A REPORT TO THE PHYSICIANS OF TEXAS

newsletter

THE UNIVERSITY OF TEXAS SYSTEM CANCER CENTER

July-August 1980 M. D. Anderson Hospital and Tumor Institute Volume 25, Number 4

Two Construction Projects Approved

Two building projects, a $3.75 million structure for MDAH in Houston and five buildings for the Science Park near Bastrop, have been approved for construction.

The University of Texas System Board of Regents authorized construction of a building to house the MDAH physical plant, police operations, and motor pool facilities at its May meeting on the basis of a report that the new facility would ensure a more efficient and cost-effective operation.

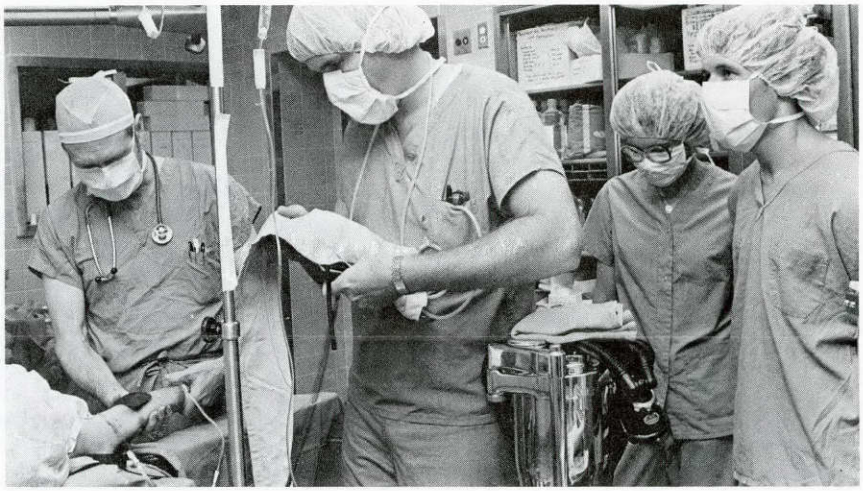
"What we have is a plan to free as much space as we can—first for patient care and second for research," said Deed Vest, MDAH assistant vice president for administration. Vest said the building will be located on a 100-acre site owned by The University of Texas south of the Texas Medical Center in Houston.

Most physical plant personnel will be housed in the new building; but, according to Vest, some will remain in the hospital to assure immediate response to any building emergency.

A warehouse, personnel facility, livestock clinic, primate clinic, and a pathology building are planned for construction at the Science Park Veterinary Resources Division near Bastrop. The construction will add over 36,000 square feet of space. Plans also include the remodeling of a 2752-square foot livestock barn.

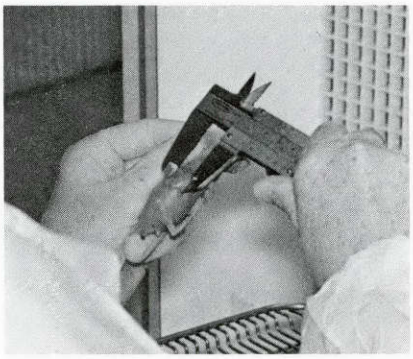
Although the warehouse accounts for most of the added space (25,200 square feet), the four other new buildings include a livestock clinic with an operating room, hospital stalls for injured animals, and the facilities to expand biologics production using plasmaphoresis techniques. Also included is a primate clinic that is centrally located to provide medical and support services to primate colonies. A pathology building will provide laboratories for histologic and histochemical analysis facilities and laboratories for clinical immunology and immunooncology procedures necessary to support diagnostic requirements of production colonies, a tumor referral program, and independent research in primate typing and bone marrow transplantation.

Competitive construction bids are being evaluated, according to Vest. The five buildings are scheduled for completion by mid- to late 1981.



MDAH's Active Summer Ends

- Junior science trainees, including the two pictured far right above, learned about science and medicine at MDAH during an eight-week summer program. See story page 3.
- One difference between MDAH and a community hospital is the prescriptions a pharmacist fills. Left, a pharmacist checks labels on intravenous solution bags. See story page 6.
- The National Large Bowel Cancer Project continues work toward preventing and controlling large bowel cancer. Nude mice, such as the one at right, are part of ongoing research. See project update on page 4.



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Scientific Abstracts

S. Kohl, L. K. Pickering, M. P. Sullivan, and D. L. Walters: "Impaired Monocyte-Macrophage Cytotoxicity in Patients With Hodgkin's Disease"

Since patients with Hodgkin's disease are unusually susceptible to herpesvirus infections, monocyte-macrophages (MP) and lymphocytes (L) from five children with Hodgkin's disease were studied in a prospective longitudinal fashion for their ability to destroy herpes simplex virus-infected target cells in the presence (ADCC, antibody-dependent cellular cytotoxicity) and absence (NKC, natural killer-cell cytotoxicity) of antiviral antibody. MP-ADCC was low at diagnosis, rose after splenectomy, and fell to lowest levels (lower than normal controls, $P < 0.05$) after chemotherapy. MP-NKC was low at all times ($P < 0.025$). In contrast, there was no impairment in patients' L-ADCC or L-NKC, although L-ADCC rose after radiotherapy and chemotherapy. These macrophage defects are consistent with the time of highest risk for severe viral infections in these patients and animal experimentation demonstrating the role of the macrophage in antiviral immunity (*Clin Immunol Immunopathol* 15:755–783, 1980).

E. C. Murphy, Jr., and R. B. Arlinghaus: "Effect of Canavanine on Murine Retrovirus Polypeptide Formation"

Canavanine is an arginine analog that is widely used to inhibit proteolytic processing of viral polyproteins. Certain results obtained with canavanine have suggested that it may have other effects. Therefore, we examined the effects of canavanine on the cell-free synthesis of murine retrovirus proteins. It was found that the electrophoretic mobility of the major *gag*-related cell-free product of both Rauscher murine leukemia virus (R-MuLV) and Moloney murine sarcoma virus 124 (Mo-MuSV-124) RNA was dependent on the concentration of canavanine used during translation. As the canavanine concentration was increased up to 4mM, the apparent size of the major *gag*-related polypeptide also increased from 65,000 (R-MuLV RNA) or 63,000 (Mo-MuSV-124 RNA) to approximately 80,000 daltons. Additional increases in the canavanine concentration up to 12 mM did not increase the size of the *gag* gene product beyond 80,000 daltons. This change in electrophoretic mobility appeared to be due to a substitution of canavanine for arginine residues in the polypeptides, not to a change in their actual size. If amber suppressor tRNA and canavanine were used together during translation of Mo-MuSV-124 RNA and Mo-MuLV RNA, the results were also in agreement with this proposal. Translation experiments done with ovalbumin mRNA and mengovirus 35S RNA indicated that canavanine incorporation caused a shift in the electrophoretic mobility of ovalbumin from 43,000 to 45,000 daltons and caused the appearance of two slightly larger polypeptides in the 155,000- and 115,000-dalton regions of the mengovirus RNA cell-free product (*J Virol* 33:954–961, 1980).

J. N. Lapeyre and F. F. Becker: "Analysis of Highly Repeated DNA Sequences of Rat With EcoR1 Endonuclease"

Cleavage of rat liver nuclear DNA with EcoR1 restriction endonuclease yields 14 discrete fragments ranging from 2300 to 93 base pairs in length, representing approximately 10.5% of the rat genome. Fragments of 1500, 180, and 93 base pairs are reiterated over 100,000 times; fragments of 2300, 880, 290, and 200 base pairs are reiterated over 20,000 times; the remaining fragments are present in over 1000 copies per genome. When compared to whole rat DNA, 11 were 1%–5% richer in A•T base pairs, and five were 1.5–2.5 times more methylated. From the criteria of the banding patterns in complete and incomplete digests, base composition, and extent of methylation, none of these fragments appeared to be generated as oligomers of a basic shorter repeat. The reassociation of EcoR1 fragments was monitored on hydroxyapatite and by S1 nuclease treatment in order to assess band reiteration frequency and the possibility of interspersion or short internal repeats. The renaturation of the four smallest EcoR1 fragments gave no indication of short internal repeats from hyperpolymer formation nor interspersion with lower frequency sequences by size reduction after S1 nuclease treatment. Anomalous renaturation of several large fragments was observed, possibly due to internal repeats (*Biochim Biophys Acta* 607:23–35, 1980).

E. R. Richie, M. P. Sullivan, and J. van Eys: "A Unique Surface Marker Profile in T-Cell Acute Lymphocytic Leukemia"

A five-year-old girl with acute lymphocytic leukemia presented with moderate hepatomegaly, marked splenomegaly, but no evidence of a mediastinal mass. The peripheral blood white count was 270 × 10^9/liter with 99% leukemic cells. Surface marker analysis showed the lymphoblasts to be E-rosette negative and complement-receptor positive. The patient's leukemic cells were unreactive with anti-p23,30, which detects Ia-like antigens, and strongly reactive with A99 anti-T-

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newsletter

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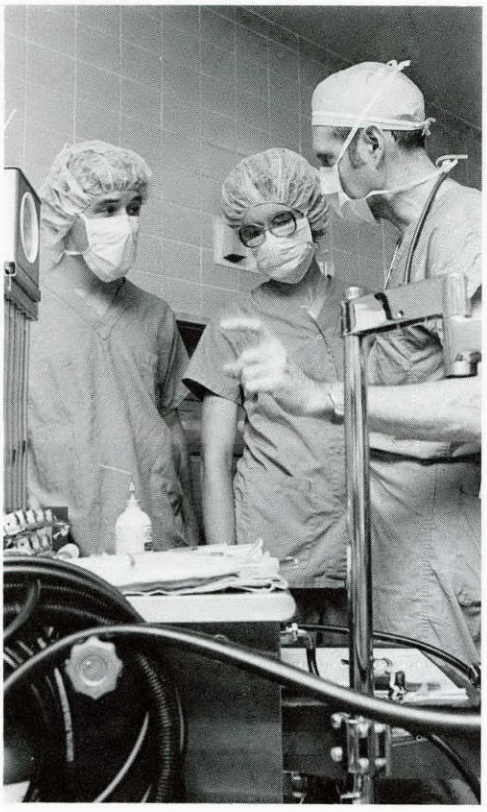

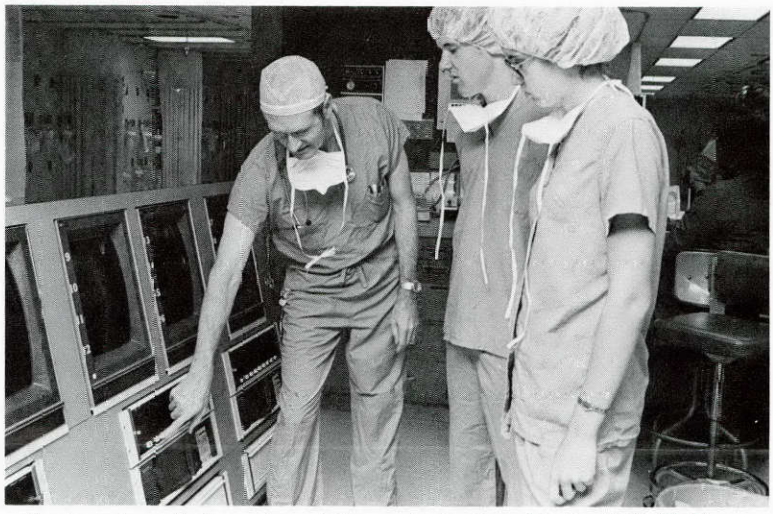

Junior science trainees toured the surgical suite guided by Hollis E. Bivens, MD, head of the Department of Anesthesiology. At left, Dent Beall of Sweetwater and Michelle Butler (center) of Dallas listen as Dr Bivens (right) explains how the anesthesiology machine works. Above, Dr Bivens describes the functions of the electrocardiogram monitoring station in the recovery room.

Junior Science Trainees Complete Summer Study

Twenty-three 1980 high school graduates concluded eight weeks of science study and laboratory research August 1 under the direction of MDAH clinicians and researchers.

Selected from a field of 200 students nominated by schools across the state, these 23 junior science trainees are part of MDAH's summer training programs that include college students, freshmen medical students, and junior medical and dental fellows. Each program has its own director and volunteer sponsors.

Michael J. Ahearn, PhD, junior science trainee program director, says volunteer clinicians and researchers who sponsor the recent high school graduates are the program's "backbone," outlining the student's research project and supervising the laboratory experience. The students work eight or more hours per day, prepare a written research report, and present it orally at the end of the program. Dr Ahearn says that many times the students' laboratory projects are related to the sponsors' ongoing research.

"Students are exposed to the wide variety of professions in a biomedical institution like MDAH. They learn about careers they didn't know existed," Dr Ahearn says. He says students have an idea from going to the family doctor what a physician does, but many times they don't know what a radiotherapist does or how a biomathematician or statistician fits into the medical field. "They never realized these professionals were part of a biomedical institution," Dr Ahearn explains.

The students learn a tremendous amount through the laboratory experience and through the Enrichment Series' twice-weekly lectures, according to Dr Ahearn. Through these presentations they become familiar with the equipment, treatments, procedures, and organization of a biomedical institution. According to Dr Ahearn, the series usually begins with a medical library orientation and with a lecture about the content and organization of a scientific paper. Lecturers are drawn from throughout the hospital, and topics may range from cytogenetics to bone marrow transplantation to anesthesiology.

Started 19 years ago, the high school program was designed to give students firsthand experience in a biomedical institution early in their academic careers rather than delaying that first experience to the end of their professional education. Dr Ahearn, who has directed the program for five years, says that evaluations by former trainees in the program have indicated its positive ability to engender research career goals and aspirations in the participants.

The Carl B. and Florence E. King Foundation of Dallas began funding the program in 1977, and during the last four years it has been the major contributor to the program's support. A National Institutes of Health grant also funds the program this year.

Scientific Abstracts . . .

Continued from page 2

cell serum, which reacts with normal human thymocytes and peripheral blood T cells. The percentage of leukemic cells bearing complement receptors diminished during relapse. The leukemic cells obtained at diagnosis and during relapse were nonreactive to mitogens and alloantigens and failed to stimulate proliferation of normal lymphocytes in mixed lymphocyte culture. There was no evidence for active suppression of normal lymphocyte reactivity mediated by the leukemic cells. The surface marker and functional profile of these leukemic cells is consistent with that of an early stage in T-cell maturation. (*Blood* 55:702–704, 1980).

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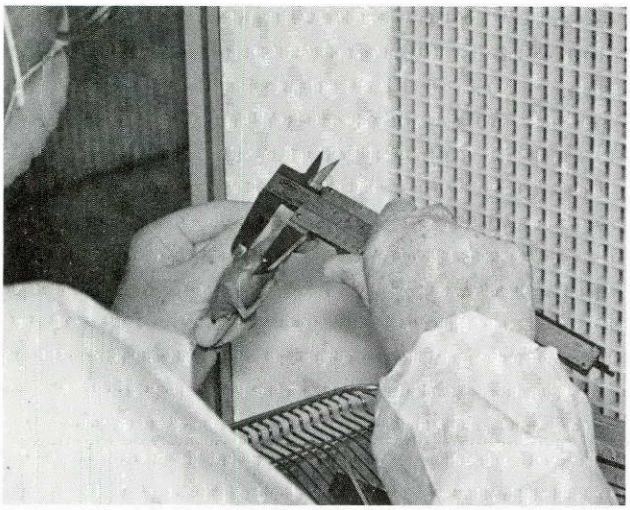

A technician working in a National Large Bowel Cancer Project investigation measures a tumor implanted in a nude mouse (left). Li-Ying Yang, BS, MS, a research associate in MDAH's Department of Laboratory Medicine, uses a pipette (right). She works with National Large Bowel Cancer Project researchers who are assaying the cytotoxicity of antitumor agents on cultured human colon carcinoma cells (line LoVo).

Cancer Project Director Reports Progress

Murray M. Copeland, MD*

Murray M. Copeland, MD

The National Large Bowel Cancer Project (NLBCP), instituted at MDAH by the National Cancer Institute in 1972, is a comprehensive grants supported program that funds approved grants of scientists investigating the causes, mechanisms of action, detection methods, and treatment of large bowel cancer. The NLBCP is one of four NCI National Organ Site Programs, and there are a national project director and a working cadre of scientists for each project. In the United States, large bowel cancer ranks second in incidence of neoplastic diseases in men and women. It will affect 114,000 people in 1980, and almost all socioeconomic groups are at equal risk.

About 45% of the NCI's colorectal cancer research is carried out through the NLBCP. Of the 430 research proposals received since 1972, 282 (65.6%) were approved, but funds have been available for only 162 of these projects. This update reviews NLBCP investigations and identifies new approaches for continuation and expansion of research into what causes colon cancer, what can be done to prevent it or detect it early, what pharmacologic and chemotherapeutic studies show, and what immunobiology brings to the understanding and prevention of colon cancer.

Colon cancer is viewed as an environmental, "man-made" disease because of patterns of international incidence and mortality. The incidence of colonic cancer in the United States is 5.4 times that in Japan. Parts of Central and South America and Africa have low incidence rates, but the Anglo-Saxon countries and parts of Western Europe have high rates. Research that compares diets of geographic areas shows that low incidence rates may be explained by larger fecal bulk and thus a lower concentration of cancer-promoting stimulus.

While still uncertain about how to prevent large bowel cancer, researchers strive to find ways to reduce its incidence. Edward Bresnick, PhD, of the University of Vermont has investigated dietary procarcinogens and their conversion to electrophilic intermediates by mixed-function oxidases. His work has substantial implications since the reactive electrophilic forms have access to genomic material without transit from endoplasmic reticulum in the cytoplasm. Dr Bresnick indicates that dietary promoters may enhance the initiation of colonic neoplasia, mediated first through the alkylated or altered DNA.

Dr Frederick R. DeRubertis, MD, of the Pittsburgh Veterans Administration Hospital has reported on changes of cyclic guanosine monophosphate (cGMP), modulated by N-methyl-N'-nitro-N-nitrosoguanidine (MNNG) in colonic epithelial cells from rabbits, which may signify an important early cellular response and may be an expression of the oncogenic effect of MNNG in the colon. He also demonstrated that increases in cGMP were suppressed by the antioxidants retinol and butylated hydroxyanisole.

Reinaldo F. Gomez, PhD, of the Massachusetts Institute of Technology has shown that the intestinal organisms isolated from rats, guinea pigs, and man are capable of converting acetohydroxaminic acid or ammonium sulfate to nitrite. (Nitrate and nitrite may be associated with an increased risk of gastrointestinal cancer.) A strain of *Actinomyces visosus* could produce nitrite without either ammonium sulfate or acetohydroxaminic acid. The heterotrophic ability of microorganisms to oxidize nitrogenous substances to nitrite in the absence of active growth may represent an important source of intestinal nitrite in man. Others have demonstrated the ability of gut bacteria to activate nitrosamines through nitroso-group exchange.

Three NLBCP researchers have shown that colonic epithelium in proximity to the tumor shows the presence of retinoic

acid-binding proteins (RABP). These proteins have been detected only in tumor lines with high metastatic potential, suggesting a possible reactivation of embryonic genes in the premalignant state. Measurements of RABP may have potential as diagnostic and prognostic probes.

In the area of prevention, NLBCP grants are supporting research in screening and early detection methods. The potential benefit of screening for colorectal cancer has been demonstrated in the study from the Preventive Medical Institute of the Strang Clinic in New York. Some 47,000 sigmoidoscopies were performed in 26,126 mostly asymptomatic patients. Of the 58 cancers of the colon and rectum detected and then followed over 15 years, the survival rate was close to 90% (88% were Dukes' classification A and B). There are few statistics available reporting long-term survival rates following screening in asymptomatic patients. Clinical trials, with screening for colorectal cancer using fecal occult blood tests, have not been in progress for a sufficient time to provide significant survival data as yet. It appears, however, that the percentage of patients coming to surgery in the screened group with favorable Dukes' classification staging is higher in these programs than in the general population. The observations from screening suggest the need for six fecal occult blood test slides per patient during a three-day testing period. Both laboratory and clinical observations suggest significant variability in the sensitivity of the methods and materials used, and these variations indicate the need for laboratory technique standardization.

Familial polyposis and Gardner's syndrome continue to serve as models of colon carcinoma. Cellular and molecular studies are in progress to attempt to identify the specific nature of individuals susceptible to these conditions. Researchers have intensively investigated the association of colonic carcinoma and ulcerative colitis. There is a need for developing new pharmacologic treatment for large bowel cancer. The NLBCP has supported studies relative to kinetics and potential methods for realizing more effective use of available agents, placing emphasis on the development of new drugs based on established metabolic pathways, using both in vivo and in vitro approaches.

Since chemotherapy is generally used to treat metastatic disease and since colon cancer in humans metastasizes very rapidly, chemotherapy could be an essential component in the clinical management of the disease. Unfortunately, progress in chemotherapy for colon cancer has been agonizingly slow because of the difficulty in performing definitive chemotherapeutic trials in patients, lack of adequate animal model systems, and many technical difficulties. Consequently, only 5-fluorouracil (5-FU) and its derivatives have offered even palliative results in the treatment of colorectal cancer patients. Recently, however, important developments have occurred through and outside the NLBCP that promise to modify this dismal picture. Through the use of carcinogenic agents such as dimethylhydrazine, researchers have produced colorectal tumors in mice, and progress has been made in growing such tumors in cell culture. Four of these tumors have been found transplantable, thus offering useful animal models for biochemical, chemotherapeutic, and other essential basic studies. In addition, these investigators have induced and established six other colorectal tumors as serial transplants. Work is going forward to characterize biologically these tumors, and chemotherapeutic trials are under way.

Researchers have transplanted human colorectal tumors in athymic or immunosuppressed mice. Furthermore, researchers have made initial progress in growing such tumors in cell culture. However, because four transplantable colorectal tumors responded differently to chemotherapeutic agents in trials, we face the discouraging prospect that each human colorectal tumor may prove to be unique both biochemically and in its response to chemotherapeutic agents. With xenografts of human colorectal cancer now available, it should be possible to test this hypothesis directly. Nonetheless, we still have the problem of developing models for selecting new agents with potential activity against colorectal cancer. If advances are made in chemotherapy for this disease, it will likely be with new agents that act differently from those currently available.

At Birmingham, Alabama's Southern Research Institute studies by T. H. Corbett, PhD, with transplantable murine colon tumors illustrated that each colon tumor's response to drugs is individual and different from that of other tumors studied. He projects expanding the spectrum of tumors in his study, continuing to search for a new drug with broad-spectrum activity, and combining drugs with Adriamycin to effect therapeutic synergism.

Despite the work by Heidelberger on the toxic effects of 5-FU's entry into various species of ribonucleic acid (RNA), Arnold Welch, MD, PhD, of St. Jude Children's Research Hospital in Memphis has tentatively concluded that 5-FU at least in some circumstances may act in ways that ordinarily cannot be accounted for by our present knowledge of the chemotherapeutic action of this drug. It may be that we must now look to RNA, as well as to DNA, as another site of the chemotherapeutic action of 5-FU (administered with large amounts of thymidine) as a major locus in which incorporation of derivatives of 5-FU may occur, presumably as 5-fluorouridine 5′-monophosphate.

Emil Frei, III, MD, at the Sidney Farber Cancer Center in Boston showed that mathematical models have good predictability; however, one problem with such models is that programs use different tumor systems: portions of the models

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Project Goals

The National Large Bowel Cancer Project identifies the following eight broad areas as approaches it is taking to achieve prevention and control of large bowel cancer:

- Identification of causes and their inhibitors
- Identification and clarification of biochemical and molecular controls
- Identification of individuals at high risk
- Early diagnosis and prevention
- Application of modern pharmacologic methods in developing new chemotherapeutic treatments
- Application of modern tumor immunobiologic methods in developing methods of treatment and prevention
- Research treatment
- Promotion of interdisciplinary communications and collaborative research programs among grantees of the National Large Bowel Cancer Project.

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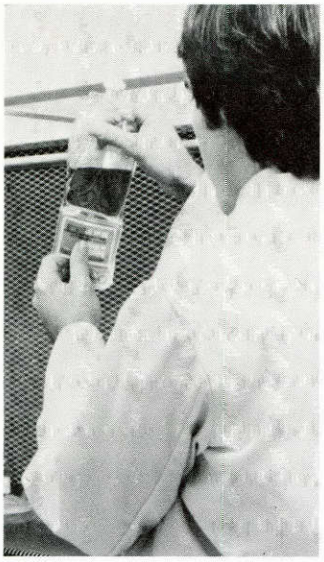

Prescriptions for intravenous solutions are filled 389% more often at MDAH than at a typical community hospital. Left, a pharmacist visually checks the final product.

Hickey Compares MDAH With Community Hospital

The dramatic differences between MDAH and a typical community hospital were recently emphasized by data reported by MDAH Executive Vice President Robert C. Hickey, MD, to the Fourth Asian Federation of Cancer Research and Control Organizations.

"The differences are great, but they should be," Dr Hickey said. "The hospitals serve different purposes."

He said the comparison showed that the most common community hospital surgical procedure (excluding obstetrics and gynecology) was tooth removal, but for Anderson it was mastectomy. For the community hospital the three most common patient categories were newborn, maternal delivery, and disorder of menstruation, but for MDAH they were genital system cancer, breast cancer, and skin cancer.

"The community hospital treats patients on a level of general care," Dr Hickey said, adding that the cancer center's purposes were to control cancer and associated problems and to research genetic implications and public health hazards.

"The cancer hospital is an extensive resource, carries out many more therapeutic treatments, uses more equipment, requires personnel in large numbers, and treats an older age group than the community hospital," Dr Hickey said.

The community hospital Dr Hickey used for comparison had 590 beds, an average patient stay of 7.5 days, and an average occupancy of 80%, whereas MDAH has 404 beds, an average patient stay of 12.33 days, and an average occupancy of 87%.

MDAH uses diagnostic procedures 900% more often than the community hospital, and the pharmacy fills 166% more prescriptions. Furthermore, prescriptions for intravenous solutions are filled 389% more often at MDAH than at the community hospital.

Both types of hospitals are needed in order for a community's residents' needs to be met, according to Dr Hickey, and he emphasized that frequent interaction between the two make working relationships and exchanges of knowledge vital.

DOE Awards Grant for Energy Study

The Department of Energy (DOE) and MDAH are sharing the cost of a $200,000 engineering analysis that should help the institution cut energy use and hold down costs, according to Howard Allen, MDAH physical plant maintenance engineer.

The DOE awarded $100,000 to MDAH for a technical assistance analysis by an outside consultant who is to evaluate MDAH's buildings and recommend ways the institution can save energy. Recommendations could range from installing solar power converters to modifying physical plant equipment design to changing operating procedures. Allen believes MDAH will especially benefit from the consulting firm's experience in evaluating other hospitals.

The DOE's cost-sharing grant is part of a program to help public and private nonprofit institutions save energy and is administered through the Conservation Division of the Texas Energy and Natural Resources Advisory Council (TENRAC). MDAH is one of about 23 hospitals in Texas to be funded under this program, according to Duane Keeran, program director for energy conservation grants at TENRAC. He said about 94% of the 385 institutions that made application for grant money received it.

Allen explains that the complexity of the hospital's 1.2 million square feet makes the consultant's evaluation difficult: "The hospital was not all constructed at the same time. Equipment was designed and installed during a time of a different attitude toward energy. The areas vary—patient, research, office, training. All have to have different types of support." Allen says there are hundreds of electric motors in use in the hospital. They range from small appliances such as sterilizers that may have fractional horsepower motors to 500-horsepower motors that provide chilled water for the air conditioning systems.

The physical plant already practices energy conservation by wrapping air ducts and water lines with insulation, "load shedding" (cutting off lights, air conditioning, exhaust fans, and other energy-draining devices when areas are unoccupied), and reducing lighting 20%–50% in certain areas. Using en-

Cancer Project . . .

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are derived from melanoma, other parts from leukemia, etc. Concentrating on a single tumor system would limit the biological variability. Kinetic studies are perhaps premature until more important drugs become available, but such studies can be used to discern the effects of drugs on cells in culture. Obtaining repetitive in vivo samples, which is becoming more feasible with technological advances, also appears desirable. There are two extremes in further development of experimental therapeutics: one emphasizes the need to develop new drugs to predict response to therapy; the other contends that a full armamentarium exists and suggests that greater effort be directed toward improving their efficacy, eg, high-dose methotrexate with citrovorum rescue factor.

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ergy-saving bulbs has reduced energy consumption, Allen added.

The physical plant is beginning to take its conservation crusade to each room in the hospital by placing over the light switch plate an orange sticker that reads: "Please turn off lights when not in use. Conserve energy. Save electricity." Allen says that in the past the savings one would realize from switching off a light for a brief time would not be significant but that now it is. When an institution has a monthly electricity bill of $150,000 or over as MDAH does, Allen indicated every savings counts.

The technical analysis is expected to extend into the spring of 1981. It includes evaluation of the hospital building, the former Prudential building, which houses MDAH offices, and the patient-care apartment hotel, The Anderson Mayfair. The consultant will analyze the buildings sequentially, so that each evaluation may be reviewed by the physical plant before the next evaluation gets fully under way.

When the consultant's recommendations are reviewed, Allen said the physical plant will consider the useful life of the equipment, the savings, the costs, and the "payback" or return on any investment or expenditure.

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For registration information, write to Mary J. Perdue, Room W-716, Office of Education, The University of Texas System Cancer Center M. D. Anderson Hospital and Tumor Institute, 6723 Bertner, Houston, Texas 77030.

Frederick F. Becker, MD

Jeane P. Hester, MD

Noteworthy

MDAH Vice President for Research **Frederick F. Becker,** MD, has been elected president of the American Association of Pathologists, a group representing about 2000 academic pathologists who are involved in experimental pathology. Dr Becker, who came to MDAH in 1976, was formerly a professor of pathology at New York University School of Medicine and director of pathology and laboratories at Bellevue Hospital Medical Center in New York, New York.

The Texas Federation of Business and Professional Women's Clubs, Inc., has presented **Jeane P. Hester,** MD, with the first Past State President's Award for her contributions to the fight against cancer. Chief of Supportive Therapy in MDAH's Department of Developmental Therapeutics, Dr Hester is an associate professor of medicine and an associate internist.

The Physicians Referral Service has presented for the first time two awards honoring outstanding achievement in research and distinguished service in oncology. Cited for his significant contributions to basic science research, **T. C. Hsu,** PhD, chief of the section of cell biology, was named recipient of the Outstanding Achievement Award. Dr Hsu holds the Olga Keith Wiess Chair for Cancer Research. Honored with the Distinguished Alumnus Award was **Philip J. DiSaia,** MD, chairman of the Department of Obstetrics and Gynecology and professor of radiology, University of California, Irvine, California College of Medicine. Dr DiSaia completed a fellowship in gynecologic oncology at MDAH in 1971.

The **Cancer Information Service,** a statewide toll-free telephone service offering answers to the public's cancer questions, answered its 25,000th call in June. The four-year-old service, which now gets 800-1000 calls per month, is manned by 34 volunteers who each work one half day per week and by three MDAH employees. Sandy Pinto, CIS director, says each call is personally answered and that a yearly survey of the service shows 48% of callers take action, such as quitting smoking or going to see their doctor, after receiving information from CIS. Free publications are mailed to about 60% of callers, according to Pinto, who said physicians may call CIS to secure a list of available publications. Physicians who want to order in bulk free publications provided by the National Cancer Institute for distribution to their patents may do so by calling 1-800-638-6694. The Texas CIS toll-free number for information is 1-800-392-2040.

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Fellows, Trainees Included

Administration Announces New Staff Appointments

New additions to the staff have been announced by Executive Vice President Robert C. Hickey, MD, and The University of Texas System Cancer Center President Charles A. LeMaistre, MD. These additions include the appointment of several fellows and trainees to staff positions, the reappointment of a former staff member, and two part-time appointments.

The Department of Developmental Therapeutics placed on staff Victor Fainstein, MD, Jorge R. Quesada, MD, Marvin L. Powell, MD, and Maria A. Scouros, MB, MS, all former fellows in the department. Working in the immunology section with Evan M. Hersh, MD, have been Dr Quesada and Dr Powell. Two new appointees to the department staff have formerly worked at other cancer centers, Dr Scouros at Greece's St. Savvas Cancer Hospital and Niramol Savaraj, MD, at the University of Miami Comprehensive Cancer Center. Marilyn D. Lafferty, PhD, who completed a year of postdoctoral training in the laboratory of Karel A. Dicke, MD, PhD, plans to continue work in bone marrow transplantation biology. Joseph P. Litam, MD, was a fellow in the Department of Developmental Therapeutics for three years before his appointment in January to the Rio Grande Cancer Treatment Center in McAllen.

Luka Milas, MD, in the Department of Experimental Radiotherapy 1967–69 and 1972–74, rejoins the department after being professor of immunology at the Central Institute for Tumor and Allied Diseases in Zagreb, Yugoslavia.

Appointed on a part-time basis were Betty J. Pfefferbaum, MD, who joins the Department of Pediatrics as an assistant professor of pediatrics, and Edward L. Wall, MD, who joins the Department of Personnel Health Service as assistant internist and assistant director. His duties include treatment of work-related illnesses and injuries, physical examination of new employees, and counseling.

Other new additions to the staff include the appointments of Michael S. Rabin, MD, Mu-Lan Shi, MD, and Kenneth C. Wright, PhD, to the Department of Diagnostic Radiology and Stephanie Drake, PhD, to the Department of Pediatrics.

Others appointed were Juan Guevara, PhD, to the Department of Urology; Frank Jess, PhD, to the Department of Biomathematics; Barbara C. Tilley, MS, to the Division of Cancer Prevention; and Sun Yen, MD, to the Department of Developmental Therapeutics.

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Immunobiologic studies, both in human systems and in experimental animals, have been supported with the expectation that new information could lead to immunoprophylaxis and possible immunoprevention of human colonic cancer. The chemistry and clinical significance of carcinoembryonic antigen has been clarified to a point at which those immunochemical studies needed to complete our knowledge of the surface protein are being identified. Similarly, the immune status and immune reactions of colon tumor patients have been extensively evaluated. Trials of Bacillus Calmette-Guérin immunotherapy with and without 5-FU as adjunctive therapy following surgical treatment in colorectal cancer have been reported, and further investigations are planned.

With the impressive progress made in the immunobiology of colonic carcinomas, the program can now reassess the current state of knowledge and identify new priorities for future studies.

*Dr Copeland is director of the NLBCP and professor of surgery at MDAH. This update is drawn from a presentation made to the American Health Foundation U.S.-Japan Cooperative Workshop March 3 in Honolulu, Hawaii, and from *Cancer* 45(Suppl.):1041–1046. (Physicians requiring further information on this subject should contact the author—ED.)

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