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In a guest editorial, Pitot (McArdle Laboratory for Cancer Research, University of Wisconsin, Madison, Wisconsin) reviews and discusses the evidence for a genomic or extragenomic alteration to explain neoplastic transformation. Dr. Pitot surveys the literature on the genetic origins of the neoplastic transformation and on the membranes and chromosomes in the natural history of neoplasia. He concludes that, if changes in macromolecular patterns of intracellular membranes can be shown to alter the normal patterns of DNA synthesis and mitosis, the two divergent concepts of neoplasia can be reconciled.

The October issue contains two studies from the Naylor Dana Institute, American Health Foundation, New York, New York, on tobacco carcinogenesis. Hecht and associates synthesize highly purified methylchrysenes, isolate these components from cigarette smoke, and bioassay tumor initiators and complete carcinogens. On mouse skin, 5-methylchrysenes is an extremely active carcinogenic polynuclear aromatic hydrocarbon.

Kobayashi and co-workers induce hyperplastic and neoplastic lesions in the upper respiratory tracts of Syrian hamsters exposed to cigarette smoke after intratracheal instillation of 7,12-dimethylbenz[a]anthracene (DMBA). In hamsters pretreated with DMBA, cigarette smoke inhalation leads to earlier and more extensive pathologic changes in the hamster larynx than in hamsters exposed to cigarette smoke alone.

In 1967, Milham reported an increased frequency of woodworking occupations among white males dying from Hodgkin’s disease in New York state. Now Petersen and Milham (University of Washington, Seattle, Washington) have applied the case-control methodology to the Washington state record file, 1950-1971. In both the New York and Washington data, carpenters and papermakers had the highest proportional mortality ratio. The authors hypothesize that woodworking and death from Hodgkin’s disease are associated and that certain types of wood contain carcinogenic agents.

Using the Connecticut Tumor Registry, the U. S. Childhood Cancer Registry and the Center for Disease Control,
U. S. Public Health Service. Curnen et al. (Columbia School of Public Health, New York, New York) find no association between childhood leukemia and maternal infectious diseases. This finding is based on a retrospective correlation study to test the hypothesis that children born of women exposed to influenza, German measles, whooping cough, chickenpox, measles or poliomyelitis during pregnancy are at high risk of developing leukemia.

Staneck and associates (Mayo Medical School, Rochester, Minnesota) characterize an antiserum generated in rabbits against malignant human plasma cells isolated from a patient with myeloma and maintained in tissue culture. The antmyeloma serum did not react with human serum proteins or immunoglobulins by immunodiffusion, complement fixation or passive hemagglutination. A strong immunofluorescent reaction was observed with a subpopulation of plasma cells, but not with lymphocytes or polymorphonuclear leukocytes, in the bone marrow of patients with multiple myeloma or Waldenström’s macroglobulinemia.

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Takemoto and co-workers (National Cancer Institute, Bethesda, Maryland) isolated a hemagglutinating papovavirus from both a reticulum cell sarcoma of the brain and from the urine of an 11-year-old boy with Wiskott-Aldrich syndrome. The virus from the brain tumor was isolated by cocultivation of tumor fragments with human fetal brain and VERO cells. Virus from the urine was detected by electron microscopy of pelleted urine and subsequently isolated in cell culture. Serum from the patient showed the development of high antiviral antibody at least a year before tumor detection. No direct relationship between the virus and the tumor was established.

Before clinical tests of intralesional immunotherapy are undertaken in patients with colorectal cancer, animal studies should be done to determine whether bacillus Calmette-Guérin (BCG) can either cause regression of colon tumor or augment tumor-specific immunity in combination with surgical resection. Toxicity tests are also required to rule out untoward complications after the intracolonic injection of
BCG. Accordingly, Bast et al. (National Cancer Institute, Bethesda, Maryland) injected BCG into the colonic mucosa of rhesus monkeys. The animals tolerated BCG well. Ulceration developed at injection sites within three weeks after initial treatment and healed spontaneously. All monkeys developed systemic tuberculin hypersensitivity. A second intrarectal injection of BCG produced indurated mucosal lesions within 24 to 48 hours and local ulceration within a week. No extracolonic lesions were observed, and at necropsy there was no evidence of systemic BCG infection.

Dunham and associates (National Cancer Institute, Bethesda, Maryland) applied certain plant materials to hamsters' upper gastrointestinal tract, including the cheek pouch. Because of a high incidence of esophageal cancer in Curacao, The Netherlands Antilles, they selected nine plants used in native teas and remedies, a tobacco and an alkaloid (arecoline) present in betel quid. Lesions developing after treatment with four plants and arecoline were a superficial spreading carcinoma of pouch epithelium, papillomas of the esophagus and advanced atypias. The histologic types and distribution of the lesions in the cheek pouch and esophagus suggest that they were caused by substances in the test materials tentatively presumed to be weaker or slower in action than known chemical carcinogens.

Pletsch and Goldenberg (University of Kentucky Medical Center, Lexington, Kentucky) chromatograph, by gel filtration, plasma from patients with malignancies, and determine the molecular size of carcinoembryonic antigen (CEA) as measured by the Hansen Z-gel radioimmunoassay. The CEA in patients with cancer of the colon, ovary, cervix or bronchi had a molecular size of approximately 370,000 daltons, whereas CEA in the plasma of patients with rectal tumors was 200,000 daltons.

In human sera, Guerra et al. (Children's Hospital of Philadelphia and School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania) describe antibodies unrelated to Epstein-Barr virus, detectable by their ability to precipitate soluble components from cells of lymphoid origin. The study points to the nonspecific components often observed in immunodiffusion tests with human sera, which are apparently responsible for contradictory reports in literature.

By immunoelectron microscopy, Bucana and Hanna (Oak Ridge National Laboratory, Oak Ridge, Tennessee) analyze cell-surface antigens common to BCG and tumor cells. The assay determines the specificity of various antisera against two hepatocarcinoma cells of guinea pigs and an early passage human melanoma cell culture. The cross-reactivity of anti-BCG serum with human melanoma cells is of special interest, since BCG scarification or intrallesional injection is a mode of immunotherapy for melanoma.