

UPCOMING EVENTS:

• Daylight Savings: March 11

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Pathology/Microbiology

VOLUME 2, ISSUE 2

OCTOBER-DECEMBER, 2006

Burkitt Lymphoma Breakthrough

UNMC Eppley Cancer Center: Cancer Update, Fall 2006



Wing (John) Chan, MD

An international research study involving the University of Nebraska Medical Center, the National Cancer Institute, and 10 other institutions has successfully identified the gene expression signature for Burkitt lymphoma. The discovery, which is reported in the June 8 edition of *The New England Journal of Medicine*, will allow physicians to better diagnose and treat Burkitt lymphoma and better distinguish it from another more common form of malignant lymphoma.

Butkitt lymphoma is a rare aggressive B cell lymphoma that accounts for 30 to 50 percent of lymphomas in children but only 1 to 2 percent of lymphomas in adults. Burkitt lymphoma is rapidly fatal if untreated, but it is curable with intensive therapy.

While standard low-dose chemotherapy is typically used to treat DLBCL, Burkitt lymphoma requires intensive chemotherapy. In addition, because of the high risk of central nervous system (CNS) involvement with Burkitt lymphoma, it is essential that prophylactic treatment of the CNS be part of the standard therapy for Burkitt lymphoma.

The article in *The New England*

Journal of Medicine featured the results of two studies on the molecular diagnosis of Burkitt lymphoma involving several European and North American institutions. One of the research teams was led by Cancer Center member Wing (John) Chan, MD, the Amelia and Austin Vickery Professor of Pathology and co-director of the Center for Lymphoma and Leukemia Research at UNMC. The research was supported through a multi-million dollar Director Challenge Grant awarded to Dr. Chan by the National Cancer Institute.

In addition to Dr. Chan, other UNMC participants included: Kai Fu, MD; Tim Greiner, MD; Dennis Weisenburger, MD; Bhavana Dave, PhD; Warren Sanger, PhD; Julie Vose, MD; James Armitage, MD; and Martin Bast.

McFadden Lecture Features Tomasz

Alexander Tomasz, Professor and Head of Laboratory of Microbiology at The Rockefeller University in New York, New York, delivered his presentation entitled, "Multiple Strategies of Vancomycin Resistance in Staphylococci" as featured speaker of the Harry W. McFadden, Jr, MD Lectureship.

Dr. Tomasz is the Plutarch Papamarkou Professor and Head of Microbiology at the

Rockefeller University and was the 12th person to present the McFadden Lectureship.

The lecture is named after Harry W. McFadden, Jr., M.D., a legendary UNMC doctor who was chairman of the school's former Department of Medical Microbiology from 1956 to 1985. Dr. McFadden also served twice as UNMC's interim chancellor.



Left to right: Cohen, Tomasz, McFadden

Letter from the Chair



Samuel M. Cohen,
MD, PhD
Department Chair

HAPPY NEW YEAR!

Numerous new activities are already under way as we begin a new year. The Sorrell College of Medicine Building and the second Durham Research Center are already under construction. A College of Public Health has been approved, and is already organized and beginning activities. Plans for expansion of clinical and hospital programs and facilities are actively being pur-

sued. Two new faculty, Drs. Subodh Lele and Audrey Lazenby, have joined us, and several additional recruitments are under way. We have received approval for a post-sophomore year fellowship program in the department and a surgical pathology fellowship. Plans are under way to expand the residency program by four positions.

With all of the activities constantly ongoing, it is apropos to aggressively plan for the future. A stra-

tegic planning exercise is underway for the department, developing new and innovative approaches to the numerous challenges and opportunities before us in our missions of education, research, clinical care, and outreach activities. Progress in this exercise will be conveyed in future issues of this newsletter.

A new year is always an exciting and challenging time. We look forward to 2007 as a particularly rewarding year.

Haas Named Facility Manager

Story by Nora Chapman



Eric Haas, PhD

Dr. Eric Haas has been promoted to Director of the Genetic Sequence Analysis Facility.

Eric began working with Drs.

Nora Chapman and Bill Chaney in July, 2000 as the facility manager for the University of Nebraska Medical Center Genetic Sequence Analysis Facility.

Eric received his Ph.D. in chemistry at the University of Nebraska at Lincoln on his crystallographic analysis of rubisco in *Chlamydomonas reinhardtii*. In the process of doing his doctoral research, he trained himself in computa-

tional biology. Because of this expertise, the former manager for our facility recommended him to us as a replacement.

The GSAF provides access to a number of sequence analysis programs to the Medical Center campus as well as researchers elsewhere who participate in research here.

Originally the position was largely systems administration, but with time the importance of having a biologist who had computational experience guide researchers through new computation biology procedures became more important.

Eric's present position requires a good deal of instruction to a

quite varied audience (from staff to graduate students to faculty) on topics related to computational biology.

Shortly after he started, he became the major instructor for PAMM873, Genetic Sequence Analysis and he has run a journal club for students studying topics in bioinformatics as well as lecturing in a number of team taught courses. Because of his teaching role, he was promoted to instructor in our department two years ago.

As Eric's role in managing the facility has grown with his experience, Drs. Chapman and Bill Chaney (the previous co-directors of the Facility) recommended his promotion to director.

Personnel Activity

NEW HIRES:

NAME	TITLE	START DATE
Claudia Borgeson	Research Technologist I	10/16/06
Kathleen Perrett	Office Associate I	10/30/06
Abdelkader Ashour	Post-Doc Research Associate	11/01/06
Aaron Schumacher	Research Technologist I	11/09/06
Amanda Bartling	Research Technician	11/29/06
Lisa Mather	Clerical Associate	

SERVICE ANNIVERSARY:

Dr. Rod Markin	20 years	11/01/1986
Mary Peterson	1 year	
Jessica Holmstrom	5 years	

Kouba Retires After 15 Years with UNMC

Brenda Kouba worked in the CLS Program for 15 years as staff assistant and recruitment coordinator. She also taught the Introduction to Health Careers course at UNO for 4 years. "Brenda was the first person that candidates



Linda Fell and Brenda Kouba (right)

interested in CLS got to know. She was great at supporting them through the application and acceptance process. We will really miss her." said Linda Fell, Program Director of CLS.

Grant Funding

JAMES E. TALMADGE

P30 CA036727-AV-93P-A1 Avon-NCI
 "Progress for Patients" Awards Program: "Neoadjuvant Intratumoral Injection of Dendritic Cells"
 9/1/06—8/31/08;

PAUL FEY

CDC-DHHS: "PPLIP-AST Lab Integration Project"
 9/30/06—9/29/09; \$400,000

PAUL FEY

Edna Ittner Pediatric Fund
 "Characterization of Staphylococcus Epidermis Neonatal Sepsis Isolates"
 9/1/06—8/31/07; \$40,000

STEVE HINRICHS

DHSS
 "Bioterrorism Lab Service Agreement — Focus Area C"
 10/1/06—9/30/07; \$513,235

STEVE HINRICHS

DHSS
 "Nebraska Chemical Terrorism — Focus Area D"
 10/1/06—9/30/07; \$247,100

TONY SAMBOL

HRSA
 "Nebraska Bioterrorism"
 10/1/06—3/30/07; \$180,000

RAKESH SINGH

NIH
 "Molecular Regulation"
 12/1/06—11/30/07; \$155,029

STEVE TRACY

Edna Ittner Pediatric Fund
 "CVB-Initiated T1D Onset Model in Young Nod Mice"
 9/1/06—8/31/07; \$33,026

Hinrichs to Lead COM's Research Development

Story by Chuck Brown, UNMC Public Affairs



Steve Hinrichs, MD

Steve Hinrichs, M.D., has been named the College of Medicine's new senior associate dean for research development, the college's dean, John Gollan, M.D., Ph.D., has announced.

Exploring ways for UNMC to gain research funding from sources other than the National Institutes of Health is one of his top priorities as he takes on his new responsibilities, Dr. Hinrichs said.

"In this time of decreased funding from the NIH, it's essential that we diversify our portfolio, so to speak, in terms of our funding sources," said Dr. Hinrichs, who also is a professor in UNMC's Department of Pathology and Microbiology and director of the Nebraska Center for Biosecurity. "We have many avenues of funding to investigate that we haven't explored sufficiently and now is the time to take a look at these options."

Increasing participation in clinical trials and diagnostic research are two areas Dr. Hinrichs especially wants to explore. He said he is looking forward to working with Jennifer Larsen, M.D., associate dean of clinical research in the College of Medicine, to find new funding sources in clinical research.

"I am excited to work with Dr. Larsen in building upon the extraordinary potential of our clinical research program," Dr. Hinrichs said. "These new funding sources can help provide a base to support future NIH grants and also allow us to compete with established research centers."

Dr. Hinrichs would like to see medical center researchers take full advantage of Department of Defense funding sources.

"NIH funding is cyclical and right now we are in a down cycle," Dr. Hinrichs said. "It is important for our researchers and students to keep in mind that increased NIH funding will come in the future. In the meantime, we will explore other options. At the end of the day, the more funding sources you have, the stronger our programs will be."

Dr. Hinrichs has an entrepreneurial spirit that makes him the right person to lead College of Medicine researchers as they look to increase funding sources, Dr. Gollan said.

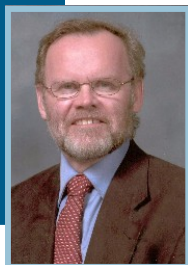
This entrepreneurial bent has been evidenced by the partnerships Dr. Hinrichs has forged with businesses -- such as 3M Corporation -- and government entities -- such as the DOD -- in his role as director of the biosecurity center.

"Dr. Hinrichs has wonderful vision when it comes to finding new funding sources and forging solid partnerships," Dr. Gollan said. "These qualities make him a great fit for this position."

Dr. Hinrichs is taking over for Ira Fox, M.D., whom Drs. Hinrichs and Gollan lauded for his work in the position, and in particular turning the College of Medicine M.D./Ph.D. program into a nationally-competitive program.

"Dr. Fox's contributions were many," Dr. Gollan said. "I believe Dr. Hinrichs will follow in Dr. Fox's mold of leading our researchers down new trails and avenues as we continue to become a world-class medical college."

Booth Named Finalist for Golden Apple Award



James Booth, PhD

S. James Booth, PhD, was recently named a finalist for the Golden Apple Award.

First- and second-year UNMC medical students annually recognize outstanding teachers with the Golden Apple Award, which is presented by the medical center's chapter of the American Medical Student Association.

"We are very lucky to have great faculty at UNMC," said Nick Branting, second-year medical student and AMSA president. "The Golden Apple Award is the students' opportunity to express our appreciation and recognize excellent teachers."

Congratulations!

Web-Based Health Record for Students Introduced

Story by Tom O'Connor, UNMC Public Affairs

UNMC has announced plans for what is believed to be the first time an academic organization has established a Web-based Personal Health Record program for all its students. In contrast with medical records that are owned by doctors or hospitals, a PHR is owned by the patient and is part of a national effort to involve patients in their own health care.

Although there has been much discussion around the country about the use of PHRs by large corporations, it is believed that this marks the first time an academic organization has done so, and the use of a Web-based PHR program makes it even more unique.

As part of its emergency preparedness efforts, all UNMC students will be given the opportunity to enroll in the voluntary program.

Under the program, students will access a password-secured Web site that provides the electronic format for creation of their health record. An Omaha based company, HDC 4Point Dynamics, is partnering with UNMC to operate and maintain the system, which was originally proposed by the Center for Biosecurity at UNMC.

A key feature of the system is that each student will have control of his/her own PHR. They will establish and maintain their personal and family health information, and the individual can decide if their

PHR can be accessed by health care professionals and for what period of time.

The approach facilitates the transportation of essential health information when the student transitions to the private sector or continues education at another institution, as commonly occurs when medical students begin their residency training.

Experts have estimated that electronic medical and health records could save the U.S. up to \$45 billion in health care costs, said Henry Zach, president of HDC 4 Point Dynamics.

"The situation our students face is representative of one of the biggest problems in health care today," said Steven Hinrichs, M.D., professor in UNMC's Department of Pathology and Microbiology and director of the Nebraska Center for Biosecurity. "When our students move between training sites, their records remain in doctors' offices and hospitals. Using the personal health record approach, the medical information such as their vaccination record moves with them and information is accessible when needed."

The PHR contains nine different information categories - demographics and insurance, related parties and emergency contacts, patient and family history (chronic conditions), lifestyle/habits/directives, allergies, immunizations, medications,

providers, and hospital/clinic visit information and vitals.

The PHR is accessible from any place at any time using a browser with Internet connection. Health care providers can access with patient permission and update their relevant medical and visit information. In the near future, students, providers and laboratories will be able to enter lab results. The system will identify the source of the new data.

Dr. Hinrichs said that both the government and private sector are looking for ways to empower the patient and give them secure access to their medical records.

"I'm excited to be part of this groundbreaking project," said Dan Connealy, immediate past president of the UNMC Student Senate and a former student regent for the University of Nebraska. "The college students of today grew up using computers and the Internet. It should be easy for all of us to be comfortable working with the PHR."

Current UNMC Student Regent Jonathan Henning said: "Considering the cost of distributing health information, a centralized PHR is a solution that can transform this burden in the U.S. health care system. I'm excited to participate, and I think this is a great opportunity for UNMC students to be a part of a cutting edge solution to a nationwide problem."

Silent gratitude isn't much use to anyone. — Gladys Bronwyn Stern

Collaboration with 3M on Protective Respirator

Story by Chuck Brown, UNMC Public Affairs



Steven Hinrichs, M.D., professor and director of the University of Nebraska Center for Biosecurity and professor of pathology and microbiology at UNMC, displays a 3M "N95" mask as U.S. Sen. Ben Nelson looks on Monday. Thanks in part to federal funding Nelson helped secure, UNMC researchers will look to develop a respirator mask that could prevent the spread of diseases such as avian influenza

A UNMC and 3M Corporation collaboration to develop respirators aimed at stopping the spread of diseases such as avian influenza was applauded by U.S. Sen. Ben Nelson.

The collaboration received a boost when UNMC was appropriated \$5.4 million in federal funds for research. About \$1.8 million of that appropriation was designated to develop personal protection gear, such as the respirator, that defend against infectious agents.

"The life-saving research being done right here in Omaha helps contribute to Nebraska's growing reputation as the 'Silicon Prairie,'" said Nelson, who played a key role in securing the funding.

Nelson was joined at a news conference at UNMC on Monday by Steven Hinrichs, M.D., professor and director of the University of Nebraska Center for Biosecurity and professor of pathology and microbiology at UNMC, and Dave Werner, plant manager at the 3M facility in Valley, Neb.

UNMC and 3M's goal is to create a respirator, which will resemble a surgical mask, that can filter and kill viruses, Werner said.

3M's "N95" surgical respirator, which is used currently at UNMC, will be the base model researchers will use while designing the new respirator.

The "N95" can filter many of the particles people would otherwise inhale but researchers want to see if the mask can capture and kill viruses, Dr. Hinrichs said.

If not, researchers will look at different filtering methods and chemicals to create a respirator that can, he said.

They will also look to create a mask that can be

mass produced and reused.

The "N95" cannot be reused.

The federal funding will help researchers test the masks in critical ways that they have been unable to before, Dr. Hinrichs said.

"The reason why this earmark is so important is that in most cases, these masks have not been tested against infectious viruses. They've really only been tested for particulates and bacteria," Dr. Hinrichs said. "In our research, the first thing we're going to be working on is the viruses."

3M is an international leader in microfiber technology and that makes the corporation a natural and powerful partner for the project, Dr. Hinrichs said.

"We have some collective ideas between us of how we might be able to modify the media that's inside the mask and either trap the virus and or kill it," Dr. Hinrichs said.

Aside from avian influenza, researchers hope the mask will be able to prevent several other respiratory viruses, including Respiratory Syncytial Virus, or RSV, and seasonal influenza, he said.

The collaboration is another example of UNMC being on the cutting edge of medical technology, Nelson said.

"This innovative research will benefit the U.S. military, the general population and will enhance our national security," Nelson said. "UNMC is actually on the verge of becoming one of the major bio-research facilities in the country. And that's why it's a pleasure to be able to work with (Hinrichs) and his colleagues ... to further that research capability."

FACT Celebrates 10 Years of Ensuring Quality in Transplantation

Story by Vicky Cerino, UNMC Public Affairs

Many people know UNMC is a leader in transplantation for cancers. UNMC faculty members also play a key role in the Foundation for Accreditation of Cellular Therapy (FACT), a national group that grants accreditation to programs performing transplants.

The foundation has had a major impact worldwide in adults and children with cancer and other diseases.

The 16-member board of FACT, made up of representatives of blood and marrow transplant programs from across the U.S., celebrated its 10th anniversary with a bronze plaque dedication ceremony. It was in 1996 that the Foundation was established at UNMC, thereby creating the world's first comprehensive quality standards and inspection program for the safe collection, processing, and clinical administration of peripheral blood stem cells, bone marrow cells or cells from umbilical cord blood for use in transplantation.

The impetus for FACT began more than 10 years ago. UNMC faculty involved included Phyllis Warkentin, M.D., professor of pathology/microbiology and pediatrics, James Armitage, M.D., professor of medicine, Anne Kessinger, M.D., professor of medicine, Peter F. Coccia, M.D., professor and vice chairman of pediatrics. Other organizers were founding members of the American Society of Blood and Marrow Transplantation (ASBMT), the professional group of clinical experts in oncology and transplantation. At the same time, a group of laboratory scientists established the International Society for Cellular Therapy (ISCT). Dr. Warkentin was a member, as well as Graham Sharp, Ph.D., professor of genetics, cell biology and anatomy, and John Jackson, Ph.D., associate professor of pathology/microbiology.

Both organizations had developed standards. The ASBMT standards focused on clinical patient care, physician training and the transplantation of cell products. The ISCT covered the collection, processing and storage of peripheral blood stem cells, bone marrow cells and umbilical cord blood.

The two organizations saw the need to merge their standards to cover the entire transplantation process and to establish a voluntary inspection and accreditation program to recognize excellence in the field.

Dr. Warkentin was asked to lead the accreditation program. In July 1996, FACT was established at UNMC through the voluntary efforts of transplant specialists across the U.S.

"We started the program from scratch, de-

veloped and published the standards, set up the structure and guidelines for the accreditation process, the training of inspectors, and what inspectors should look for," she said.

Subsequently, the national office was established with Linda Miller, now the chief operating officer, and Pam Welch, administrative assistant. The office is located near 69th and Dodge streets.

"Today there are eight employees with expertise in transplantation who advise program personnel in the accreditation process, schedule on-site inspections, prepare reports and do whatever is needed to support the work of the Foundation," Dr. Warkentin said. "It's a lot of work to get accredited, but the staffs at accredited transplant programs say they have a better program because of FACT. It's a quality management system that has us always looking at what we do and how we can do things better."

Dr. Warkentin, medical director, Transfusion and Transplantation Laboratories, The Nebraska Medical Center, also is board-certified in pediatric hematology/oncology and has been active in clinical transplantation. She said she is driven by interest in quality care for all patients. "It's really important for patient care. You want the whole program to do well. In the lab, we've always had inspections so we're used to that. To bring the same amount of discipline to clinical medicine is an important step because it focuses the improvements back to the patient." She said there are 237 programs registered for accreditation, with 150 accredited and 87 are in the process of attaining the three-year accreditation. She said 109 programs have been accredited a second time and some a third time, representing about 92 percent of the hematopoietic blood and marrow transplant centers in the U.S.

The first inspections began in September 1997. Three-member teams of volunteer inspectors visit sites. There are approximately 150 trained and active inspectors, who are all experts in some phase of laboratory or clinical transplantation, around the country.

Dr. Warkentin said accreditation also is used as an important measure of quality for transplant programs. Increasingly, health insurance plans, managed care organizations and state and federal government programs recognize or require FACT accreditation for patient care reimbursement or for designation as a center of excellence. Patients, too, quickly learn about accreditation and look for FACT approval when participating in decisions about their health



Some FACT officers were on campus to organize the strategic planning retreat happening this week. (From left to right) Alan Leahigh, chief executive officer, Linda Miller, chief operating officer, Phyllis Warkentin, M.D., medical director, and sitting is C. Fred LeMaistre, M.D., president.

care.

Patients in the U.S. aren't the only ones who benefit from the FACT standards.

In 1999, the standards were adopted for blood and marrow transplant programs throughout Europe by the Joint Accreditation Committee of International Society for Cellular Therapy and the European Group on Blood and Marrow Transplantation. FACT has also developed standards and an accreditation program for cord blood banks worldwide.

"The goal of international standards in this area is to raise the bar of quality for everybody. The standards are about clinical care, quality management, personnel training that meets certain standards and teams working together well to provide high quality medical and laboratory practice in transplantation," Dr. Warkentin said.

Transplantation is an international effort. More than 5 million donors are registered in the National Marrow Donor Program to provide patients anywhere in the world with a cellular match for transplantation. She said about one-third of the donor marrow, peripheral blood stem cells and cord blood units comes from abroad, mostly western Europe. The more volunteer donors, the better chance of a match for each patient, she said.

"The idea is that you want the transplant program to be someplace you would take your own child or family member. We want to help all programs get to that level. Those working in the field of transplantation programs have a genuine desire to provide the best care for their patients," she said.

What Microarrays Say About Lymphomas



Wing (John) Chan, MD

“For cases with ambiguous morphology or phenotype or cytogenetics, a molecular profile will provide additional help.”

How many molecules does it take to distinguish Burkitt's lymphoma from diffuse large-B-cell lymphoma? Between 2,500 and 2,600, according to one recent article.

The current World Health Organization classification already goes beyond morphology to include molecular data such as immunophenotyping, which measures expression of CD antigens, and evaluation of *c-myc* and *bcl-2* translocations. Even so, differentiating Burkitt's from diffuse large-B-cell lymphoma remains imperfect, as the authors of this recent article noted. They pointed out that the characteristic t(8;14) translocation of Burkitt's lymphoma is also found in five to 10 percent of cases of diffuse large-B-cell lymphoma; since the latter malignancy is 20 times more prevalent, an aggressive lymphoid malignancy with this translocation has at best a 50:50 chance of being Burkitt's based on the translocation alone. As a result, they write, “[A] lymphoma with a t(8;14) translocation can present a diagnostic problem” (Dave SS, et al. [N Engl J Med](#). 2006; 354:2431-2442).

Distinguishing between these two lymphomas is important because Burkitt's requires more aggressive chemotherapy. Accordingly, this international group of investigators, who compose the Lymphoma/Leukemia Molecular Profiling Project, based in the laboratory of Louis M. Staudt, MD, PhD, of the National Cancer Institute, set out to determine whether molecular diagnosis, in the form of gene expression profiling with oligonucleotide microarrays, could improve differential diagnosis of these two lymphoid neoplasms. Profiling was pursued with two arrays: an Affymetrix U133 array, representing more than 39,000 transcripts derived from about 33,000 human genes; and a custom array containing a selected subset of 2,524 genes that have been useful in the diagnosis of lymphoma and genes known to be important in oncology and immunology. The researchers concluded that “The molecular classifier of Burkitt's lymphoma based on gene expression provides a quantitative and reproducible diagnosis of Burkitt's lymphoma that is superior to

Story by William Check, PhD; CAP Today, 20(10), 2006

the best current diagnostic methods.” Fortunately, the full-scale Affymetrix array was not necessary; the smaller array was diagnostically accurate.

A number of complex comparisons led to the conclusion that an array can beat a panel of expert pathologists in this application. For instance, 26 cases originally called Burkitt's or Burkitt-like lymphoma at the contributing center had been reclassified on review by the panel to diffuse large-B-cell lymphoma or high-grade lymphoma, not otherwise specified. However, microarray analysis showed that eight of these 26 cases had the gene-expression profile of Burkitt's lymphoma, which the authors interpreted as “suggesting they represent cases of Burkitt's lymphoma that are difficult to diagnose by current methods.” Outcome data were available for seven of the eight discrepant cases. Five patients treated with standard regimens had not survived beyond two years, while one of two who had received intensive regimens lived more than five years after diagnosis.

Using gene expression microarrays to characterize lymphomas has been an ongoing goal of the Profiling Project and other international teams of investigators. An initial accomplishment was the division of diffuse large-B-cell lymphoma into two categories, one that expressed genes characteristic of germinal center B cells (germinal center B-cell-like) and a second that expressed genes normally induced during in vitro activation of peripheral blood B cells (activated B-cell-like diffuse large-B-cell lymphoma) (Alizadeh AA, et al. [Nature](#). 2000;403:503-511). Later, a third category was added, primary mediastinal diffuse large-B-cell lymphoma. Microarray profiles of these categories of lymphoma predicted survival after chemotherapy (Rosenwald A, et al. [N Engl J Med](#). 2002;346:1937-1947). Specific chromosomal alterations were found to be associated with significant changes in gene-expression signatures and to reinforce their prognostic value (Bea S, et al. [Blood](#). 2005;106:3183-3190). Similar findings have emerged with regard to mantle cell lymphoma (Rosenwald A, et al. [Cancer Cell](#). 2003;3:185-197). ”

"Typical cases of Burkitt's lymphoma are not that difficult to diagnose," says Wing C. Chan, MD, co-chair with Dr. Staudt of the Profiling Project and Amelia and Austin Vickery professor of pathology and co-director of the Center for Lymphoma and Leukemia Research, University of Nebraska Medical Center, Omaha. "But," he adds, "there are cases that have an atypical morphology or immunophenotype that present a diagnostic problem." That was the reason for the profiling studies, he says, "to see if that would be a way to define Burkitt's lymphoma more accurately." In Dr. Chan's view, the data showed that molecular profile is "excellent" and can objectively identify Burkitt's lymphoma. "For typical cases it is not so necessary to have a molecular profile," he says. "But for cases with ambiguous morphology or phenotype or cytogenetics, a molecular profile will provide additional help."

One problem in making firm conclusions from the data, Dr. Chan acknowledges, is that there is no gold standard to evaluate the findings. Criteria in the study included cytogenetics, pathologist review, phenotyping, and response to treatment. "There were a number of criteria that we could correlate, but no gold standard," he says. Corresponding data correlated well. But, he says, "None of them were perfect. The closest to a gold standard is the diagnosis of a panel of experienced hematopathologists using all the

available information."

Practically, Dr. Chan sees a 1,000- to 2,000-gene array as an adjunct to traditional pathologic workup, perhaps substituting for many ancillary investigations. "One thousand genes on a chip is really simple," he says. "Since the diagnostic algorithm is based on gene expression signatures, the easiest thing is to go directly to a small microarray. It would be more work to transform the signatures into RT-PCR and even more work to transform them into immunohistochemistry. We would need to make antibodies and to show that gene expression data can be translated into protein data." And possibly the immunohistochemistry assays would need to be quantified. Dr. Chan sees the microarray format as being well within the capability of most large medical center laboratories with an established molecular diagnostic section. "Can we eventually convert into an IHC format?" Dr. Chan asks. "That could be a possibility. We would need to reduce the number of markers. Immunostains are the format most familiar to pathologists."

Full article may be found in the October, 2006 issue of CAP Today

Publications & Presentations



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 - Anderson KL, Roberts C, Disz T, Vonstein V, Hwang K, Overbeek R, Olson PD, Projan SJ, Dunman PM. Characterization of the *Staphylococcus aureus* heat shock, cold shock, stringent, and SOS responses and their effects on log-phase mRNA turnover. *J Bacteriol*. 2006 Oct;188(19):6739-56.
 - Projan SJ, Nesin M, Dunman PM. Staphylococcal vaccines and immunotherapy: to dream the impossible dream? *Curr Opin Pharmacol*. 2006 Oct;6(5):473-9. Epub 2006 Jul 25. Review.
 - Ahn JS, Chandramohan L, Liou LE, Bayles KW. Characterization of CidR-mediated regulation in *Bacillus anthracis* reveals a previously undetected role of S-layer proteins as murein hydrolases. *Mol Microbiol*. 2006 Nov;62(4):1158-69.
 - El-Hajjar DF, Swanson KH, Landmark JD, Stickle DF. Validation of use of annular once-punched filter paper bloodspot samples for repeat lead testing. *Clin Chim Acta* 2007;377:179-84.
 - Talmadge JE, Hood KC, Zobel LC, Shafer LR, Coles M, and Toth B. Cyclooxygenase-2 chemoprevention of intestinal tumors inhibits immature myeloid suppressor cells. *International Immunopharmacology*. In press.
 - Ashour AE, Turnquist HR, Singh RK, Talmadge JE, Solheim JC. CCL21-Induced Immune Cell Infiltration. *International Immunopharmacology*. In press.
 - Turnquist HR, Lin X, Ashour AE, Hollingsworth MA, Singh RK, Talmadge JE, Solheim JC. CCL21 induces extensive intratumoral immune cell infiltration and specific anti-tumor cellular immunity. *Int J Oncol*. In press.
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- PRESENTATIONS**
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UNeMed Looks to Increase Profitability

Story by Chuck Brown, UNMC Public Affairs



James Linder, MD

UNeMed, the marketing and licensing arm for UNMC, is looking to increase its presence on and beyond campus.

To accomplish this, the organization has combined its operations with the UNMC Intellectual Property office and named James Linder, M.D., as UNeMed president.

"Historically, the protection and marketing of intellectual property have been administratively separate," said Donald Leuenberger, UNMC vice chancellor for business and finance. "Joining them will create a stronger organization that can better serve the growing opportunities for technology transfer that accompanies the growth in research at UNMC."

UNeMed, which was incorporated in 1991 to commercialize new technology developed at UNMC, is wholly-owned by the University of Nebraska. Dr. Linder is hoping to increase the organization's visibility on campus by taking a more aggressive approach to identifying innovative research going on at the medical center and getting it into the marketplace.

"I am delighted with this opportunity to work with the creative and entrepreneurial faculty and staff at UNMC," said Dr. Linder, who also serves as associate vice chancellor for research. "We have over 200 funded investigators at UNMC; any of them -- graduate students, fel-

lows or other UNMC staff -- have the potential to be inventors. We hope that the UNMC community realizes that the development of intellectual property is a valuable activity that supports important academic efforts."

Dr. Linder takes over for Tom McDonald, Ph.D., who had led UNeMed from its formation. Under Dr. McDonald's leadership, UNeMed has been involved in licensing, start-up companies and joint ventures with private entities.

"Tom McDonald has led UNeMed through some difficult periods and has achieved a number of successes," Leuenberger said. "His leadership has been very much appreciated."

Dr. McDonald will continue to lead the UNMC Technology Advancement Group, which Dr. Linder said is essential to UNeMed's success.

The timing is right for UNeMed to become more active in capitalizing on research being conducted at UNMC, said Tom Rosenquist, Ph.D., vice chancellor for research.

"With the acceleration of research funding at UNMC, there is a growing opportunity to license the intellectual property of UNMC investigators," Dr. Rosenquist said. "Combining the UNeMed and Intellectual Property functions in the Office of the Vice Chancellor for Research will link research activities

directly to our licensing efforts."

The leadership of Michael Dixon, Ph.D., and Todd Headley, should prove to be a boon for UNMC and UNeMed, Dr. Linder said. Under the new organizational set-up, Dr. Dixon will be director of intellectual property and Headley will fill the director of licensing position.

"UNeMed's focus will be to ensure that the process of invention disclosure is efficient, and we are effective in the marketing and licensing of inventions," Dr. Linder said. "Fortunately, we have effective leadership in these areas."

From creating tiny robots that can perform surgery, to an improved form of creatine now being sold in health food stores nationwide, to a probe that destroys tumors using radio frequency ablation, UNMC researchers are blazing trails in medicine that could benefit society while also being profitable for the medical center, said Chancellor Harold M. Maurer, M.D.

"The sheer volume of cutting-edge research being done at UNMC more than justifies strengthening UNeMed's presence," Dr. Maurer said. "We need to make sure we fully capitalize on these medical advances and UNeMed will play a major role in making sure that happens."

Stickle to Serve as AACC Chair



Douglas F. Stickle, PhD, DABCC, FACB has been selected to serve as the 2007 Chair of the Midwest Section of the American Association of Clinical Chemistry (AACC).

The Midwest Section is comprised of AACC members from seven U.S. states (MN, IA,

MO, KS, NE, SD, ND) as well as from the Canadian provinces of Ontario and Manitoba. It is one of 22 Local Sections of AACC.

Congratulations!

Dictionary is the only place that success comes before work. Hard work is the price we must pay for success. I think you can accomplish anything if you're willing to pay the price. —Vince Lombardi

National Gram-Positive Pathogens Conference

Story by Chuck Brown, UNMC Public Affairs

Some of the world's leading researchers in Gram-positive pathogens were in Omaha for a UNMC-hosted national conference on the subject.

The four-day National Conference on Gram-Positive Pathogens focused on bacteria such as staphylococcus (a.k.a., staph), streptococcus (a.k.a., strep) and anthracis (a.k.a., anthrax). These bacteria are known as Gram-positive pathogens.

In the research world, people who study one type of Gram-positive pathogen don't often have an opportunity to interact with researchers who study other kinds of bacteria, said Kenneth Bayles, Ph.D., associate professor of pathology/microbiology at UNMC.

The conference was held at the Embassy Suites in downtown Omaha offered a



Kenneth Bayles, PhD

chance to bring researchers of various bacteria together, Dr. Bayles said.

"There are definitely similarities among the bacteria," Dr. Bayles said. "This meeting is a chance to discuss those similarities and maybe help each other with our research."

The conference featured several keynote speakers, including Theresa Koehler, Ph.D., professor of microbiology and mo-

lecular genetics at the University of Texas Medical School at Houston, and a leading researcher of anthrax.

Dr. Koehler spoke of her studies of the factors making anthrax so lethal.

The agenda for the final day of the conference featured a presentation by Steven Projan, Ph.D., vice president of biological technologies at Wyeth Pharmaceuticals, Inc., and a leader in antibacterial development for staph infections.

The conference's importance is highlighted by a recent rise in concern about some Gram-positive pathogens that has been stoked by an increase in staph infections and the potential use of anthrax in terrorist attacks, Dr. Bayles said.

Graduate Program

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Pathology & Microbiology Doctoral Dissertations



Chunhui Yi presented her Pathology & Microbiology Doctoral Dissertation for the PhD, Degree on October 16, 2006. The title of her presentation was entitled, "Characterization of Rhabdomyosarcoma, Breast, and Pancreatic Cancer by Expression Profiling, and Roles of Fibulin-2 and MUC1 in Breast and Pancreatic Cancer" Advisor: M.A. Hollingsworth

Danielle Dae presented her Doctoral Dissertation for the PhD degree on December 6, 2006. The title of her presentation was, "Postreplication Repair Inhibits Trinucleotide Repeat Instability in Yeast." Advisor: Dr. Bob Lahue



USCAP Offers Free Educational Opportunities

The United States and Canadian Academy of Pathology recently announced plans to post all educational materials presented at the recent International Academy of Pathology Centennial Congress in Montreal.

Breast, Hematopathology, Cytology, Dermatopathology, Infectious Disease, Endocrine Pathology, and Neuropathology.

Many up-to-date pathology/educational courses and reviews are currently available, including: Gu, GI, GYN,

Please visit the USCAP website at USCAP.org for more information.

We make a living by what we get, but we make a life by what we give. —Winston Churchill

Holiday Party Draws Crowd

The Path/Micro Holiday party was held on December 1st at the DoubleTree Hotel.



Upcoming Seminars



The **Departmental seminar calendar** can be found on-line at <http://www.calendarwiz.com/unmcpathologyseminars> or by clicking on the Seminars link from the Pathology homepage. Please contact Tuire Cechin at 9-4040 with any questions or comments.

Speaker/Subject	Date	Time	Category	Location
Dr. James Linder "The HPV Vaccine: Performance and Impact on Cervical Cancer Screening"	Feb. 7 th	12:00	Grand Rounds	College of Nursing, Cooper Auditorium
Shi-Jian Ding, PhD, will be presenting Proteomics: From Biomarker Discovery to Cell Signaling Profiles"	Feb. 13 th	12:00	Special Seminars	Wittson Hall Amphitheater
Michael Olson - "Staphylococcus epidermidis Biofilms: A Home for the Insurance Hypothesis" UT4208	Feb. 14 th	12:00	Graduate Student Research Seminars	
Zhixin (Jason) Zhang, PhD from the University of Alabama at Birmingham, will be presenting Molecular Regulation of Immunoglobulin Gene Recombination".	Feb. 21 st	12:00	Basic Science Seminar Series	College of Nursing, Cooper Auditorium
Garret Pohlman "Prostatic Carcinoma Diagnosis and Grading"	Feb. 22 nd	8:00	M4 Presentation	McWhorter Learning Center
Kelsi Anderson	Feb. 28 th	12:00	Graduate Student Research Seminars	
Timothy J. Triche, M.D., Ph.D. - Title TBA	Mar. 7 th	12:00	Grand Rounds	College of Nursing, Cooper Auditorium
Kathie Rogers	Mar. 14 th	12:00	Graduate Student Research Seminars	
Dr. Jason Bartz from Creighton University will be presenting (TBA).	Mar. 21 st	12:00	Basic Science Seminar Series	College of Nursing, Cooper Auditorium
Alyssa Bouska	Mar. 28 th	12:00	Graduate Student Research Seminars	
Wing C. Chan, M.D. - Title TBA	Apr. 4 th	12:00	Grand Rounds	College of Nursing, Cooper Auditorium
Kendall Bryant	Apr. 11 th	12:00	Graduate Student Research Seminars	

Congratulations!

- Matt Baker, son of Dr. John Baker, graduated in December from the University of Nebraska-Lincoln with a degree in Broadcast Journalism.
- Mallory Trudell, daughter of Kathy Trudell, graduated from Morningside College in Sioux City, Iowa with a B.S. in English.

Training Opportunities

- Self-study options are available through the UNMC Skillport on-line site. The sessions are free to **UNMC staff and students**. <http://unmc.skillport.com>. Training is available for all levels of users in areas such as Lotus Notes, Microsoft Office, Windows, IE/Netscape, PDAs, Adobe, Crystal Reports, Microsoft Project, and home and personal use (digital photography, video editing, networking, Quickbooks, Quicken, Turbotax, Paintshop, Microsoft Money, Microsoft Works, and CD Creator).
- **TNMC Employees** can complete on-site Microsoft Office Training (sponsored by Clarkson College). Individual or group registration is welcome. To register by phone, contact Sharon Nieto, Clarkson College, at 552-3396, or visit the site at:

http://www.clarksoncollege.edu/Programs/Continuing_Education/Microsoft_Office_Training_and_Certification/

We're on the Web:
[www.unmc.edu/
 Pathology](http://www.unmc.edu/Pathology)

Employee Recognition

- The **UNMC Silver U** award is given annually to approximately 120 employees who provide consistent performance that exceeds expectations or for other special achievements. Unit leaders select employees on a monthly basis. The number of recipients from each unit is based on unit population. Recipients receive a silver 'U' pin, a denim shirt with the silver 'U' logo and will be invited to lunch with the chancellor. To nominate an employee for the Silver 'U', contact Beth LaFave or Steve Kuss.
- **The Chancellor's Commendation Gold 'U' Award**
 This award is given annually to approximately 12 employees who consistently deliver outstanding performance and service to UNMC. A campus-wide selection committee will choose the recipients. Those selected will receive recognition at a Board of Regents meeting, a gold 'U' pin, an art glass paperweight, a \$100 cash award and a breakfast with the chancellor.
- **Thank "U" Rewards** are a way for employees to recognize their colleagues for outstanding service. Anyone may request that a Thank 'U' message be sent to a colleague for a job well done or to recognize special achievement. The recipient will receive a Thank 'U' card and a medallion redeemable for gifts or services. To send a Thank 'U' Reward, individuals should login to the [employee self service system](#). Look for the **thank u rewards** link under **Rewards and Recognition**.

PUBLISHING INFORMATION:

The Path/Micro Newsletter is published quarterly.
 Please send your newsletter stories, ideas, and announcements to:
 Kim Christian, Editor — kachrist@unmc.edu, 559-7212



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A black starburst graphic with a white center containing text.

**We're on the
Web:
[www.unmc.edu/
Pathology](http://www.unmc.edu/Pathology)**