THE CANCER LETTER INTERACTIVE

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NCI To Recompete Drug Discovery Groups In 2003, As Program Nears Its 20th Year

In 1982, an NCI advisory group approved a new research funding mechanism to support high-risk collaborations between academia and the pharmaceutical industry to identify and develop anticancer drug candidates for clinical trials.

The National Cooperative Drug Discovery Groups, first funded in 1984, has resulted in three drugs approved for marketing and 12 agents in clinical development, for a total cost to NCI of $179 million. NCI officials last week called the program's track record successful, and said they plan to recompete the 13 funded groups in fiscal year 2003.

The NCI Board of Scientific Advisors unanimously concurred with

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In Brief:

Biomedical Imaging & Bioengineering Institute Names 10 To Advisory Council

NATIONAL INSTITUTE FOR BIOMEDICAL IMAGING AND BIOENGINEERING has appointed 10 individuals to serve on its advisory council. The council provides recommendations on the conduct and support of biomedical imaging and bioengineering research and research training. The new institute received $20 million in transferred NCI grants in 2001 and is expected to receive another $60 million more in 2003. The council members are: **Carlo Deluca**, director, NeuroMuscular Research Center, Boston University; **Janie Fouke**, dean, College of Engineering, Michigan State University; **Brent Harrison**, professor and chairman, Department of Radiology, University of Mississippi Medical Center; **Shirley Ann Jackson**, president, Rensselaer Polytechnic Institute; **Linda Lucas**, dean, University of Alabama School of Engineering in Birmingham; **C. Douglas Maynard**, special advisor to the president of health sciences and professor of radiology, Wake Forest University School of Medicine; **Rebecca Richards-Kortum**, professor and associate chairman for research, Department of Electrical and Computer Engineering, University of Texas in Austin; **Stephen Williams**, executive director and worldwide head of clinical technology, Pfizer Global Research and Development, Pfizer Inc.; **Frank Yin**, chairman of the Department of Biomedical Engineering at the Washington University in St. Louis; **James Zagzebski**, professor and chairman, Department of Medical Physics, University of Wisconsin Medical School. . . . **RODNEY LANDRENEAU** has been appointed director of the Comprehensive Lung Center at University of Pittsburgh Medical Center Shadyside at the UPMC

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NCDDGs: 3 Drugs On Market, 12 In Clinical Development

(Continued from page 1)

the recompetition at its Nov. 14 meeting. Board approval is not necessary for NCI to reissue the Request for Applications, but is desired.

The NCDDG formula has since been adopted by three other institutes at NIH, said Mary Wolpert, NCI program director.

The current NCDDG principal investigators are: Henry Brem, Johns Hopkins University; Allison Chin, Geron Corp.; Phillip Crews, University of California, Santa Cruz; William Fenical, University of California, San Diego; Jose Halperin, Harvard Medical School; Sidney Hecht, University of Virginia; Chris Ireland, University of Utah; Elizabeth Jaffee, Johns Hopkins University; Alan Kinghor, University of Illinois at Chicago; Alfred Merrill, Emory University; William Parker, Southern Research Institute; Garth Powis, Arizona Cancer Center; Said Sebti, H. Lee Moffitt Cancer Center.

The program's Web site is: http://dtp.nci.nih.gov/branches/gcob/gcob_web3.html.

Highlights of the work of the groups were included in the RFA concept statement presented to the BSA. Excerpts of the document follow:

National Cooperative Drug Discovery Groups for Cancer. Reissue of RFA (cooperative agreements), set-aside for first year $12 million, length of awards 5 years, estimated 12 awards, total cost $60 million.

The NCDDG program was created in 1982 at the recommendation of the Board of Scientific Counselors of the Division of Cancer Treatment. Its objective was to attain a more desirable balance between rational, mechanism-based approaches to the discovery of new, improved anticancer treatments and the ongoing traditional in vitro and in vivo screening programs.

The program was launched in 1984 with two awards for a total of $581,333. In 1989, NCDDGs were expanded to include natural products drug discovery. The highwater mark for the program occurred in fiscal year 1992 when the program supported 23 groups at an outlay of $17 million. Under this program, the term “drug” has been used broadly to include not only small molecules, but also delivery strategies and biologicals such as vaccines and antibodies.

The NCDDG program represents one of the earliest examples of public-private partnerships. Using the cooperative agreement funding mechanism as a framework for interactions, multidisciplinary teams of scientists representing academia, industry, and government are brought together. They work toward a common goal under a principal investigator who provides the conceptual leadership. Rapid developments in biomedical research over the past decade have provided unprecedented opportunities for rational drug design based on new molecular targets associated with the cause and maintenance of cancer. Similarly, evolving technologies are providing the drive to develop new target-based screening approaches.

The NCDDG program with its emphasis on multidisciplinary, yet investigator-initiated approaches is ideally suited to apply scientific advances to drug discovery. Each award generally consists of three to five complementary projects. The role of the Division of Cancer Treatment and Diagnosis has been to support and facilitate diverse and often high risk team efforts to identify and develop clinical trial candidates. Although the NCDDG program does not provide support for clinical trials, it encourages timely clinical evaluation of products discovered by NCCDGs. These may be proof on concept trials conducted through NCI, NIH grants, or commercial entities. The Rapid Access to Intervention Development and Rapid Access to NCI Discovery Resources programs have been most helpful, especially for clinical production

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of biologicals that often involve complex process development. Currently, five products are in some phase of development through RAID and one in RAND. It is also expected that the Molecular Targets for Drug Discovery grant program will provide a feeder system of new targets and new investigators for future NCDDG projects.

The current NCDDG portfolio consists of 13 awardees at a total cost of about $12 million at the end of fiscal year 2002. Total expenditures from the inception of the program to the present are roughly $179 million, a sum that is less than the average cost of development of a single new agent in the pharmaceutical industry.

Participation of industry in an NCDDG is encouraged but not required. Nine of the 13 groups began their awards with major pharmaceutical companies (five) or small biotechnology firms (four) as partners. These arrangements facilitate technological transfer while protecting intellectual property and promoting discussions of licensing arrangements very early in the drug development process.

The NCDDG cooperative agreement mechanism has been very successful in identifying new leads and therapeutic delivery strategies in comparison with traditional funding mechanisms. NCDDGs focus on scientific opportunity rather than market share. Given the long-term commitment, large costs, and high risk involved in drug discovery projects, not every good idea or lead will survive developmental hurdles. Some of the agents represent "first-in-class," while others are improved products.

Agents which have been developed to clinical trial or identified as major leads with significant involvement of the NCDDG program since its inception include the following:

Three Agents Approved for Marketing:

Topotecan was developed by the NCDDG headed by Warren Ross, University of Florida at Gainesville, and received approval from FDA in 1996 for the treatment of ovarian cancer. Topotecan, an inhibitor of topoisomerase I, is a semi-synthetic, water-soluble analog of the natural product camptothecin. The clinical development of this agent resulted from a close collaboration between SmithKline Beecham and the NCI Cancer Therapy Evaluation Program in the design of the clinical trials.

Gliadel, a product consisting of BCNU impregnated in a wafer composed of a polyanhydride biodegradable polymer invented by Robert Langer of MIT, was developed by the NCDDG headed by Henry Brem, Johns Hopkins University. The product received marketing approval in 1996 for the treatment of recurrent glioblastoma multiforme, a tumor that frequently recurs at the same site. The product is manufactured by Guilford Pharmaceuticals, an exclusive licensee of MIT.

DAB389IL-2, a fusion protein composed of the catalytic and transmembrane domains of diphtheria toxin and IL-2, was produced by the NCDDG organized by John Murphy, of The University Hospital, Boston. This product was shown to be safe and well-tolerated and to induce durable complete and partial emissions in hematologic malignancies characterized by expression of high affinity IL-2 receptors. This product, known as ONTAK Interleukin-2 Fusion Protein or Denileukin difitox, was approved in 1998 for the treatment of adult patients with recurrent or persistent cutaneous T cell lymphomas. Ligand Pharmaceuticals Inc., of San Diego, CA, acquired the marketing rights from Seragen Inc.

Twelve Investigational New Agents

N^1,N^{14}-diethylhomospermine (SunPharm) and **N^1,N^{11}-bis(ethyl)norspermine** (Parke-Davis) are polyamine analogs synthesized by the NCDDG headed by Carl Porter, Roswell Park Memorial Institute. These compounds, prepared by Raymond Bergeron, disrupt polyamine homeostasis. Diethylhomospermine is being evaluated in a phase II trial in AIDS patients with uncontrolled, refractory diarrhea. Diethylnorspermine has entered phase II clinical trials for the treatment of solid tumors.

O^6-Benzylguanine was identified and evaluated by the NCDDG guided by Anthony Pegg, of the Milton S. Hershey Medical Center. OBG, synthesized by Robert Moschel at NCI Frederick, entered NCI-sponsored clinical trials following development by the NCI Developmental Therapeutics Program. It is being combined with BCNU to block repair of DNA adducts by alkylguanine transferase, a protein responsible for a major mechanism of resistance to BCNU and similar agents. OBG is also being given systemically in a clinical trial with Gliadel for the treatment of brain tumors.

Cryptophycin, a novel depsipetide isolated by Robert Moore, University of Hawaii, from blue-green algae with potent antiproliferative and antimitotic properties, was developed by the NCDDG organized by Frederick Valeriote, Wayne State University. A semi-synthetic analog, Compound #52, entered phase

I clinical trials under sponsorship of Eli Lilly and represented a productive collaborative effort between natural product and medicinal chemists. Lilly recently closed the clinical trials, but further analog work is ongoing.

Cordycepin and Deoxycoformycin entered phase I clinical trials for the eventual treatment of lymphoblastic leukemias and lymphomas which contain terminal deoxynucleotidyl transferase (TdT), a unique DNA polymerase which catalyzes the polymerization of deoxyribonucleotides on the 3'-hydroxyl ends of preformed oligo- or polydeoxynucleotide chains, without the need of a template. Cordycepin inhibits TdT if its own metabolism is blocked by deoxycoformycin, an inhibitor of adenoside deaminase. This project, conceived by the Ronald McCaffrey NCDDG (the University Hospital, Boston), is a good example of translational research. Laboratory tests on clinical samples are being conducted as part of the proof-of-concept clinical trials.

Murine anti-transferrin receptor monoclonal antibodies (A27.15/E2.3) were discovered on the Mendelsohn NCDDG by Ian Trowbridge, Salk Institute. The products were manufacture by the Biopharmaceutical Development Program at NCI Frederick. They entered clinical trials at the University of Arizona in Tucson under the supervision of Raymond Taetle. The antibodies were administered as a combination in a 1:1 ratio based on preclinical studies which showed that the most effective inhibition occurred when the products were given as a pair, presumably by cross-linking the transferring receptor. The IND was closed in 2001.

Anti-EGF receptor antibody C225 was developed on the John Mendelsohn NCDDG, originally at Memorial Sloan-Kettering Institute, but now at M.D. Anderson. Based on preclinical results from the NCDDG, this human-mouse chimeric product is being combined with chemotherapeutic agents, such as Taxol and Cisplatin, and with other monoclonal antibodies for the treatment of breast and other cancers. Phase III trials of C225 were initiated in 1999 by ImClone Systems Inc. In 2001, Bristol-Myers Squibb and ImClone Systems agreed to co-develop IMC-C225, also called Erbitux (cetuximab). In November 2001, ImClone submitted a Biologics License Application to FDA for Erbitux for the treatment of advanced colon cancer that is refractory to irinotecan. The BLA was not approved, and more studies are in progress.

A farnesyl transferase inhibitor was developed by the NCDDG headed by Said Sebti, University of South Florida, Tampa. Based on the peptide structure of the CAAX box, this group synthesized and evaluated a series of peptidomimetics. They were the first to publish the antitumor properties of this class of compounds in human xenograft models and to demonstrate, contrary to earlier expectations, that the Ras protein is probably not the target for the compound's antitumor activity. One derivative entered phase I trials under sponsorship of Abbott Laboratories, but was later dropped when the orally administered drug did not achieve required blood levels. Additional analogs are under study.

A vaccine for prostate cancer (Provenge) was developed by Riner Laus, Dendrion Corp., Seattle, in Ronald Levy's NCDDG. It has completed phase II under the direction of Eric Small at the University of California, San Francisco, and has proceeded to phase III trial based on a notable decrease in disease progression. Their approach is to isolate a patient's dendritic cells, pulse them with a peptide derived from prostatic acid phosphatase, and re-administer the modified dendritic cells back to the patient.

HTI-286 is a totally synthetic analog of hemiasterlin, which was originally isolated from a marine sponge and synthesized by Raymond Andersen, University of British Colombia, Vancouver, with support from the NCDDG headed by Chris Ireland, University of Utah. HTI-286, a peptide-like molecule that binds to the vinca binding domain on tubulin, inhibits both microtubule function and cell division but is not cross-resistant with Taxol. The industrial collaborator Wyeth-Ayerst synthesized clinical material, completed toxicology and in December 2001 filed an Investigational New Drug Application. The INDA was approved by FDA and phase I trials are in progress.

LAF389 is a semi-synthetic analog of Bengamide, which was originally isolated by Phillip Crews, University of California, Santa Cruz, on the NCDDG he directs on the isolation of novel agents from marine organisms. This agent is an inhibitor of methionine amino peptidase 2 (MetAP2) and has shown anti-angiogenic properties. Drug optimization and development studies were conducted by Novartis, the industrial partner. LAF389 has recently entered phase I trials in Europe under Novartis sponsorship.

LAQ824 is an histone deacetylase inhibitor

which has entered phase I trials in Europe. The industrial partner Novartis did extensive screening to identify the psammaplin series of compounds as promising leads. The isolation and structural elucidation of the original lead compounds was conducted on the Crews NCDDG. After extensive computer modeling studies, a synthetic compound was designed and developed by Novartis.

In addition to the above agents which are already in patients, a number of leads are under evaluation, including eleutherobin (Fenical NCDDG), a novel natural product in short supply and the second molecule of at least four known classes of compounds which possess the unique microtubule stabilizing properties of paclitaxel; GRN163, a thio-phosphoramidate oligonucleotide template antagonist developed by Geron (Chin NCDDG) which is a potent inhibitor of telomerase activity; and 1-deoxy, 5-hydroxysphinganine, a compound created on the Merrill NCDDG that inhibits sphingosine kinase in a number of human cancer cell lines and is being evaluated as a treatment or preventive agent for colon cancer.

In fiscal year 2002, $11.9 million was allocated to the NCDDG program. This included about $1 million for biologicals, $4 million for natural products, and $6.9 million for mechanism of action and disease-based approaches to new therapies. This funding included support for 13 groups, two expiring in 2004 and 11 in 2005. It is recommended that the RFA be issued during fiscal year 2003 for new awards in fiscal year 2005.

Purpose of RFA: The Developmental Therapeutics Program is seeking approval to reissue the RFA for National Cooperative Drug Discovery Groups. All of the reasons in the original report that led to the creation of the program are still valid and relevant. The emphasis will continue to be on the discovery of innovative and effective treatments for cancer, including novel delivery systems. Applications which propose analog development programs involving commercially available anticancer agents will not be accepted. There has been an explosion of knowledge in cancer genetics, including identification of more relevant therapeutic targets. In parallel, there have been remarkable advances in new technology, including combinatorial chemistry, combinatorial biosynthesis, chemical genetics, structural biology, proteomics, and the development of highly sensitive and automated assays. Thus, the NCDDG program is likely to be even more successful in the future as the outstanding accomplishments in molecular and cellular biology are applied to new drug discovery programs.

The cooperative agreement mechanism has provided a successful framework for multidisciplinary and multi-institutional cooperation among scientists from academia, industry, and government. It has fostered outstanding research, facilitated technology transfer of new products to industry, and used government resources effectively to enhance the efficiency and effectiveness of group efforts. Each group organized under the leadership of a single principal investigator will continue to define its objectives in accord with its own research goals. As before, investigators will be required to provide for patent coverage of inventions and to provide for right of indigenous peoples if natural products are obtained from foreign sources.

It is suggested that an RFA be issued in FY 2003 for awards in FY 2005 with set-aside funds of $12 million, the current level for the program. To encourage participation especially from the recent pool of awardees from Molecular Targets of Drug Discovery initiatives, at least six months is being given for groups to self-assemble and prepare an application. Special effort will be made to reach out to new groups given the unusual results of the most recent competition where only two funded groups were new. In line with previous competitions, a cap of $1 million on first-year total costs followed by cost-of-living increases in future years is planned. Pharmaceutical companies are expected to provide goods and services at no cost.

NCI Programs:

Advisors OK $10.5M Contract For Pediatric Preclinical Testing; Reissue Of Survivorship RFA

The NCI Board of Scientific Advisors has approved in concept NCI's plan to fund a $10.5 million, five-year contract to for preclinical testing of new agents for childhood cancers.

The Division of Cancer Treatment and Diagnosis will oversee the contract, developed in response to a Congressional mandate to intensify research on preclinical models to test new therapies for childhood cancers.

At its Nov. 14 meeting, the BSA also concurred with NCI's decision to reissue a Request for

Applications for cancer survivorship research. The RFA would fund 15 grants for a total of $20 million over five years.

The field of cancer survivorship research "has taken off," said Julia Rowland, director of NCI's Office of Cancer Survivorship, which was established in 1996. In 1999, NCI funded 29 survivorship research grants; last year, the OCS funded 82 grants.

Excerpts from the texts of the concept statements follow:

Pediatric Preclinical Testing Program. Concept for a new RFP, first-year set-aside $1.97 million, one contract for five years, total cost $10.551 million. Program Director: Malcolm Smith, Division of Cancer Treatment and Diagnosis.

Approximately 400 agents are currently under evaluation for cancer indications in adults. Although the proportion of children with cancer that enroll on clinical trials is higher than adults, the absolute number of children with cancer is relatively small compared to adults, placing a limitation on the number of pediatric clinical trials that investigators can conduct. Because of the increasing imbalance between the large number of agents potentially available for clinical testing and the more limited number of agents that can be systematically evaluated in pediatric clinical trials, it is essential to develop predictive preclinical models of pediatric cancers to help clinical investigators prioritize new anticancer agents and combinations of agents for testing in children. The proposed contract will provide support to the Cancer Therapy Evaluation Program of DCTD by systematically testing agents in childhood cancer preclinical models.

The proposed contract is responsive to the Best Pharmaceuticals for Children Act, enacted by Congress in January 2002. Section 15(c) of the ACT states that the NCI director "shall expand, intensify, and coordinate the activities of the Institute with respect to research on the development of preclinical models to evaluate which therapies are likely to be effective for treating pediatric cancer."

The primary objective of this RFP is to identify a panel of predictive pediatric preclinical models to inform pediatric oncologists' prioritization of new agents for evaluation in children with cancer. NCI will utilize a contract mechanism to systematically test 10-15 agents or combinations of agents per year against a panel of preclinical models of the most common childhood cancers. For agents tested, pharmacokinetic studies will be performed to determine the serum drug levels and systemic exposures associated with antitumor activity. Results obtained from the preclinical testing program will be correlated with the clinical activity and with the pharmacokinetic profile of the tested agents to assess the predictive capabilities of the program.

The program will utilize a panel of preclinical models for approximately six childhood cancers, with each cancer type represented by six to 10 different xenografts. For agents with general cytotoxic activity for which a molecular target is not defined, the program would initially test the agent at its MTD against the entire xenograft panel. For tumor types in which responses were observed, the program would develop a full dose response curve, and also study the agent in orthotopic or genetically engineered mouse models for these tumor types when they are available. This sequential design minimizes the resources required to study drugs by avoiding complete dose response studies for agents with little or no activity in tumor models.

The design for the program anticipates that many of the agents available for testing will have known molecular targets and that relevant genetically engineered mouse models will exist for some of these targeted agents. For those agents with defined molecular targets, testing will begin at doses below the MTD if there is convincing data documenting significant target modulation at lower doses; however, even for agents with known molecular targets, an advantage may exist for performing the initial testing at the MTD. Antitumor activity associated with modulation of the agent's known target would likely be detected by testing at the highest dose level tolerated and activity associated with previously unrecognized targets may be identified. Regardless of the dose used for the initial testing, if activity were observed, then the program would perform full dose response testing to relate antitumor response to target inhibition. If the target of an agent was one for which there was a murine genetic model with suitable characteristics for preclinical testing, evaluation against this model would occur in the first tier of testing. If activity was observed in the first tier of testing for specific tumor types, the agent would also be studied in available orthotopic models for these tumors.

The program will be led by a prime contractor who will be selected for experience and excellence in preclinical testing.

NCI will establish a Pediatric Preclinical Decision Group that will include experts in childhood cancer drug development to assist in selection of agents for preclinical testing. This group will include clinical investigators leading nationwide pediatric drug development efforts in the extramural and intramural NCI-supported clinical trials community for children with cancer.

The correlative science activities of the contract will be facilitated by the availability of tissue and cell microarrays of the cell lines and xenografts that will be components of the Preclinical Testing Program. These arrays will be developed using a separate source of DCTD funds in a collaborative effort between the Children's Oncology Group Phase I Consortium, CTEP, and the NCI intramural program. The arrays will serve as a resource to qualified investigators to identify the expression and activation status of potential therapeutic targets in the Preclinical Testing Program's cell lines and xenografts. Gene expression profiles of the program's tumor models also will be obtained.

Long-Term Cancer Survivors: Research Initiatives. Concept for a reissued RFA, first-year set-aside $4 million, 15 awards for two to five years, total cost for project $20 million. Program Director: Noreen Aziz, Division of Cancer Control and Population Sciences.

This is a major initiative of the NCI FY 2004 Extraordinary Opportunity in Cancer Survivorship. The population of long-term cancer survivors continues to grow: 62 percent of adult and 77 percent of pediatric cancer survivors survive beyond five years, and cancer can be for most a chronic disease. However, limited research has addressed outcomes of cancer and its treatment among long-term cancer survivors (those who are five years or more beyond cancer diagnosis. The RFA will use a variety of mechanisms (R01, R21, R03) depending upon the scope of research. To be effective, applications are expected to cover the full range of domains affected by long-term survival and treatment (physiologic, psychologic, social, economic) and emphasize understudied areas and gaps in current research.

The purpose of this RFA re-issuance is to build upon the research base established and to provide a critical additional stimulus to the research community to undertake studies on cancer survivors who are five years or more post-diagnosis, focusing especially on research foci that remain understudied. It is critical that we expand and accelerate our potential to address the impact of long-term survival in particular with respect to: a) specific survivor groups such as those treated for previously understudied cancer sites (e.g. colorectal, gynecologic, hematologic), and those belonging to underserved populations (elderly, rural, low education/income, diverse racial and ethnic populations); b) questions addressing specific gaps in our knowledge such as the incidence of and risk factors for late and long-term effects of cancer and its treatment, role of socio-cultural and behavioral factors in modulating treatment outcomes, impact of survivorship on health care utilization, role of co-morbidity in outcomes, appropriate follow-up care and surveillance for survivors, and the effect on families of living with a cancer history in a loved one.

In Brief:

Rodney Landreneau To Direct Lung Center At Pittsburgh

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Cancer Centers. Landreneau was director of the Center for Lung and Thoracic Diseases at Allegheny General Hospital. Prior to his position at AGH, he had been with the UPMC Health System for five years as co-director of the Lung Cancer Center at the University of Pittsburgh Cancer Institute. He will work with **James Luketich**, chief of the division of thoracic surgery at UPMC, on comprehensive, multi-specialty evaluation and treatment of all non-cardiac diseases of the chest, including lung and esophageal cancers as well as gastro-esophageal reflux disease. . . . **CINCINNATI CHILDREN'S HOSPITAL MEDICAL CENTER** Division of Hematology/Oncology has hired two physician/researchers. **John Perentesis,** director of the Pediatric Developmental Therapeutics/Advanced Therapies Program at the University of Minnesota Cancer Center, has been appointed director of the division's Oncology Program. He is known for his work in experimental therapeutics, phase I agents, and acute myeloid leukemia. **Stella Davies**, medical director of the Unrelated Donor Blood and Marrow Transplantation Program at the University of Minnesota, has been appointed interim director of the Blood and Marrow Transplant Program at CCHMC. Davies, known for her work hematopoetic stem cell transplantation and acute lymphoblastic leukemia, will lead a group of medical researchers in the study of genetic control over responses to chemotherapeutic agents in

children. . . . **PEARL MOORE**, CEO of the Oncology Nursing Society, has been appointed to the advisory board of the Johnson & Johnson Campaign for Nursing's Future. The $20 million campaign is a national effort to support and promote nursing as a career. . . . **BRUCE COMPAS** was named Patricia and Rodes Hart Professor of Psychology and Human Development at the Vanderbilt University Peabody College. Compas was also named director of psycho-oncology in the Pain and Symptom Management Program of the Vanderbilt-Ingram Cancer Center. He was professor of psychology, medicine, and pediatrics, and director of the doctoral program in clinical psychology at the University of Vermont. . . . **LISA NEWMAN** has received the National Surgical Adjuvant Breast and Bowel Project Foundation Inc. Minority Investigator Award. Newman is a clinical oncologist, associate professor of surgery, and director of the Breast Care Center for the University of Michigan in Ann Arbor. . . . **COMPREHENSIVE CANCER CARE CENTER** at Case Western Reserve University and University Hospitals of Cleveland announced the following awards and appointments: **James Willson**, center director, received the John Peter Minton, Hero of Hope Research Medal of Honor from the American Cancer Society; **David Boothman**, professor of Radiation Oncology and Pharmacology, was named cancer center associate director of basic research. Four faculty were appointed to endowed professorships: **Kurt Strange**, professor of family medicine and cancer center associate director for cancer prevention research, was named the Gertrude Donnelly Hess Professor of Oncology Research; **Nancy Oleinick**, professor of radiation oncology, is the Joseph T. Wearn MD University Professor of Medicine; **Thomas Stellato**, professor of surgery, is the Charles A. Hubay MD Professor of Surgery; **Nathan Berger**, professor of medicine (hematology/oncology) has been named the Hanna-Payne Professor of Experimental Medicine. Berger also was appointed the Case Western Reserve University first director of the Center for Science, Health and Society, a collaboration between the university and the City of Cleveland to promote public health education. . . . **EDNA CUKIERMAN** has joined the Fox Chase Cancer Center Division of Basic Science. Cukierman, a cell biologist, was a Fogarty International Center postdoctoral fellow at the National Institute of Dental and Craniofacial Research.

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Business & Regulatory Report

Clinical Trials:

Millennium Pharmaceuticals Begins Trials Of Agent For Metastatic Prostate Cancer

Millennium Pharmaceuticals Inc. (Nasdaq: MLNM) has begun a phase I trial of MLN2704 in metastatic androgen-independent prostate cancer.

The company is co-developing the agent with **BZL Biologics LLC.**

MLN2704 employs a novel approach designed to deliver chemotherapy directly to prostate tumor cells while minimizing harm to

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Oncology Management:

In Survey, Two-Thirds Of Physicians Say Cancer Patients Over 65 Are Undertreated

In a survey of oncologists and family physicians, two-thirds of physicians said undertreatment of cancer in patients over age 65 is a common occurrence.

At the same time, 87 percent of respondents agreed that otherwise healthy cancer patients over the age 65 can obtain the same benefits from chemotherapy as younger patients.

The findings were announced by the **American Society on Aging** and **Pharmacia Oncology** at the meeting of the Gerontological Society of America earlier this month.

"Age alone should never be a barrier to receiving appropriate care," said Gloria Cavanaugh, president and CEO of the American Society on Aging.

The survey suggests that a primary driver of undertreatment is the misconception that patients over 65 are ineligible for chemotherapy because of increased associated risks.

More than one-third of oncologists and primary care physicians surveyed say the physician community at large holds this belief and they themselves believe it: about 15 percent of oncologists and 30 percent of primary care physicians say patients aged 65-74 are likely to be too frail to tolerate chemotherapy; this number grows to 97 percent of oncologists and 89 percent of PCPs for patients age 85+.

Only 35 percent of those surveyed report they recently saw data regarding patient tolerability of chemotherapy over the age of 65, and the majority of oncologists (74%) and PCPs (83%) say there is a gap in knowledge between clinical data and the "common" treatment practices

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Genzyme Begins Phase I/II Of Vaccine For Kidney Cancer

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healthy cells, the company said.

The agent combines the cytotoxic agent DM1 with a monoclonal antibody, MLN591, which binds to a specific protein on the surface of prostate cancer cells called prostate-specific membrane antigen (PMSA).

Known as a "Tumor- targeted Monoclonal Antibody Vehicle" or T-MAV, MLN591 was discovered by a team headed by Neil Bander, the Bernard and Josephine Chaus Professor of Urological Oncology at Cornell University Medical Center, the company said.

Patients must have androgen-independent prostate cancer with progressive measurable or evaluable disease, progressive bone metastasis, or progressive PSA levels.

* * *

Genzyme Molecular Oncology (Nasdaq: GZMO) of Framingham, Mass., said it has begun a phase I/II trial of a patient-specific vaccine which uses electrofusion to target cancer cells.

The trial in kidney cancer is enrolling patients in Boston at the Beth Israel Deaconess Medical Center, and at the Dana-Farber Cancer Institute, the company said. David Avigan, director of the bone marrow transplant program at the Beth Israel Deaconess Medical Center and assistant professor at Harvard Medical School, is the lead investigator.

The approach involves surgical removal of cancer cells and combining them electrically with immune-stimulating dendritic cells, the company said. The combined cells are then delivered to the patient in the form of a vaccine, through multiple injections into the upper thighs and lower abdomen. The vaccine may enable the immune system to recognize the remaining cancer cells as foreign to the body, and attack them, the company said.

Up to 20 patients with advanced kidney cancer will be treated over 12 weeks, the company said.

* * *

IDM, a Paris-based biopharmaceutical company specializing in cellular immunotherapy, began a phase II trial of the therapeutic vaccine Uvidem (IDD-3) for melanoma.

The trial is being conducted metastatic melanoma patients who have received no more than one chemotherapy line and whose lesions can be accurately measured. Altogether, 60 patients will be recruited at 10 centers in France, Germany and Australia, the company said. The trial is being coordinated by Isabelle Gorin, of the department of dermatology at the Hopital Tarnier-Cochin Hospital in Paris.

Uvidem is a cell drug containing dendritic cells which have been generated using IDM's technology in presence of Interleukin 13, the company said. The agent is being developed by IDM and Sanofi-Synthelabo.

* * *

Kosan Biosciences Inc. (NASDAQ:KOSN) and **Roche** (SWX Zurich) announced interim results from an initial clinical trial of KOS-862 (Epothilone D) at the 14th EORTC-NCI-AACR Symposium on Molecular Targets and Cancer Therapeutics meeting in Frankfurt, Germany.

KOS-862 is a polyketide natural product that inhibits cancer cells by the same mechanism as paclitaxel and is also effective against paclitaxel resistant tumors in in vitro and in vivo animal models.

As determination of an optimal dosing regimen may be critical to the successful development of a tubulin polymerizing agent such as KOS-862, Kosan has begun three phase I clinical trials of KOS-862 examining a total of five different schedules in patients with advanced solid tumors.

The presentation outlined interim results from the first of Kosan's phase I clinical trials seeking to

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determine possible drug-related toxicities, pharmacokinetics, and pharmacodynamics of escalating intravenous doses of KOS-862 administered every 3 weeks.

To date, the drug has been evaluated in 42 patients: single doses (n=31; from 9 to 185 mg/m$^{2)}$ and doses administered over three consecutive days (n=11; 20-50 mg/m^2/day). The 120-150 mg/m^2 single dose cohorts are being expanded as is the 40 mg/m^2 /day dose group.

The results to date indicate no apparent myelosuppression. Within the expanded cohorts, toxicities of fatigue, nausea/vomiting, mild peripheral neuropathy, and transient cognitive abnormalities have been observed. Pharmacokinetics are linear with no change upon repeat dosing and the drug shows a 10-hour half-life and good tissuepenetration. The pharmacodynamic measurements demonstrate that maximal microtubule bundle formation in peripheral blood cells correlates with maximal plasma concentrations.

Two additional phase 1 trials (representing three dosing regimens) are currently ongoing: weekly dosing for three weeks out of four, and 24-hour and 72-hour continuous infusion every two weeks.

Kosan and Roche recently entered into a global partnership to jointly move KOS-862 through clinical development.

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Pharmagenesis of Palo Alto, Calif., has begun U.S. clinical trials of PG490-88Na, a derivative of a compound from an herb used in Chinese medicine.

In preclinical studies, PG490-88Na reduced tumor growth, or caused regression or eradication of human tumors implanted into mice, the company said.

The agent also appeared to have direct anti-cancer effects, and was able to potentiate effects of commonly prescribed chemotherapy drugs such as 5-FU, Camptosar (irinotecan) and Taxol (paclitaxel).

U.S. trials are being conducted at two sites, the Cancer Therapy & Research Center in San Antonio, and the University of Colorado Cancer Center in Denver.

A phase I open-label study is accruing patients with advanced solid tumors who have failed standard therapy.

* * *

A radiation approach being tested at **Stanford University Medical Center** could shorten the overall treatment time for women with breast cancer.

Participants will receive a single dose of radiation at the time of surgery rather than the usual six-week course of radiation therapy. The clinical trial is now recruiting patients.

"The trial should tell us whether this accelerated form of radiotherapy is safe, feasible and effective in controlling cancer recurrence in the breast for certain women who have a lumpectomy," said Frederick Dirbas**,** assistant professor of surgical oncology at the Stanford School of Medicine and leader of the trial.

Investigators Dirbas and Donald Goffinet are replicating an Italian trial, where more than 100 participants received a single large dose of radiation at the time of surgery. The trial seeks to recruit 50 women who are older than 40, have a single breast tumor that is smaller than 2.5 centimeters and have a low likelihood of tumors elsewhere in the breast.

Deals & Collaborations:

Epigenomics, Mayo Clinic Sign Research Collaboration

Epigenomics AG of Berlin and **Mayo Clinic** have signed a two-year collaboration to identify and validate a panel of DNA methylation-based markers for the early detection of colorectal cancer.

DNA Methylation is a natural switch that controls gene expression, giving rise to distinct patterns in cells, including those found in cancer and other diseases, the company said. Based on these methylation patterns, cancer may be detected and classified from tissue and bodily fluids, such as blood serum or urine samples.

Under the agreement, Mayo Clinic will provide Epigenomics with samples of clinical material from well-characterized patient populations, the company said. Researchers will collaborate to define clinical subgroups and research strategy.

"A simple, accurate and non- invasive test that involves less patient discomfort could help detect more cancers at an earlier stage," said David Ahlquist, of Mayo Clinic

Epigenomics will use samples from Mayo Clinic to confirm candidate methylation markers that have been identified using its proprietary marker discovery process, the company said. Methylation markers that consistently detect all stages of colorectal cancer will be determined by comparing DNA-methylation patterns of healthy versus diseased tissue using the Epigenomic high-throughput array analysis technology. Resulting markers will lead to a pre-

validated marker panel that would be tested in body fluids and could eventually be developed into an early screening test.

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Adherex Technologies (TSX:AHX) of Ottawa said it it has completed a merger with **Oxiquant Inc.**, a U.S. based biopharmaceutical company.

The merged company will continue to operate in Ottawa, under the name Adherex Technologies Inc.

Adherex products include the compound, Exherin, which is expected to be tested in the clinic next year. Oxiquant brings three new clinical phase cancer drugs to the Adherex product portfolio. All of Adherex's non-cancer related assets have been spun-off into a new company, Cadherin Biomedical Inc., the company said.

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Ariad Pharmaceuticals Inc. (Nasdaq: ARIA) of Cambridge, Mass., has entered into a non-exclusive worldwide license agreement with **Bristol-Myers Squibb Co**. (NYSE: BMY) that grants Bristol-Myers Squibb the right to conduct pharmaceutical research and development covered by Ariad's NF-(kappa)B patents, retroactive to Sept. 8, 1998.

BMS will pay Ariad an up-front license fee, annual fees, product development and commercialization milestones, and royalties based on sales of products discovered using ARIAD's NF-(kappa)B drug-discovery methods, the company said.

The licensed patents are part of Ariad's NF-(kappa)B patent portfolio awarded to the Whitehead Institute for Biomedical Research, Massachusetts Institute of Technology, and Harvard University.

"Our agreement with BMS covers an important area of R&D for Bristol," said Harvey Berger, chairman and CEO of Ariad. "There are many additional potential licensees of our NF-(kappa)B patents, and we are committed to creating value for the team of distinguished inventors, their institutions, and our stockholders through a broad licensing program for our NF-(kappa)B patents."

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Broadlane Inc. of San Francisco said its customers will be able to use the radiation oncology products of **Elekta Oncology** of Atlanta.

The three-year agreement covering radiation oncology products and services provide Broadlane customers with access to such Elekta products as the Precise Treatment System Linear Accelerator, the PrecisePlan Treatment System and the AcQsim CTLarge Bore Oncology Simulation System.

Elekta was awarded the contracts as part of the Broadlane contract selection process, which focuses on delivering high-quality, cost-effective products and services to its healthcare provider customers, the company said.

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GE Medical Systems, a unit of **General Electric Co.** (NYSE:GE), said it has made two transactions to accelerate its ongoing initiatives in molecular medicine:

—GE has acquired **Enhanced Vision Systems Ltd.**, a London, Ontario, company that specializes in MicroCT imaging technology.

—GE also entered into a strategic alliance with **ART Advanced Research Technologies Inc.** to develop optical molecular imaging applications.

Currently, more than 200 pharmaceutical and research studies in cancer, osteoporosis, arthritis, and stroke are being conducted using EVS MicroCT technology. MicroCT imaging systems provide a non-invasive option for evaluating the short-term and long-term impact of a new drug or therapy.

Under the agreement with ART, GE will make a minority equity investment in ART and help market, manufacture and distribute ART's SoftScan optical breast imaging system, and develop with ART new optical molecular imaging applications.

SoftScan produces a functional image that can depict blood volumes and blood oxygen content simultaneously. With this information, it is believed that practitioners will be able to see anomalies in the breast that previously went undetected and will, in turn, be better able to determine whether a tumor is malignant or benign, the company said.

"When we combine SoftScan technology with GE Medical Systems' breakthrough technologies like the Senographe 2000D full-field digital mammography system, we believe cancer detection will improve dramatically," said Dow Wilson, general manager of Global Diagnostic X-ray at GE Medical Systems. "We expect that SoftScan will provide more accurate images of dense breast tissues and breast tissue of women that have undergone hormonal therapy."

GE Medical Systems will begin work to determine how ART's SoftScan technology translates into future applications including head, abdomen and prostate imaging.

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Helsinn Healthcare SA, a privately-owned

Swiss pharmaceutical group of Lugano, Switzerland, and its partner **CJ Corp.** of Seoul, Korea, said they have signed an agreement granting CJ Corp. the exclusive license and distribution rights for palonosetron in the Republic of Korea.

Palonosetron is a highly selective 5-HT3 receptor antagonist with a strong receptor-binding affinity and an extended plasma half-life, in development for the prevention of chemotherapy-induced nausea and vomiting.

The new drug application for palonosetron was recently submitted to FDA, the company said.

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IVAX Corp. (AMEX:IVX) (LSE:IVX.L) of Miami said it has assumed worldwide rights to develop and market LMB-9, a recombinant immunotoxin designed as a treatment for a wide variety of cancers.

LMB-9 was developed under the leadership of Ira Pastan, chief of the **NCI Laboratory of Molecular Biology**, and was designed to target and destroy cancer cells without harming normal cells, the company said.

LMB-9 targets the Lewis Y antigen, which is found in most gastrointestinal cancers, as well as in prostate and breast cancer, the company said. In the laboratory, LMB-9 has been highly active against various forms of cancer.

According to IVAX, clinical trials of the agent are in progress.

"The ability of LMB-9 to kill tumor cells at very low concentrations, as well as favorable results from our ongoing clinical trial with TP-38 in brain cancer, encouraged IVAX in this important expansion of our immunotoxin platform," said Phillip Frost, IVAX chairman and CEO.

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Kosan Biosciences Inc. (Nasdaq:KOSN) of Hayward, Calif., said it has signed two cooperative research and development agreements with NCI.

The first CRADA would develop 17-AAG (17-allylaminogeldanamycin), which is in phase I trials, and the second would develop improved geldanamycin analogs, the company said. Kosan also received an exclusive license to the NCI portfolio covering these and related compounds.

Hsp90 (heat shock protein 90) is a protein chaperone that binds to several sets of signaling proteins, known as client proteins, the company said. The proteins include cancer-relevant targets such as mutated p53, Bcr-Abl, Raf-1, ErbB2 and other kinases, as well as steroid hormone receptors. Disruption of the Hsp90-client protein complexes leads to proteosome-mediated degradation of client proteins.

The polyketide geldanamycin, and analogs such as AAG, binds to Hsp90 and causes dissociation and degradation of the client proteins, the company said. Because the Hsp90 client proteins are so important in signal transduction and in transcription, geldanamycin analogs such as AAG could serve as chemotherapeutic agents in a number of diseases. Preclinical studies suggest that the compounds are synergistic with other inhibitors of the signal transduction client proteins, as well as conventional anticancer agents.

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Lorus Therapeutics Inc. of Toronto said **Mayne Pharma**, an Australian company, will exercise its option to acquire distribution rights for Virulizin in Argentina for malignant melanoma.

The agreement for Argentina will include the same terms as the exclusive seven-year distribution agreement signed between Lorus and Mayne Pharma in October 2001 for the Mexico market, the company said. Lorus will be responsible for manufacturing Virulizin and will receive royalties from sales. Mayne Pharma will share in any additional clinical development and regulatory costs that the two companies agree are appropriate in Argentina.

Virulizin is a non-toxic immunotherapy that recruits natural killer cells, monocytes and macrophages, to attack tumor cells, the company said. In pre-clinical and clinical studies, the treatment was well-tolerated and drug capable of antitumor activity in a range of cancer types, such as malignant melanoma and pancreatic cancer, the company said. Virulizin is a phase III clinical trial in North America for advanced pancreatic cancer.

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Matritech Inc. (NASDAQ:NMPS) of Newton, Mass., and **Sysmex Corp.** of Kobe, Japan, said they have formed a partnership to develop an automated Pap smear test.

The new approach will use Sysmex's flow cytometry technology and Matritech's patented NMP179 protein biomarker to perform highly accurate cell-by-cell analysis for cervical cancer, the companies said.

The new technology will enable laboratories to automate the process of separating normal samples from those requiring pathologist attention, the companies said. Sysmex will market the new

technology worldwide; the first target will be the $1 billion U.S. market.

Under the agreement, Sysmex will make an investment in Matritech, including the purchase of equity at a premium to the current market price and milestone payments during development. Sysmex will also make a significant financial commitment to the research and development of the product, the companies said. Upon the product's completion, Matritech will supply Sysmex with NMP179 antibodies while Sysmex will pay royalties based on the sales of Matritech's reagents, the companies said.

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Mentor Corp. (NASDAQ:MNTR) of Santa Barbara said it has reached an agreement to acquire **Mills Biopharmaceuticals Inc**., a manufacturer of ProstaSeed Iodine 125 brachytherapy seeds for prostate cancer.

"Vertical integration in the prostate brachytherapy market will give us the ability to not only better serve this market but ultimately combine our R&D efforts and look to move into other markets and applications within the global brachytherapy market," said Christopher Conway, president of Mentor.

Stanley Mills, founder of the company, will continue as president of Mills Biopharmaceuticals.

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NeoRx Corp. (Nasdaq: NERX) of Seattle, said it received a $1 million milestone payment from **Angiotech Pharmaceuticals Inc.** (Nasdaq:ANPI; TSX: ANP) under an existing license agreement.

The agreement conveys to Angiotech an exclusive license NeoRx US patent rights to use paclitaxel and related compounds to treat vascular diseases and conditions, including restenosis.

Paclitaxel, a chemotherapeutic widely used to treat ovarian and breast cancers, also may be useful in reducing restenosis, the narrowing of blood vessels that often occurs following balloon angioplasty and other vascular procedures. Under the agreement, NeoRx previously received from Angiotech a milestone payment of $1 million in April.

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Procter & Gamble Co. (NYSE:PG) of Tucson, Ariz., said it has donated 33 patents and accompanying intellectual property for the treatment of cancer, HIV, and hepatitis C to the **University of Arizona Foundation.**

Research on the donated compounds will be conducted by the UA College of Pharmacy and the Arizona Cancer Center, the company said.

The portfolio includes the compounds FB636 and FB642, for cancer and HIV, and PG-301029, for hepatitis C, the company said. Pre-clinical and initial clinical studies suggest the compounds may be active against many forms of cancer as well as viral infections.

As the new sole owners of the technology, the UA will benefit from all future revenues, the company said.

The FB642 mechanism of action inhibits the growth of certain cancer cells, the company said.

"Partnering the research expertise at the UA with this donation from P&G underscores the importance of innovative public/private partnerships in health care research," said Daniel Von Hoff, director of the Arizona Cancer Center at the UA. The outcome of this donation could result in breakthrough medical treatments for patients with cancer and other life-threatening diseases."

* * *

Roche of Basel and **Antisoma plc** of London said they will form a broad strategic alliance which grants Roche exclusive worldwide rights to the Antisoma pipeline of oncology products.

Agents covered by the agreement include Pemtumomab, which is in phase III development for ovarian cancer and could be the subject of product license applications as early as 2004, the companies said.

Three other oncology compounds, Therex, TheraFab and DMXAA, which are in phase I clinical trials are also covered. Roche will also have rights to opt in to pre-clinical programs that advance into clinical trials during a 5-year period, the companies said.

Under the agreement, Roche will initially pay 4.15 million GBP to acquire Antisoma shares equivalent to just under 10 percent of the current share capital and make a cash payment to gain access to the existing Antisoma portfolio, the companies said. Roche will provide Antisoma with access, development and milestone and commercial payments based on compounds reaching critical stages. Key milestones will be entry into phase III trials and marketing approvals. Roche will cover in full the remaining development costs of Pemtumomab and Therex, the companies said.

Roche would maintain its equity stake in Antisoma until at least the earliest of the following: the approval for marketing of Pemtumomab, the

termination of the agreement, or the elapse of 3 years from completion, the companies said.

Pemtumomab, which is in phase III clinical development for ovarian cancer and phase II for gastric cancer, is an Yttrium-90 labelled mouse monoclonal antibody designed for administration into the peritoneal cavity and directed against MUC-1, a form of mucin found on various cancer cells.

Therex is a humanised monoclonal antibody, which is in phase I testing TheraFab, which is in phase I clinical testing for non-small cell lung cancer, is the Fab2 fragment of pemtumomab linked to Yttrium-90. It is used in combination with external beam radiotherapy to deliver an increased radiation dose to the tumor. DMXAA, which is phase I trials, is a small molecule vascular targeting agent that selectively disrupts blood flow through tumor blood vessels.

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SangStat (Nasdaq:SANG) of Fremont, Calif., said it has entered into a strategic collaboration with **Therapeutic Human Polyclonals Inc.** to develop and commercialize the humanized polyclonal antibodies.

The THP technology uses a rabbit's immune system to generate humanized antibodies, the company said. SangStat is a manufacturer of rabbit polyclonal antibodies and has marketing experience in that area.

"Just as the development of humanized monoclonal antibodies represented a significant medical advance, we believe the development of humanized polyclonal antibodies, if successful, will prove to be a watershed event in medical science," said Richard Murdock, interim chairman, president and CEO of SangStat.

The collaboration consists of two agreements for the development and commercialization of two classes of therapeutics, the company said. The first is a humanized version of the SangStat Thymoglobulin polyclonal antibody product. Thymoglobulin, anti-Thymocyte-globulin from rabbit, is used in immunosuppressed patients. A humanized version of Thymoglobulin could allow for repeat dosing in solid organ and bone marrow transplantation, and could be useful immunocompetent patients with autoimmune diseases such as rheumatoid arthritis, multiple sclerosis, diabetes mellitus, lupus and other indications.

The second collaboration focuses on the development and commercialization of humanized polyclonal antibodies for hematologic diseases, such as B-cell lymphomas, leukemia and other B-cell related disorders, the company said.

The collaboration agreements consist of product licensing fees, clinical milestone payments and royalties, the company said. THP has the option to co-fund a portion of the development costs for certain hematology products in exchange for a percentage of the resulting profits.

Product Approvals & Applications:

ODAC To Review Bexxar, Casodex On Dec. 17-18

FDA Oncologic Drugs Advisory Committee is scheduled to meet on Dec. 17-18 to review:

—The biologics licensing application for Bexxar, Tositumomab (Anti-B1) and Iodine-131-Tositumomab for relapsed or refractory low-grade, follicular or transformed low-grade, B-cell non-Hodgkin's lymphoma, including rituximab-refractory follicular non-Hodgkin's lymphoma.

The agent is sponsored by **Corixa Corp.**, and co-developed in the US by Corixa and **GlaxoSmithKline.**

—The new drug application for Casodex(150 mg bicalutamide) as adjuvant therapy to radical prostatectomy and radiotherapy of curative intent in patients with locally advanced non-metastatic prostate cancer who have a high risk for disease recurrence, or immediate treatment of localized non-metastatic prostate cancer in patients for whom therapy of curative intent is not indicated.

Casodex is sponsored by **AstraZeneca Pharmaceuticals LP.**

Oncology Management:

Only 16% Of Physicians Have Geriatrics Training

(Continued from page 1)

for patients over 65.

In fact, only 16 percent of physicians have received formal training in how to provide care for cancer patients aged 65+.

In addition, the survey suggests that patients over 65 are routinely excluded from clinical trials (41% of oncologists and 51% of PCPs).

"I am concerned that patients may not be receiving available treatments," said Stuart Lichtman, associate professor of medicine, North Shore

University, NYU School of Medicine, division of oncology.

"In my practice, for example, while colon cancer does affect younger patients, it is most prevalent in the 65+ age group," Lichtman said. "There are regimens, such as Camptosar, also known as irinotecan, that have been shown to be beneficial for patients across a wide range of ages. It is our duty to do everything we can to make sure both patients and physicians have the information required to make an informed decision about chemotherapy treatment."

According to the survey, an additional factor contributing to undertreatment is patient education.

Approximately one-third of physicians surveyed believe patients are uninformed about their treatment options.

Almost half of the physicians indicated the most important action a patient can take is to be more proactive with their physician to learn about treatment options.

The majority of physicians (93%) believe patients are resistant to chemotherapy and indicate that the two greatest barriers to effective communication with patients are their fear of side effects and preconceived notions/misinformation about cancer and chemotherapy's risks and benefits (92% of oncologists and 91% of PCPs, 87% oncologists and 91% PCPs respectively).

"The issues raised by the physicians themselves also point to the need for strengthening the tools and information available," said ASA's Cavanaugh. "Involving geriatricians as part of the healthcare team could be an important step in the right direction."

The survey was conducted by the Seniors Research Group of Livonia, Mich., on behalf of Pharmacia Oncology during October 2002.

Altogether, 300 interviews were completed with oncologists and primary care physicians, which produces a statistical precision of +/- 6 percent at the 95 percent confidence level.

Of the 300 completed interviews, 149 were conducted with oncologists and 151 were conducted with PCPs for a statistical precision of +/-8 percent at the 95 percent confidence level. The Seniors Research Group is an alliance between Market Strategies, a market research firm, and the National Council on the Aging, a non-profit group.

* * *

Wayne State University School of Medicine and **Henry Ford Health System** announced a partnership to provide medical education and collaborate on medical research, establishing Henry Ford as a Wayne State core academic affiliate.

The affiliation concludes months of discussion between the Detroit metropolitan area's only medical school and one of its largest health providers.

Under the agreement:

—Henry Ford Health System physicians and researchers who teach WSU students will receive academic appointments as faculty;

—Researchers from both institutions will share facilities and research studies;

—Basic science graduate students in doctoral programs and faculty will collaborate in training and research.

Wayne State University has a long-standing affiliation with the Detroit Medical Center, including Children's Hospital of Michigan and the Kresge Eye Institute, as well as the Barbara Ann Karmanos Cancer Institute, for clinical care as well as education and research.

The 750 full-time faculty members of the School of Medicine will continue to conduct patient care activities and clinical trials research within these facilities, officials said.

The WSU School of Medicine is aligned with many of the area's largest health providers through a consortium at 14 sites throughout southeastern Michigan.

* * *

US Oncology (NASDAQ: USON) of Houston said its board of directors has authorized the company to repurchase up to $50 million of US Oncology common stock.

The shares can be repurchased periodically both in the open market and private transactions, depending on stock price and the cash position of the company.

Shares of stock will be held in treasury and used to satisfy company obligations with employee stock options, the company said.

No expiration date for the repurchase was established, the company said.

In another development, the company said it has opened a cancer-care facility in Lee's Summit, Mo. The center is part of the Kansas City Cancer Centers oncology practice.

The KCCC-East location offers outpatient oncology services, such as medical oncology, clinical hematology, laboratory services, oncology pharmacy, diagnostic radiology, PET scanning, and radiation therapy, including 3-D treatment planning, the company said.

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