May

Oncogenic Viruses: Quo Vadis?

In an informative, thoughtful Presidential Address before the 67th annual meeting of the American Association for Cancer Research, Charlotte Friend (Mt. Sinai School of Medicine, New York) describes the progress, status and future prospects in tumor virology. Her entry into the field 20 years ago coincided with its "coming of age" after several decades of rejection. Since then, information derived from research on animals and on cells has been prodigious. Although no human oncogenic viruses have been definitely identified so far, the field remains as viable as ever, with better and increasingly more sophisticated methods for pursuing the "sly and devious" putative culprits.

Two Viruses Associated with Human Cancer

The two viruses that at this time appear to be closest to human neoplastic disease are the DNA entities, Epstein-Barr virus (EBV) and the Herpes Simplex type 2 (HSV-2) virus. EBV is associated with Burkitt's lymphoma and nasopharyngeal carcinoma, and causes the benign, self-limiting infectious mononucleosis. HSV-2 is linked epidemiologically and serologically with cancer of the uterine cervix. The more elusive RNA viruses appear in cultures of human leukemia and seem related to primate C-type viruses.

Importance of Basic Research

These incomplete, unexploitable forays into human disease, however, are based on massive laboratory research that has been so generously supported by the nation. It may not please the impatient critics that the problem of cancer has not been solved, and that cancer mortality continues to rise. The worst disservice to our resolve would be to cripple basic research upon which all subsequent applications depend. It is only to "those who refuse to go beyond fact and rarely get as far as fact" that the future looks bleak. It does not take much imagination to become excited at the implication of such findings as, "there are instances of virus-transformed cells that phenotypically revert to normal," with examples of the frog renal carcinoma and mouse teratocarcinoma. The techniques of molecular biology are becoming competent to unravel the enigmas of cancer. We can join Charlotte Friend's invocation of Benjamin Franklin's vision of the day when "all diseases may by sure means be prevented or cured."

Related Reports

As a counterpoint to Friend's message, the May issue contains no less than a
half-dozen reports bearing on viral oncology and tumor antigens. These include contributions from Belgium (L. Thiry et al.), Italy (V. Marinozzi et al.), and United States laboratories from New York to California.

Inclusions and Viruses
Reports of intracellular “virus-like” particles continue to appear, with the implication that such inclusions are indeed viruses of etiologic significance. Marinozzi and co-workers (University of Rome, Italy) examined four cases of adenocarcinoma of the gastrointestinal tract and found large electron-dense mitochondrial inclusions of two types. One consisted of calcium-containing granules linked to a glycoproteic substrate; the second type was phospholipid with osmium-dependent electrodensity. Neither should be confused with viruses.

June

Preclinical Chemotherapy: Quo Sumus?
The development of clinical cancer chemotherapeutic agents depends upon animal pharmacology as predictors of toxicity and effect. The methods have been standardized, promulgated and accepted by regulatory agencies during the past 20 years, under the national cancer program.

In the June issue, Philip S. Schein (Georgetown University School of Medicine, Washington, D.C.), critically reviews the topic of preclinical toxicology of anticancer agents, as it appears now. He points out what has been learned from studies on mice, dogs and monkeys; recommends changes that seem indicated on the basis of experience; and suggests approaches for further progress. One conclusion reached was that studies in monkeys offered no advantages over studies in dogs. This should help to reduce the already inordinate costs of drug development. It is hoped that regulatory bodies will take note of this finding.

Schein’s thoughtful editorial should be widely read as a basis for further discussion and research in this important field.

To emphasize the importance and relevance of the subject, the June issue contains papers on the pharmacology of three recent chemicals: esters of arabinofuranosylcytosine (D.H.W. Ho and G.L. Neil), chartreusin (J.P. McGovern et al.) and 5-aza-2′-deoxycytidine (R.L. Momparler and J. Goodman). The indications and uses of antimetabolite methotrexate (MTX) are extended by the clinical demonstration of W.D. Ensminger and E. Frei III (Sidney Farber Cancer Institute, Boston, Mass.) that thymidine offers significant protection against MTX toxicity.