

*Meeting Report*

## The Ninth Meeting on Mammary Cancer in Experimental Animals and Man

The Ninth Meeting on Mammary Cancer in Experimental Animals and Man was held in Pisa, Italy, on October 28 to 30, 1974, by the organization of the Institute of Pathological Anatomy and Histology, under the auspices of the University of Pisa Medical School, the National Research Council of Italy, the Italian Cancer Society, and the Virus Cancer Program, National Cancer Institute, Bethesda, Md. Following the tradition of previous meetings, attendance was limited to invited workers mainly in the fields of murine, primate, and human mammary tumorigenesis with particular emphasis on the "MTV's."<sup>1</sup>

With the Institute Staff there were 87 participants from the United States (43), the Netherlands (15), Italy (11), England (4), Denmark (3), Japan (3), France (2), Israel (2), Tunisia (2), German Democratic Republic (1), and Poland (1). The Meeting was held in the Historical Lecture Hall of the University, Sapienza Building, before the memorial marble sculpture of Galileo Galilei. Sixty papers were presented during 2.5 days of intense work and discussion. These were grouped by topic to form 10 successive sessions.

The 1st session (Chairman, Walter E. Heston, National Cancer Institute, Bethesda, Md.) concerned hormonal factors, in particular, the essential role of prolactin in mouse mammary tumorigenesis by exogenous ovarian hormones (Gabrielle Röpcke and Lourens M. Boot, Netherlands Cancer Institute, Amsterdam, Holland), the increase of prolactin content in the mouse pituitary after methylcholanthrene treatment (Daniel Medina, Baylor College of Medicine, Houston, Texas), the increase after adrenalectomy of rat mammary tumors induced by radiation and prolactin secreting pituitary tumor isograft (Kelly H. Clifton, University of Wisconsin, Madison, Wis.), the close relationship among prolactin secretion, frequency of mammary cell division, and mouse mammary tumorigenesis (Hiroshi Nagasawa and Reiko Yanai, National Cancer Center, Research Institute, Tokyo, Japan), the detection of significantly high plasma prolactin levels in a human population with high risk for breast cancer (F. J. Cleton, Netherlands Cancer Institute, Amsterdam, Holland), and the significant differences in pregnenolone metabolism between breast cancer patients responsive or unresponsive to adrenalectomy (N. Deshpande, Imperial Cancer Research Fund, London, England).

The 2nd Session (Chairman, Pietro M. Gullino, National Cancer Institute, Bethesda, Md.) dealt with regression of

established mammary tumors and included communications on the growth characteristics of hormone-dependent mouse mammary tumors (Per Briand, Fibiger Laboratory, Copenhagen, Denmark), the biochemical changes in hormone-dependent mouse mammary tumors during hormone deprivation (Martin Schülein and J. L. Daehnfeldt, Fibiger Laboratory, Copenhagen, Denmark), the role of cyclic adenosine 3':5'-monophosphate-binding protein in regression of Walker 256 mammary carcinoma (Yoon Sang Cho-Chung, National Cancer Institute, Bethesda, Md.), the effect of insulin on metabolism and regression of chemically induced mammary tumors in diabetic rats (Russell Hilf, University of Rochester, Rochester, N. Y.), the immune mechanism responsible for regression of an established metastasizing rat mammary carcinoma (Untae Kim, Roswell Park Memorial Institute, Buffalo, N. Y.), the immune factors controlling resistance to metastatic implantation of mouse mammary tumors (Jan Vaage, Pondville Hospital, Walpole, Mass.), and the usefulness of hydroxyproline excretion as an indicator of progress in treatment of breast cancer (Philip K. Bondy and Trevor J. Powles, Royal Marsden Hospital, Sutton, England).

The 3rd session (Chairman, Otto Mühlbock, Netherlands Cancer Institute, Amsterdam, Holland) was devoted to genetic factors, with papers given on histocompatibility genes responsible for MTV activity in mice (Otto Mühlbock), mammary tumor incidence in BIMA, a new inbred mouse strain carrying MTV (Anna Dux, Netherlands Cancer Institute, Amsterdam, Holland); chromosomal and extrachromosomal transmission of MTV in GR mice (Robertha van Nie and Jo Hilgers, Netherlands Cancer Institute, Amsterdam, Holland); linkage relationship between the gene controlling MTV expression in milk and the albino locus (A. A. Verstraeten, Netherlands Cancer Institute, Amsterdam, Holland); and evidence for hereditary types of human breast cancer (David E. Anderson, M. D. Anderson Hospital and Tumor Institute, Houston, Texas).

The 4th session (Chairman, Michael J. Brennan, Michigan Cancer Foundation, Detroit, Mich.) concerned mainly morphology, biology, and ultrastructure of premalignant and malignant mammary lesions, with papers presented on relationships between year of birth and frequency of human breast cancer in a large population sample (Michael J. Brennan), induction of preneoplastic alveolar nodules by chemical carcinogens in organ culture of mouse mammary glands (Mihir R. Banerjee, University of Nebraska, Lincoln, Neb.), evaluation of the preneoplastic nature of alveolar mouse mammary nodules by the study of their

<sup>1</sup> The abbreviation used is: MTV, mammary tumor virus.  
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## Meeting Report

angiogenic properties in intraocular transplants (Pietro M. Gullino), morphological aspects of mammary tumors in rats (C. F. Hollander, Institute for Experimental Gerontology TNO, Rijswijk, Holland), clinical aspects and prognosis of rapidly growing human breast carcinomas (Nejib Mourali, Institute Salah Azaiz, Tunisian Cancer Hospital, Tunis, Tunisia), and reproduction of tumor histological pattern by a human mammary carcinoma cell line in sponge culture (Jose Russo, Michigan Cancer Foundation, Detroit, Mich.).

The 5th session (Chairman, Satyabrata Nandi, Cancer Research Laboratory, University of California, Berkeley, Calif.) considered the intracellular expression, replication, and distribution of mouse MTV. Papers were presented on the enhancement of MTV synthesis by glucocorticoid hormones such as hydrocortisone (Satyabrata Nandi) or dexamethasone (Donald L. Fine, Frederick Cancer Research Center, Frederick, Md.) in cultures of mouse mammary tumor cells, the structural protein components of intracytoplasmic A particles as compared to those of B particles (Nurul H. Sarkar and Arnold S. Dion, Institute for Medical Research, Camden, N. J.), the antigenic relationship between A and B particles (Kamal J. Ranadive, Cancer Research Institute, Tata Memorial Centre, Parel, Bombay, India, and Martin Müller, Medizinische Akademie "Carl Gustav Carus," Dresden, German Democratic Republic), and the organ distribution of MTV (Peter Bentvelzen, Radiobiological Institute TNO, Rijswijk, Holland).

The 6th session (Chairman, Peter Bentvelzen) concerned biological properties, *in vitro* cultivation, and biochemistry of mouse MTV; it included communications on some characteristics of MTV in DD mice (Yoshihiko Tsubura, Nara Medical College, Nara-Ken, Japan), *in vitro* infection of a cat kidney cell line with mouse MTV followed by continuous replication (Etienne Y. Lasfargues, Institute for Medical Research, Camden, N. J.), antigenic expression of exogenous or endogenous MTV in cultured mouse cells from various sources (Peter Bentvelzen), strain differences in mouse MTV as detected by molecular hybridization between labeled MTV RNA and cellular DNA from different mouse strains (Rob Michalides, Meloy Laboratories, Inc., Springfield, Va.), the characterization of MTV genes in various mouse strains and in cultured cells by DNA-DNA annealing and RNA-DNA hybridization studies (Harold E. Varmus, Department of Microbiology, San Francisco Medical Center, San Francisco, Calif.), and the search for intracellular MTV-related RNA in murine mammary glands of high and low mammary cancer strains (Arnold S. Dion).

The 7th session (Chairman, Louis R. Sibal, National Cancer Institute, Bethesda, Md.) pertained to immunology of mouse MTV, with papers concerning methods of disruption of MTV by detergent-free solvent treatments to yield purified viral components with retention of antigenicity (Bernard Kramarsky, Institute for Medical Research, Camden, N. J.), studies of MTV glycoproteins by immunoadsorption (J. Brinkhof and J. Ouwehand, Radiobiological

Institute TNO, Rijswijk, Holland) and metabolic labeling (Joel B. Sheffield, Institute for Medical Research, Camden, N. J.), the expression of cytoplasmic and membrane MTV antigens in infected cells at different phases of the life cycle (Jo Hilgers), the distribution and mobility of cellular MTV antigens studied with the electron microscope by the immunoferritin method (Jero Calafat and Philomena C. Hageman, Netherlands Cancer Institute, Amsterdam, Holland), and the MTV antigen expression in male genital tract of high- and low-mammary cancer-strain mice (Taoufik Souissi, Institute Salah Azaiz, Tunisian Cancer Hospital, Tunis, Tunisia).

The 8th session (Chairman, Leon Dmochowski, M. D. Anderson Hospital and Tumor Institute, Houston, Texas) covered the field of immunological studies on mammary cancer in animals and man. The papers presented concerned antigenic similarities among different human mammary carcinomas and between human and mouse mammary carcinoma (Leon Dmochowski), suppression of endogenous MTV expression and tumorigenesis in mice after immunization with inactivated MTV (Jesse Charney, Institute for Medical Research, Camden, N. J.), cellular and humoral immune responses to mammary tumor antigens in mice (Osias Stutman, Sloan-Kettering Institute for Cancer Research, New York, N. Y.), the ability of ascitic mouse mammary tumor cells to bind unrelated antibodies (Asher Frensdorff, Department of Microbiology, Tel Aviv University, Tel Aviv, Israel), the cytotoxic effect of lymphocytes from mammary carcinoma-bearing cats (K. Weijer, Netherlands Cancer Institute, Amsterdam, Holland), the presence of antibodies to intracytoplasmic A particles in sera of women bearing benign or malignant proliferative breast diseases (Martin Müller), and the immunological relationship between human breast carcinoma and oncornavirus isolate from Hep-2 cells (Elizabeth Priori, M.D. Anderson Hospital and Tumor Institute, Houston, Texas).

The 9th session (Chairman, Jeffrey Schlom, National Cancer Institute, Bethesda, Md.) concerned attempts to detect oncornaviruses in human materials by electron microscopy and studies of the Mason-Pfizer monkey virus. Papers were given on intramitochondrial virus-like particles in a human cell line infected with human mammary carcinoma cell culture supernatants (Jafa Keydar, Department of Microbiology, Tel Aviv University, Tel Aviv, Israel), presence of virus-like particles in human breast and placental tissues (George Schidlowky and Mumtaz Ahmed, Pfizer Inc., Maywood, N. J.), ultrastructural characteristics of 2 established human breast cancer cell lines apparently free from virus-like particles (Gabriel Seman, M. D. Anderson Hospital and Tumor Institute, Houston, Texas), new infectivity assay (Mumtaz Ahmed) and radioimmunoassay (Jen Yeh, Pfizer Inc., Maywood, N. J.) for the Mason-Pfizer monkey virus, RNA subunit and protein structure of the Mason-Pfizer monkey virus (Gerald Schochetman, Meloy Laboratories Inc., Springfield, Va.), and biochemical characterization of the Mason-Pfizer monkey virus (Jeffrey Schlom).

The 10th session (Chairman, Dan H. Moore, Institute for

Medical Research, Camden, N. J.) dealt with possible breast cancer viruses in humans and included papers on reverse transcriptase activity in human milk (Justin J. McCormick, Michigan Cancer Foundation, Detroit, Mich.), significance of mouse MTV-related RNA detected in some human breast tumors (Akhil B. Vaidya, Institute of Medical Research, Camden, N. J.), characteristics of a candidate human oncornavirus isolated from breast carcinoma cells in culture (Charles McGrath, Michigan Cancer Foundation, Detroit, Mich.), and comments on human breast cancer virus (Dan H. Moore). Closing remarks on the Meeting were made by Leon Dmochowski. Several other participants, who did not present papers, were involved in the discussions.

The Meeting permitted evaluation of the progress made

during the last year (particularly in the field of mammary tumor viruses), it disclosed the most recent lines of research, and it allowed new people to join the previous members of the group. The accommodations for participants were close to the Leaning Tower, so that they could enjoy the magic atmosphere of "Piazza dei Miracoli" before or after sessions, early in the morning or late at night. The 10th Meeting will be held in Nara-Ken, Japan, during the spring of 1976, by the organization of the Department of Pathology, Nara Medical College.

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