticals. □