Breaking the code:
Decoding the Book of Life is the task of genomics researchers, including David Largaespada, shown here with lab coordinator Sandra Horn.

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“The population pressures, the expansion of tourism to remote areas, the internationalization and industrialization of our food supply, together have conspired to create a biologic threat potential that is truly unique in history,” said Donald A. Henderson, special advisor to Health and Human Services Secretary Tommy Thompson. He spoke after receiving an honorary Doctor of Laws degree from the University’s School of Public Health June 10 for his contributions to public health and public service. He noted during his talk that adding to the dangers is the threat of biological weapons and bioterrorism. Henderson, who did more than anyone else to eradicate smallpox as leader of the global eradication effort from 1967 to 1977, also sees hope in humanity’s ancient battle against infectious diseases. He said that the record of immunization programs in developing countries, together with advances in disease prevention and treatment, suggests that the world has a chance to defeat some of the greatest disease threats. (For full coverage of Henderson’s talk: http://www.cidrap.umn.edu/cidrap/content/bt/bioprep/news/june1203henderson.html)
Pictures of Health

Snapshots

A quick look at news from the Academic Health Center.

Outreach

House of Healing
Using a combination of conventional and complementary therapies to reach patients with eating disorders.

Caring Tools
A program that trains family members in new roles as caregivers for elders and others.

Education

Exchange Rate
At the Karolinska Institute in Stockholm, University students and faculty gain new perspectives on health care and research.

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Fast Forward
Making advances in continuing education for health professionals.

Research

A Closer Look
School of Dentistry researcher Eric Schiffman seeks improved diagnosis of TMD.

Horse Sense
A University researcher’s new feed and better understanding helps a common muscle problem among horses.

Health Talk & You

Special Focus: Genomics
AHC researchers are filling in the details on the map of the human genome.

Back Page: Honoring Excellence
Four who are the first honored with a new award for research excellence.
The Translational Research Facility (design shown at right) recently received essential financial support, both public and private. During its latest session, the Minnesota State Legislature passed a $24 million bonding bill to underwrite the TRF. In addition, $10 million for the TRF was given through the William W. McGuire and Nadine M. McGuire Family Foundation. Announcing the gift, William McGuire said, “Improving the process of moving scientific breakthroughs toward effective medical treatments is a critical need, and we are proud to help the University, the Medical School, and its scientists enhance their efforts and leadership in this area.” Frank Cerra, senior vice president for health sciences at the University of Minnesota Academic Health Center, said: “Our future success as an institution will depend on the willingness of private individuals to invest in our work as that will provide the necessary margin of excellence.”

The Minnesota State Legislature also approved $1.5 million to help upgrade the Veterinary Diagnostic Laboratory. In late July, the lab was chosen by the Centers for Disease Control and Prevention as the national testing site to screen for monkeypox virus in animals. The CDC has been handling the testing since the outbreak in early June. The University lab can accommodate the high volume of testing samples because it has the same state-of-the-art molecular technology as the CDC labs, which had been handling the testing since the early June outbreak. The University’s is the first veterinary diagnostic lab to be selected as a full member of the CDC’s Laboratory Response Network. “Membership in the CDC’s Laboratory Response Network provides the University a great opportunity to rapidly diagnose and prevent diseases transmissible from animals to people,” said laboratory director Jim Collins. Inclusion in the network gives the University access to CDC protocols, immediate emerging disease information, and coordinated communications.

With the encouragement of Governor Tim Pawlenty and support from the Legislature, the Minnesota Partnership for Biotechnology and Medical Genomics was launched earlier this year. A collaboration between the University of Minnesota and the Mayo Clinic in Rochester, the partnership will create new biomedical understanding that will promote human health and potentially boost the state’s economic health. Researchers now are submitting proposals for studies focusing on cancer, heart disease, and Alzheimer’s and other neurological disorders.

Co-directors of the new Center for Minimally Invasive Surgery are surgeons Michael Maddaus (at right) and Sayeed Ikramuddin. Minimally invasive surgical techniques allow surgeons to operate through tiny incisions using specifically designed instruments. Patients experience less pain, have minimal scarring, and are able to recover more quickly than if they had an open procedure. “This is the future of surgery,” said Ikramuddin. Maddaus added that: “We are providing the highest level of training and education that will ensure the future success of our surgeons and surgical residents.” Four of the operating rooms at Fairview-University Medical Center have been transformed into rooms devoted entirely to minimally invasive surgical procedures. The operating rooms are fitted with robotics, technology that allows surgeons to control the operating room with simple voice commands, and advanced telecommunication equipment that enables surgeons located anywhere in the world to talk with and observe surgeons at work there.

Linda Holm Bearinger received the 2004 Wyeth-Ayerst Visiting Professor in Adolescent Medicine Award from the Society for Adolescent Medicine. Bearinger, the first nurse to receive the award in its 18-year history, receives financial support from the society to educate a group of health care providers who would not otherwise be able to benefit from her expertise. A nationally known researcher, Bearinger studies the long-term consequences of adolescent abortion, youth sexual behaviors, pregnancy, sexually transmitted diseases, adolescent substance use, and youth development among urban American Indians. A consultant to state and national agencies, she teaches how to translate research from all the health disciplines into practice, health promotion, and the development of vulnerable young people. Bearinger holds appointments in the School of Nursing, the Medical School Department of Pediatrics, and the School of Public Health and directs the School of Nursing’s Center for Adolescent Nursing.

With its September 10 open house, the new Health Careers Center officially launches a new University initiative to reach students—high school, undergraduate, and returning—considering careers in health care. The Academic Health Center, the College of Biological Sciences, the College of Liberal Arts, the Institute of Technology, and the College of Human Ecology have joined efforts to create the new Health Careers Center. The center offers a wealth of health careers resources that can be accessed at www.healthcareers.umn.edu. This includes Web-based tools and a schedule of classes helping prospective students explore their interests in health careers.

Members of the Hmong population in Minnesota are nearly 40 times more likely to develop cancer in the area in the back of the nose and upper throat and eight times more likely to develop stomach or liver cancer compared with other Minnesotans. “Because we now know that this population has much higher incidence of certain cancers, some of which are rare in the state’s overall population, we can start working on developing and implementing culturally sensitive screening programs,” said Julie Ross (at left), a member of the University’s Cancer Center and the lead investigator on the study, published in Cancer. Next to California, Minnesota has the highest population of Hmong residents in the United States.
A new approach to treating eating disorders at the Anna Westin House.

Last winter, a group of teens and adults moved into Minnesota’s first long-term residential treatment facility for women with eating disorders, but Anna Westin was not among them. In 2000, at age 21, Anna committed suicide. The Chaska resident had struggled with anorexia nervosa for more than five years and might have benefited from just such a program.

Eating disorders affect nearly 10 million Americans. Treatment often takes years and requires careful monitoring by doctors, psychologists, and nutritionists, but most recovery programs are outpatient-based. “One of the things that was not available to Anna was residential care,” says her mother Kitty Westin. Until recently, many insurers have been reluctant to cover inpatient treatment. Shortly after Anna died, the state sued Blue Cross Blue Shield of Minnesota for delaying, denying, and withholding treatment for eating disorders from its customers. The suit was successfully settled.

The Westin family used the settlement proceeds to establish the Anna Westin Foundation and subsequently the Anna Westin House, a treatment facility for girls and women with eating disorders and operated by Methodist Hospital’s Eating Disorders Institute. The Anna Westin House is a collaboration of the Anna Westin Foundation and Methodist Hospital and is supported by a team that includes the University’s Center for Spirituality and Healing, the Medical School’s Department of Psychiatry, Blue Cross Blue Shield, and Mayo Clinic.

Based in Chaska, the 3,500-square-foot facility provides a safe, nurturing, homelike environment for girls and women ages 14 to 40 who are recovering from anorexia, bulimia, and other eating disorders. The comfortable, bright duplex can house up to eight, and has a full-time, on-site staff that includes licensed psychologists, a registered dietitian, a professional chef, nurses, and administrators. Additionally, patients have regular visits by a physician, a psychiatrist, physical therapists, occupational therapists, a chaplain, psychologists, and specialists in Traditional Chinese Medicine, massage therapy, energy healing, music therapy, art therapy, dance therapy, and yoga.

Complementary and alternative therapies are an integral part of the regimen at the Westin House, says Karen Lawson, physician and director of integrative clinical services at the Center for Spirituality and Healing. Such therapies help relieve anxiety often associated with eating disorders. They also improve body image, help the body heal physically, and address spiritual well being. “Eating disorders is a diagnostic category for which mainstream medicine has not found a package treatment or an accepted answer,” Lawson says. “It’s a multi-faceted condition: It may have some genetic underpinnings, there are cultural and psychosocial components, and there are familial and metabolic components. Mainstream biomedical health care on the whole does not have a very good track record in dealing with such multi-faceted conditions.”

Other systems of medicine, like Traditional Chinese Medicine, tend to look at the larger picture, Lawson adds. “They try to restore a balanced system of energy to the whole body,” she says, augmenting conventional Western treatments.

Women and girls admitted to the house stay for whatever time is therapeutically needed participating in a highly structured program aimed at meeting their nutritional, physical, mental, and spiritual needs. “There’s a real sense of calmness, of health and healing in the house,” says Kitty Westin.

What’s more, participants’ involvement in the program is covered by some insurers. The primary motivator for third-party payers, says Lawson, is that a diagnosis usually requires ongoing, long-term interventions, and patients have unusually high rates of recidivism. “They’re inpatient, they’re outpatient, they go back and forth. We don’t see a lot of resolution in difficult cases, and haven’t been able to keep people out of the hospital,” Lawson says. “Our hope with the residential program is to significantly decrease the need for recurrent inpatient care, emergency room visits, and most importantly, years of ongoing treatment.”

“We’re really pleased and proud,” Kitty Westin says of such advances in treatment and coverage. “It’s a real legacy to Anna. It wasn’t there when she needed it.”

—Kitty Westin

Joel Hoekstra
Taking care of mom has been one of Karen Eccli’s jobs ever since her mother was diagnosed with Alzheimer’s disease five years ago. As anyone who’s performed this role knows, it isn’t easy.

“It has been really stressful—she’s very emotional and you cannot reason with her,” says Eccli. “I think the biggest thing for me is recognizing that I can’t interact with her as I’ve always interacted with her as a daughter. It’s a role reversal.”

Recently, Eccli enrolled her mother, now 79, in a long-term care program in Colorado, an alternative to nursing home care that has adopted Savvy Caregiver Training, a program developed by an interdisciplinary team at the University of Minnesota. Karen received six weeks of training in caregiving.

“It helped me understand how to balance my caregiver role with having a regular life, and I think that’s so important,” says Eccli. “If I’m not here, who is going to take care of my mother?”

Eccli’s mother is one of about five million Americans suffering from Alzheimer’s. In about 90 percent of the cases, families are the primary caregivers, says Ken Hepburn, associate dean for research in the School of Nursing and former faculty member in the Medical School’s Department of Family Practice and Community Health. Because of that, he says, roughly 75 percent of the cost of caring for Alzheimer’s patients is borne by families.

That’s a big reason why Hepburn and Marsha Lewis, associate professor in the School of Nursing, developed The Savvy Caregiver: A Caregiver’s Manual and The Savvy Caregiver Training Manual, a relatively new self-contained program that has already trained hundreds of caregivers in Alaska, Colorado, Minnesota, and Mississippi. The program, funded by a $90,000 grant from the UCare Foundation and an $180,000 grant from the Alzheimer’s Association, builds on the caregiver curriculum developed a few years ago by Hepburn and Sharon Ostwald, a former School of Nursing faculty member, and Wayne Caron, College of Human Ecology.

“For us, the implicit national policy is to rely on families for this kind of care, then we should give them resources to perform well in a way that harms them as little as possible,” says Hepburn. “Our research—which has also received substantial funding from the National Institute for Nursing Research at NIH—has shown that this program helps caregivers in their work and it helps them avoid the bad things that typically happen to caregivers.”

Those bad things can include depression, a decline in physical health, and a drain on family finances, Lewis notes.

Hepburn and Lewis point out that the Savvy Caregiver truly is a training program—not a support group. It teaches caregivers special skills to help them care for their loved one and for themselves. “The focus is on education—for training them in a role for which they probably have never been trained and for one that has been thrust upon them,” Lewis says.

“We certainly advocate that people avail themselves to support groups,” adds Hepburn, “but I can’t emphasize enough what happens when a person becomes a caregiver. She or he doesn’t stop being a husband or a child, but takes on a whole new role.”

The caregiver program was designed to be inexpensive. “What we’ve tried to do with the Savvy Caregiver is to develop the resources and export the program so that other people can benefit from it,” Hepburn says. “We are working on a way to make the materials available to the many people who would benefit from them.”

Next up for Hepburn and Lewis is developing the program in Spanish with another Alzheimer’s Association grant. The two are working with CLUES, Chicanos Latinos Unidos En Servicio, a leading provider of social services for the Latino community in Minnesota. “We’ll be working at ground level, trying to understand family values and family structures and how Latino people think about this disorder and about caregiving,” says Hepburn.
The Medical School cultivates a Swedish connection.

**Surgeons given lemonade to sip** and sweets to nibble during long operations indicated a relaxed approach at a Swedish hospital. That difference struck Nathan Hoffman when a few years ago as a University medical student he spent a month’s rotation at the Karolinska Institute in Stockholm. “They had more of a teaching atmosphere, I thought, and less of ‘see how much you can get done in a certain amount of time.’ And it seemed like because of that people were a little happier in their work environment.”

Now an on-the-go urology resident at the University, Hoffman says, “Someday, I'd like to incorporate some of those things into my practice—especially the lemonade.”

The relatively easy-going nature of medical education in Sweden might surprise those familiar only with the high-stress American system—or those who know Karolinska as the institution Alfred Nobel entrusted in 1895 to handle the awarding of the Nobel Prize in physiology or medicine. Karolinska is among the largest and most prestigious medical universities in Europe. Since 1990, under a program partially endowed by the late Curt Carlson, it and the University have carried out joint symposia and exchanges with the Swedish university. Karolinska has an international exchange program that includes 60-plus medical schools from Estonia to Uganda and 12 U.S. schools.

“This was a built-in opportunity, since courses are taught in English,” Vercellotti says. “It is a different health care system—socialized medicine. It has outstanding science and outstanding clinicians….In turn, it gives us an opportunity to diversify our class, to have students from Sweden who arrive with a different perspective during the rotations, to give our students a world view of medicine.”

Many faculty have been involved as well, including Robert Elde, dean of the College of Biological Sciences and neuroscience professor in the Medical School, who was the first visiting professor at Karolinska. Within the Medical School, the most involved groups in the Karolinska student and faculty exchanges thus far are otolaryngology, neuroscience, radiation oncology, and, most recently, inflammation and infectious disease.

The relationship evolved from a chance encounter between University otolaryngology professor Steven Juhn and former Minnesota governor Wendell Anderson, who until February served as Sweden’s honorary consul general in Minnesota. Juhn, who had spent a year at Karolinska as a visiting faculty member in biochemical research, was in Sweden to attend a conference and recognized Anderson on a street corner. They met for dinner and discussed the benefits of scientific exchange program, says Juhn. Anderson got the approval of the idea for such an exchange from the president of the Karolinska Institute. He then presented the idea to Curt Carlson, a Swede by heritage and founder of the Carlson companies, who donated $500,000 that the University enlarged to $1 million endowment.

Anderson sees potential economic benefits from the relationship. “Most new jobs in Minnesota over the last 25 to 30 years have resulted from medical technology and basic research,” he says. “This cross-fertilization gives us a chance to learn from one another and combine resources and experience. It could potentially fuel the economy through another scientific breakthrough.”

Vercellotti hopes to see the exchanges cultivate further collaborative research, especially with greater involvement of graduate and post-doctoral students. And, seeking potential support, he's excited about the future of the exchange with Karolinska, which includes a symposium on stem cells here at the University in fall 2004.

**Physicians and researchers, as well as students, benefit from the Karolinska exchange by being exposed to new ideas, says Steven Juhn, at right, shown with exchange co-founder and former Minnesota governor Wendell Anderson.**

**“It gives our students a world view of medicine.”**

~Gregory Vercellotti

**Terri Peterson Smith and Allison Campbell**
It’s the future that keeps Beth Lautner coming back. For more than 20 years, she has taken part in the Allen D. Leman Swine Conference. An annual effort of the College of Veterinary Medicine, the conference first attracted her while she was at the University.

“As a grad student, it was a place to be in awe,” says Lautner. “It was a great opportunity to network with researchers, practitioners, the leading-edge thinkers in the industry.” After her time at the University, she returned to practice—and continued to attend to learn for her clients the latest information and future trends for which the Leman conference is known.

Now vice president of science and technology for the National Pork Board, based in Des Moines, Iowa, Lautner still drives up for the Leman conference. She’s no longer hands-on so it helps her keep up with research and practice. And it helps her focus on global and upcoming trends: “I always have my antenna up for issues.”

Lautner exemplifies life-long learning, one of the concepts driving change in continuing education in the Academic Health Center’s six disciplines. Traditionally, continuing education consists of courses to bring working health professionals up-to-date on new developments or licensing requirements. In the Academic Health Center, educators in the schools and colleges revamp programs, move toward new models, use new technology, and open up offerings to those outside their professions.

Some offices have changed their names to indicate a new focus. The Veterinary Outreach Programs also include just-in-time training on threats like West Nile Virus and bovine spongiform encephalopathy (Mad Cow Disease), animal-dentistry training, and, for the public, Mini Vet School, a six-week introduction to veterinary education for “wannabe” vets.

The Office of Educational Development in the College of Pharmacy changed its name as it added a self-care course for University undergrads, pharmacy courses aimed at nurses, respiratory therapists, and professionals in other fields, and distance learning with the college’s expansion to the Duluth campus this fall. “We’re an example of how things can morph and grow and respond to needs,” says Director Kristin Janke.

Pharmacy’s program is primarily online, another indicator of how much things have changed since 1913 when University President George Vincent, son of a Chautauqua movement founder, formally instituted extension study. In the School of Dentistry, the effort began even earlier, in the 1890s.

It has grown significantly since 1969 when Minnesota was the first state to establish mandatory continuing education. In the last 20 years, dentistry’s continuing education program has expanded from about 20 courses a year and a $100,000 budget to more than 100 courses and a $1 million budget. Today, the University of Minnesota dental school program consistently ranks among the top five in the country in terms of attendance, with 4,500 to 5,000 participants annually.

Some classes satisfy Minnesota’s licensing requirements. Others, such as the postgraduate certificate program in restorative and esthetic dentistry, provide university credit and encourage dentists to increase their skills as well as improve their practices. One of only two such programs in the country, esthetic dentistry has expanded from 100 to 300 hours of lecture, laboratory, and clinical training since the first class was offered eight years ago. This continuum program has attracted participants from as far away as the Middle East.

Public health professionals who desire training have many options at the Center for Public Health Education and Outreach at the School of Public Health. “We’ve been doing outreach and continuing education forever,” says Debra Olson, associate dean for Public Health Practice Education, “but now we’ve brought it together in a new way, framing it for accessibility, to build the capacity of the public health workforce.”
Disciplines

RESPONSE COURSE LEARN HOW TO PROPERLY DON AND REMOVE PROTECTIVE SUITS.

The six major branches within the center range from the long-standing Midwest Center for Occupational Health and Safety to new certificate programs in public health practice.

Those who want to develop bioterrorism preparedness expertise can enroll in Public Health Institute courses sponsored by the University’s Center for Public Health Preparedness, a new program within the center. As with many public health offerings, the courses work like building blocks of lifelong learning. Students can take them for continuing education credit or academic credit, Olson says. “If they want to take the whole series, which means two three-week institutes,” she adds, “then they can complete an entire Regents’ certificate.”

To create the courses, the school reached out to community faculty, such as Richard Danila, an epidemiologist in the Minnesota Department of Health, whom Olson says is “dynamite.” Building a two-way bridge with such community experts, Olson says, is vital to the School of Public Health. “It keeps us moving and thinking and responding to new challenges.”

In the Medical School, the concept of a continuum of education for physicians is a priority for Dean Deborah Powell. Soon after becoming dean, she set up a continuing medical education (or CME) task force with representatives from the Twin Cities Medical School, the School of Medicine-Duluth, affiliated hospitals, and community partners, chaired by Marc Swiontkowski, head of orthopaedic surgery.

“Dean Powell is very interested in having the Medical School not just stop when individuals graduate with an M.D.,” says Swiontkowski, “but also to link graduate medical education [residencies] as well as continuing medical education in a lifelong learning model.” He adds that the continuum idea fits with another new concept, promoted nationally by the American Board of Medical Specialties, of focusing not on re-certification in specialties but rather maintenance of certification.

Among the changes begun since the task force report are improving oversight with a new assistant dean, Steven Hillson, who practices at Hennepin County Medical Center and has a faculty appointment in the Medical School. Swiontkowski and the task force also suggested that the Medical School should strive to become providers of health information for the public and to pursue efficiencies by combining continuing medical education programs statewide.

One thing that has not changed yet is funding of many courses by companies. “For the most part, it’s not an issue,” says Bart Galle, recently retired head of CME. “But to keep it from being an issue does require some vigilance.” The accrediting body of continuing medical education programs has guidelines for commercial support of programs: the provider has ultimate control over the program content and speakers. Speakers are, in addition, required to disclose any relationships they have with pharmaceutical and other companies.

Funding concerns aside, the schools’ researchers have valuable information to offer. As the flagship school in the state, the School of Nursing’s outreach courses target advanced practice nurses and those in leadership and also offers its faculty expertise to those in other disciplines. For example, along with nurses, educators, social workers, counselors, and clergy were among the intended audience for the intensive four-day institute this August, Linking Youth Development and Sexuality Education, developed by the Center for Adolescent Nursing and the Medical School’s pediatrics department.

Overall, however, the outreach program encounters barriers because of the current shortage of nurses, says Mary Pattock, communications director for the school. “Hospitals are so pressed, so understaffed,” she says, “they can’t spare the nurses for the training they really need.”

The barrier arises even among nurses doing administrative jobs who need training, says nursing professor Christine Mueller, who studies long-term care settings. Recognizing that very few resources existed for nurse administrators or directors of nursing in nursing homes, Mueller developed a Web-based course on long-term care nursing leadership and management. But she finds that nurses in these very demanding jobs, coping with such challenges as 50 percent turnover in employees in a year, have a hard time fitting in even her self-directed course.

Time is also an issue for Lautner. At the swine conference, along with attending workshops and presentations, she squeezes in meeting colleagues. “From morning till night, you’re either in sessions or you’re meeting with people,” she says. “It’s intense but you’re very productive.”

Allison Campbell

BRINGING THE MOST UP-TO-DATE EDUCATIONAL APPROACHES TO CONTINUING MEDICAL EDUCATION AND CARRYING OUT FOLLOW-UP ASSESSMENT ARE GOALS FOR STEVEN D. HILSON, NEW ASSISTANT DEAN OF CONTINUING EDUCATION FOR THE MEDICAL SCHOOL.

“We're an example of how things can morph and grow and respond to needs.”

—Kristin Janke.
Among the most versatile joints in the body, the temporomandibular joint (TMJ), which links the head with the jaw, allows motion forward and back, up and down, around and around. When things go awry in this joint, or in the associated jaw muscles—and they do in three out of every 20 Americans—the result can be debilitating facial pain and locking of the jaw.

Eric Schiffman, researcher in the School of Dentistry, is leading a major effort to advance the diagnosis of disorders affecting the TMJ and jaw muscles—collectively known as temporomandibular disorders, or TMD. Schiffman is principal investigator of an $8.3 million study to assess the reliability and validity of the criteria dental researchers use to diagnose TMD. This multi-site study, funded by the National Institute of Dental and Craniofacial Research, includes the University of Minnesota, University of Washington, and the University at Buffalo in New York.

The focus of the research is a standard set of diagnostic criteria dental researchers use to distinguish among the many types of TMD. To carry out studies aimed at improving treatment, researchers must be able to separate study subjects according to TMD type—to distinguish, for example, problems due to muscle disorders from those caused by joint disorders or arthritis.

For more than a decade, researchers have used these standard criteria, which are based on symptoms, clinical signs, and imaging information, to assign subjects to one of nine TMD diagnostic categories. Although an expert team of dental researchers developed these criteria, no one has ever established their validity and reliability. Schiffman’s goal is to evaluate both.

“This study in a nutshell is, ‘Can two experts in this area of health care come together and almost always agree on a diagnosis?’” Schiffman says. “We can do TMD research now, but it’s difficult to compare different findings between studies. It’s also difficult to be sure whether you and some other researcher are both studying the same disorder or a different one.”

The research team began by developing and confirming the accuracy of an extensive exam protocol that dentists with expertise in TMD will use to categorize individuals as having no TMD or having one of 32 distinct TMD diagnoses. This “gold standard” of diagnostic categorization will then be compared to the results obtained by trained dental hygienists who will perform an exam using the conventional standardized diagnostic criteria. The ultimate goal is to improve dental researchers’ ability to design research studies and accurately interpret their results—leading, in the long term, to better understanding and treatment of TMD.

“These diagnostic criteria for TMD are unique in that they not only assess for physical problems associated with TMD, but also assess the pain-related disability, psychological effects, and behavioral problems that can trouble TMD patients,” Schiffman says. “When the causes of these relevant issues are completely understood, the patients will best be treated. And this will also potentially allow us to develop etiology-based diagnostic criteria.”

Even as he is working to improve existing diagnostic criteria, Schiffman has his sights set on yet another goal—identifying biological markers for TMD that may be present in TMJ fluid and jaw muscle tissue. These markers will be potentially useful not only for the diagnosis of the physical problems associated with TMD, but also for investigating the utility of mechanism-based diagnostic criteria.

Schiffman’s grant helped catapult the University of Minnesota School of Dentistry into first place among dental schools in the amount of NIDCR funding obtained for 2002.

“There’s a lot of misinformation about temporomandibular joint problems,” says William Liljemark, the school’s interim dean. “We’re right where we should be: at the forefront of research that translates into better patient care. And that’s a real service to our students, our practicing colleagues, and to patients.”

Mary Hoff
Horse Sense

From improving their feed to understanding their genes, this equine veterinarian responds to the needs of her “tying-up” patients.

Shena, an eight-year old American quarter horse, doesn’t look any more uncomfortable than she should at this late stage of her pregnancy as veterinarian Stephanie Valberg leads her around the paddock. Valberg’s pleased to see that Shena is not in any pain.

It’s not labor pains Valberg is checking for. In fact, Shena’s not due for another month. But she has a condition called “tying-up,” which causes painful muscle cramps, typically in the hindquarters and back, resulting in difficult or restricted movement. Thanks to Valberg’s care, Shena is experiencing fewer and fewer occurrences and everything looks set for a healthy birth.

Tying-up is the term used to describe horses that develop painful muscle cramps with exercise. The disorder has been around for hundreds of years and was initially known as “Monday morning disease,” because it was often associated with farm horses returning to work after a day’s rest on a diet full of grain.

For many years it was thought that tying-up was a single disorder caused by a buildup of lactic acid in the muscles. But in 1992, while studying a group of American quarter horses afflicted with the disorder, Valberg discovered abnormal accumulations of glycogen and polysaccharides in their muscles.

“It was the first clue that we might be dealing with a disorder that has more than one cause,” says Valberg, “that there might be something more to it than sporadic episodes brought on by overexertion or nutritional deficiencies.”

Valberg termed this newly identified form of tying-up polysaccharide storage myopathy or PSSM. A metabolic condition, PSSM occurs when sugars, derived from the starchy carbohydrates commonly found in equine feeds, are stored at very high levels in the horses’ muscles. The glycogen is not used as energy, but instead is converted into abnormal polysaccharides. These polysaccharides cannot fuel muscle cells, which then begin to break down.

“It’s almost the opposite of type 2 diabetes,” says Valberg, “as these horses are extremely sensitive to the hormone insulin.”

The only way to diagnose PSSM is through a muscle biopsy, and Valberg’s lab is only one of two in the world that test for PSSM. Since 1995, her team has diagnosed more than 270 cases.

Although there is currently no cure for PSSM, the condition can be controlled by providing a low-sugar diet with complex carbohydrates and supplemental fat. “Ninety percent of horses improve when this kind of diet is followed in combination with a training program,” says Valberg.

But until recently, no such commercial equine feed was available. While there were feeds on the market with increased fat, their starch content was too high. “More fat in a horse’s diet won’t help if it’s not also low in starch.”

So Valberg took matters into her own hands and developed RE-LEVE, a feed formulated specifically for horses prone to tying-up. On the market for over a year, a portion of all proceeds is contributed to the University for continued support of equine research.

Part of that research is investigating the genetic predisposition to PSSM. “It’s prevalent in American quarter horses, affecting about five percent of the population of about four million horses,” says Valberg.

Working with Jim Mickelson in the Department of Veterinary Pathobiology, she hopes genetic research will one day yield a DNA-based test for PSSM. “Until more is understood about the genetics of tying-up, there is no way to prevent the condition,” she says.

The answer may lie in Shena’s foal. Over the past six years, mares donated to the University with PSSM have given birth to nine foals. The foals are followed to determine whether or not they develop muscle cramping and accumulate abnormal polysaccharide in their muscles. This equine family, along with families identified through the muscle biopsy service, are being studied to determine if affected horses and their affected offspring share a common genetic marker.

In the meantime, there’s no mistaking the empathy in Valberg’s care. Years ago, she had to stop competing in horse shows because of an injury resulting in her own muscular pain.

“I think I know how these horses feel,” says Valberg.

Brenda Hudson
On June 17, the Academic Health Center honored four of its own, inducting Jay N. Cohn, Ashley T. Haase, Horace H. Loh, and Philip S. Portoghese into the AHC’s Academy for Excellence in Health Research.

Awards aren’t new to these four. With more than 140 years of combined experience, the four have garnered tens of millions of dollars in research grants and earned international recognition. The internal AHC honor is new, however. The academy was established this year with the AHC Faculty Consultative Committee and represents the highest recognition of excellence for AHC faculty research.

“What has driven me over the years is my questioning of conventional wisdom,” says Cohn, a faculty physician-researcher in the Medical School. “That stimulates my constant search for insights into how things work and how we can better understand them.” Cohn is widely cited as the “father of contemporary therapy for heart failure” and his research over 40 years has led to current understanding of cardiovascular disease management. His contributions to the fields of hypertension and congestive heart failure have played a crucial role in cardiac diagnosis and management.

Exploring ways to prevent HIV from outwitting the immune system has been keeping Haase busy for most of his career. “It wakes you up early in the morning and keeps you interested all the time,” says Haase, a researcher in the Medical School. Over the past 25 years, Haase has distinguished himself as one of the world’s foremost investigators of viral pathogenesis, beginning with his work with lentiviruses and sheep at the University of California at San Francisco. When HIV and AIDS hit in the early 1980s, it grabbed Haase’s attention. Ultimately, he hopes to find an HIV vaccine. “The research is fascinating and, obviously, if you can do something to help, you do.”

Loh, a researcher in the Medical School, is recognized internationally for his contributions to addictive disease research. By explaining the biochemical and molecular bases of opiates’ effect on the brain, Loh has provided important insights for treating opiate addiction. “The reason I became involved in opioid addiction is because opioids are still one of the most important and widely used painkillers used in clinical practice and are also highly addictive with many negative side effects,” Loh says. “It would be beneficial indeed if one could develop a painkiller that is as effective, but not addictive.”

Work that is both intellectually rewarding and fun is the formula that has made Portoghese a success. “I think that’s what really drives me,” says the College of Pharmacy researcher. During his 42-year career, Portoghese has made major contributions to medicinal chemistry, and is recognized around the world as an expert on opioid receptors. His research has been critically important to understanding pain management, and the addiction and tolerance to morphine-like pain relievers. “It’s nice to be recognized by the Academic Health Center,” he says, adding: “This award is really a tribute to the people who have worked in my lab, as well. They’re the ones who really made it possible.”

Mark Engebretson