The Veterinary Diagnostic Laboratory’s new online reporting system is a boon to vets who keep Minnesota’s agricultural and companion animals in good health. Director Jim Collins and associate scientist Karen Olsen analyze one of the thousands of samples submitted to the lab each day.
Katharine Densford was director of the School of Nursing from 1930 to 1959. She headed several national nursing organizations, mobilized nurses for duty during World War II, and led efforts to racially integrate the nursing profession. See Academic Health Center Sesquicentennial Timeline, pages 8-9.
Dentistry’s 1893 graduating class included two women.  
AHC Sesquicentennial Timeline, Pages 8-9.

Faculty member Tom Mackenzie makes education entertaining.  
Page 11

Bill Toscano’s transgenic zebrafish reveal low levels of toxins in water.  Page 12

DENTISTRY’S 1893 GRADUATING CLASS INCLUDED TWO WOMEN.  
AHC SESQUICENTENNIAL TIMELINE, PAGES 8-9.

FACULTY MEMBER TOM MACKENZIE MAKES EDUCATION ENTERTAINING.  
PAGE 11

BILL TOSCANO’S TRANSGENIC ZEBRAFISH REVEAL LOW LEVELS OF TOXINS IN WATER. PAGE 12
LAST YEAR NINA HERRERA, 10, BECAME THE FIRST PATIENT IN THE WORLD TO RECEIVE A TYPE OF BONE-MARROW TRANSPLANT FOR SEVERE SICKLE CELL ANEMIA THAT WAS DEVELOPED AT THE UNIVERSITY BY LAKSHMANAN KRISHNAMURTI AND JOHN WAGNER. THIS SUMMER SHE AND HER FAMILY RETURNED FOR HER ONE-YEAR CHECK-UP. NINA IS PICTURED WITH HER BROTHER, CHRISTIAN (THE DONOR), 13; HER FATHER, MELVIN; AND HER MOTHER, IRIS. THE FAMILY LIVES IN BUFFALO, NEW YORK.

Lynn Blewett, School of Public Health, received a $4 million grant from the Robert Wood Johnson Foundation to address the needs of states for data on monitoring the number of uninsured.

Melissa D. Avery, School of Nursing, received a $1.5 million, three-year federal grant to use distance learning technology to increase the number of nurse-midwives, women’s health care nurse practitioners, and public health nurses in the upper Midwest.

Othello, a Raptor Center Eagle, and Mark Martell, conservation programs coordinator, made an appearance at the New York Stock Exchange in September to help Canon, Inc., a Raptor Center sponsor, celebrate its debut as a public company. Othello symbolized Canon’s commitment to the environment.

Members of the U’s kidney-transplant team outlined their policy for anonymous kidney donations in the Aug. 10 New England Journal of Medicine. Arthur Matas, Medical School; Catherine Garvey and Cheryl Jacobs, Fairview-University Medical Center; and Jeffrey Kahn, Center for Bioethics, co-authored the report.

The Minnesota Medical Foundation received a record $57.9 million last year in contributions to endowments for health-related research and education at the University of Minnesota. For the fiscal year ending June 30, the total gift commitments, which support the Medical School in the Twin Cities and School of Medicine-Duluth, the School of Public Health, and the Cancer Center, were more than double the $26.2 million in commitments from the previous fiscal year.

The Academic Health Center was the featured health center on the Association of Academic Health Centers’ Web site for the month of September. Included on the site was a letter from Senior Vice President Frank Cerra, a profile of the AHC, and a feature article about the Fairview-AHC affiliation. Visit the site at http://www.ahcnet.org and select the “Featured Member” link.

Peter Polverini is the new dean of the School of Dentistry. Polverini was chair of the Department of Oral Medicine, Pathology, and Oncology at the University of Michigan School of Dentistry and is chair of the Oral Medicine and Biology-1 Study Section of the National Institutes of Health Center for Scientific Review.

Joanne Disch has been named by Dean Sandra Edwardson to fill the Katherine R. And C. Walton Lillehei Chair in Nursing Leadership, which honors Katharine Denford, former director of nursing. She will also serve as director of the Denford International Center for Nursing Leadership.

The new Molecular and Cellular Biology Building is going up on Washington Avenue in the Academic Health Center. The seven-story facility will promote collaboration among faculty in the health sciences and biology, accelerate the development of new treatments for serious diseases, provide classroom space and instructional laboratories for students, and support the growth of biotechnology industry in Minnesota. The $70 million structure is scheduled to be completed early in 2002.
Karl Self, director of the U’s outreach clinic in the Phillips neighborhood, seeks to stabilize finances to continue providing quality health care to the clinic’s 9,000 poor and diverse patients.

As a young dentist, Karl Self remembers, he didn’t like seeing people with no health care experience make business decisions that affected how he and other providers did their work. Rather than complain, however, Self did something unusual: He went to business school.

Eight years after receiving his MBA from the Carlson School of Management, Self is making those business decisions at the clinic in which he worked as a young dentist—the Community-University Health Care Center/Variety Children’s Clinic (CUHCC) in the Phillips neighborhood of South Minneapolis. Founded in 1966, CUHCC provides medical, dental, and mental health services to some 9,000 patients a year. An outreach clinic of the Academic Health Center, it also trains about 40 students a year from the schools of medicine, dentistry, nursing, and public health.

For an administrator, it’s a daunting challenge. The Phillips neighborhood is likely the most diverse in Minnesota; signs in the CUHCC lobby welcome patients in Vietnamese, Laotian, Cambodian, Hmong and Somali as well as English. Staff members speak eleven languages or dialects. The vast majority of CUHCC’s patients are poor. More than one-fourth are uninsured.

Self, a Roseville native who turns 41 in November, was chosen after a nationwide search, in part because he knows the clinic inside-out. After graduating from the School of Dentistry in 1984, Self worked briefly in private practice, then spent ten years at CUHCC as a dentist, dental instructor, and administrator. He also worked at Health Partners for four years. "Being a clinic director has been a goal of mine for a long time," he says.

Mark Niblick, who chairs the community board that governs the clinic, was impressed by Self’s intelligence and experience. “He has a real passion for the mission of the clinic, and that passion came through in the interviews," Niblick adds.

One of Self’s first priorities is to develop a more stable financial base. He hopes both to reduce costs—if possible, without reducing services—and seek additional funding through grants and donations. “It’s expensive to provide services in multiple languages,” explains Bonnie Brysky, CUHCC’s mental health director, who served for a year as the clinic’s interim director. “If we’re going to continue doing a good job serving people, we are going to have to look at a more stable financial base.”

Though CUHCC’s importance to the Phillips neighborhood may be more obvious—many patients would otherwise seek care in emergency rooms—it’s also vital to the University. “You need to get students in health fields out into community sites,” Brysky says. “We have opportunities for students to work with multicultural populations, to work with mostly a full-time staff. We give students a unique educational experience, which I think creates much better health providers.”

Self may now be making key business decisions, but he hasn’t forgotten his roots as a dentist. Once he’s settled into his new position, he says, he hopes to return to treating patients. “I want to stay in touch with the dental side,” Self explains. “It’s also important to see how the decisions that I and other leaders make affect our patients, staff, and providers.”

Nor has Self forgotten why he entered health care in the first place. “It’s not the technical part of the job that gives you overall satisfaction,” he says. “Sure, when you finish a beautiful crown, there’s a moment when you say, ‘Aha!’ But on a day-to-day basis, it’s the relationship with patients that gives you satisfaction, that keeps you going. I can’t explain it, but I guess I have always been interested in community, in public service.

Signs in the CUHCC lobby welcome patients in Vietnamese, Laotian, Cambodian, Hmong and Somali as well as English. Staff members speak eleven languages or dialects.
It’s not the kind of delivery most people would run to the door for—samples of milk, mucus, tissue and just about any other liquid or solid you can obtain from an animal. But it’s what the Veterinary Diagnostic Laboratory is all about. Each day thousands of such packages arrive on the laboratory’s doorstep, where they are greeted by technicians eager to help veterinarians statewide make sick farm animals and pets better.

Until this year, veterinarians who sent in samples for analysis could only access VDL results during business hours, and then only by mail, fax, or phone. But last spring, the lab began offering its clients—at no extra charge—the opportunity to view results on line.

“It provides access to laboratory results 24 hours a day, seven days a week,” says laboratory director Jim Collins.

Results are only accessible via a registered account with a password, ensuring confidentiality. But they remain accessible indefinitely. As a result, the system not only speeds diagnosis and treatment, it also allows veterinarians to look at trends and patterns, which opens the door to better disease prevention and treatment.

Swine veterinarian Mike Eisenmenger of the Swine Vet Center in St. Peter says the online service is a little like being able to take his office with him wherever he goes—which is a good thing, since he lives 70 miles from the clinic and spends his days traveling among dozens of farms.

“I use it as an electronic filing cabinet, really,” he says. “For example, if I’m going to a farm the next morning and I’m at home, I can access all the diagnostics over, for example, the past six months without having to plan ahead and get to the clinic or have someone fax them to me.”

The online access serves not only farm animal and companion animal veterinarians, but industrial veterinarians—for example, those working in medical device companies as well.

“One of the real advantages we see is that many different people can access the same information, for example, if there is one company with three sites throughout the country,” Collins says.

In addition to reporting results on line, the laboratory’s Web presence also allows users to learn about various services, download submission forms, and review instructions for sampling and submitting samples.

Collins admits that, barring the advent of “Beam me up, Scotty” Star Trek-ology, sample submission will continue to remain outside the realm of electronics. But he expects the rest of the process to become increasingly computer-based. For example, he notes that veterinarians already can send digitized photos and videos to the laboratory so diagnosticians can observe animal behavior or appearance along with samples sent by mail. Eventually, he’d like to see users be able to electronically submit the test requests and test applications they currently send as hard copy. This, he says, would streamline the process of submitting samples for the laboratory and veterinarian alike. Eventually, he predicts, veterinarians will be able to work directly with the diagnostic service via wireless Internet right from the barn.

“Our ultimate goal is to become totally electronic,” he says.

The capability to provide results online makes the VDL an even more powerful player in the national field. It already is considered one of the top of its kind, and offers a number of tests not available anywhere else.

Mary K. Hoff
At 87, Margaret Bimberg is still pretty independent. She lives on her own and when she needs groceries, she drives herself to the store in downtown Wadena.

But nearly three years ago, Bimberg suffered a heart attack and today she has congestive heart failure. So, nurses at Wadena's Tri-County Hospital make house calls regularly to make sure she's OK. Today's visit is a little unusual.

"Margaret, how do you feel this morning," asks Debra Zacharias, an RN with Tri-County's Home Health Care/Hospice program, as she talks on a phone and views Margaret on a TV monitor. Zacharias is in her office across the street from the hospital. Bimberg, meanwhile, is several blocks away in her apartment.

The two are having a "virtual visit," as part of a University of Minnesota study called TeleHomeCare. Bimberg is one patient involved in the $1.27 million demonstration project, which is funded in part with a $625,000 grant from the U.S. Department of Commerce and matching funds from clinical and industry partners. Led by Stanley Finkelstein, Medical School, laboratory medicine and pathology, and Stuart Speedie, the project is intended to determine whether technology can improve the quality of home health care, while also saving money through early detection, reduced hospitalizations, and reduced travel costs—especially in expansive rural areas such as Wadena.

The 33-month project, which runs through June 2001, is focusing on three health problems: heart failure, chronic obstructive pulmonary disease, and wound care. More than 11 million people in the U.S. receive home health care each year, while the costs for such care have increased 400 percent over the last five years. Finkelstein hopes that the project will demonstrate that virtual visits can improve the health of the 18 million Americans who suffer heart failure or obstructive pulmonary disease, and cut the cost of treating chronic wounds.

In the study, the virtual visits supplement—but do not replace—traditional home health services by using commercially available and low-cost videoconferencing equipment, the Internet, and monitoring devices connected to patients' televisions via the phone line.

"If it works as well as we think it will, virtual visits can replace some home health care visits," says Finkelstein.

One concern was whether patients—many of them seniors—would welcome or shy away from the technology.

"Most of the patients are afraid at first of making a mistake," says Caren Winkels, manager of the Tri-County Home Health Care/Hospice. "But after a couple of visits, most patients, she says, are comfortable with the technology. "They've made it so simple, it's easy for them."

"I didn't know beans about the Internet—didn't know beans—I never dreamed I would have anything to do with it," says Bimberg, a retired grade-school teacher. However, she quickly adapted and now cruises the Web (pages are bookmarked for patients) for health information when she's not sending e-mails to Winkels or Zacharias. "It didn't take me long to get on with it. I sort of enjoy it."
1851
Territorial legislation that created the University of Minnesota names medicine and science among five original academic disciplines.

1888
The College of Medicine and Surgery is established by the Board of Regents. Perry Millard is appointed dean.

1890
The University's first Veterinary Hospital provides medical care for horses and other farm animals.

1891
The College of Dentistry begins as a division of the Department of Medicine.

1893
Dentistry's graduating class includes two women.

1894
The College of Pharmacy opens with Frederick Wulling as dean. Wulling remains dean for 44 years.

1895
The Medical School, the University's first endowed chair, is established.

1896
The Veterinary Diagnostic Laboratory is established.

1899
The School of Nursing opens as the first nursing school on a university campus. Louise Powell is named superintendent.

1900
The College of Agriculture is created within the University of Minnesota Department of Medicine.

1906
The Veterinary Diagnostic Laboratory opens.

1909
The College of Dentistry begins as a division of the Department of Medicine.

1910
Abraham Flexner, of the Carnegie Foundation, calls the Medical School a model for health education in a report on the nation's 165 medical schools.

1911
Eliot Hospital, one of the first university-owned teaching hospitals, opens.

1913
The College of Pharmacy plants a garden of medicinal herbs.

1916
The Division of Veterinary Medicine is created within the College of Agriculture.

1920
The College of Dentistry establishes a two-year dental hygiene program, which is made a four-year program in 1989.

1922
The Medical Technology Program is established in the Medical School. It's the first program of its kind in the U.S.

1930
School of Nursing graduate Ellen Church persuades United Airlines to use nurses as airline hostesses.

1932
Dentistry moves into Owre Hall, named after Alfred Owre, dean from 1903 to 1927.

1937
Wesley Spink, Medical School, brings sulfa antibiotics and penicillin to Minnesota.

1938
Louise Powell, Director of the School of Nursing, is the first living person to have a university building named after her. Powell Hall is a residence for nurses.

1940
Ancel Keys, public health, creates K-Rations.

1941
The Physical Therapy Program is created in the Medical School.

1942
The Minnesota Multiphasic Personality Inventory is published by Medical School professors J. Charnley McKinley and Starkie Hathaway.

1943
The first director of the U.S. Nurse Corps is School of Nursing faculty member Lucile Perry, Minnesota trains 1,215 cadets.

1944
The Board of Regents approves a plan to create the School of Public Health.

1945
Owen Wangensteen, Medical School, invents a suction device to prevent postoperative intestinal blockage. It dramatically reduces mortality from abdominal surgery.

1946
The University's first endowed chair, the Mayo Professorship in Public Health, is established in the School of Public Health.

1947
The College of Veterinary Medicine enrolls its first class, which graduates in 1950.

1948
Lucile Petry, Minnesota of Nursing faculty member, is named after her. Powell Hall is a residence for nurses.

1949
The first ever full-time department of Nursing for the first time.

1950
Men enroll in the School of Nursing for the first time.

1951
The Variety Club Heart Care Center is established in the Phillips neighborhood to provide health services to disadvantaged patients.

1952
The world's first successful open-heart surgery is performed by Medical School surgeons F. John Lewis and C. Walton Lillehei.

1955
The world's first successful heart valve replacement using an artificial valve.

1959
Katharine Densford retires as School of Nursing director after 29 years. Densford was known for national leadership, mobilizing nurses during World War II, and promoting racial integration of the profession.

1964
Leonard Schuman, School of Public Health, helps prepare the U.S. Surgeon General’s landmark report on smoking and health.

1966
Community-University Health Care Center is established in the Phillips neighborhood to provide health services to disadvantaged patients.

1970
The world's first successful pancreas transplant is performed by Richard Lillehei and William Kelly, Medical School, surgery.

1995
The world's first successful heart transplant is performed by Richard Lillehei and William Kelly, Medical School, surgery.

2000
The world's first successful heart transplant is performed by Richard Lillehei and William Kelly, Medical School, surgery.

2010
The Minnesota Multiphasic Personality Inventory is published by Medical School professors J. Charnley McKinley and Starkie Hathaway.

2015
The Physical Therapy Program is created in the Medical School.

2020
The Medical Technology Program is established in the Medical School.

2030
School of Nursing graduate Ellen Church persuades United Airlines to use nurses as airline hostesses.

2040
The Veterinary Diagnostic Laboratory opens.
Sesquicentennial timeline

Health Center looks back on 150 years of achievements in the health sciences.

1951: Loretta Young officiates at the opening of Variety Club Children’s Hospital.

1950s & 1960s: The Medical School scores firsts in heart surgery and organ transplantation.

1988: A vaccine for Lyme Disease is patented by Russell Johnson, Medical School, microbiology, who identified the organism that causes the disease.

1991: Jim Collins, College of Veterinary Medicine, patents a vaccine for porcine respiratory and reproductive syndromes, which threatens the swine industry.

1992: The Minnesota Center for Research in Agricultural Safety and Health is established in the School of Public Health.

1993: Functional MRI, an imaging technique that shows the brain in action, is developed at the University of Minnesota.

1996: A mouse model for Alzheimer’s Disease is developed by a team led by Karen He Joe, Medical School, neurology. The model is used worldwide to test new drugs for the disease.

1999: Ground is broken for the Molecular and Cellular Biology Building.

1967: Christiana Barnard, trained at the Medical School, performs the world’s first human heart transplant in South Africa. Marvin Bancroft, Medical School, physiology, develops the heart drug Bretylum, which later earns $10 million in royalties for the University.

1968: The world’s first successful bone marrow transplantation is performed at the University of Minnesota by Robert Good.

1970: The Health Sciences Center is created to unify the health sciences schools and promote interdisciplinary training and research. Lyle A. French is the first vice president for health sciences.

1971: Ancel Keys, School of Public Health, publishes his landmark study “Coronary Heart Disease in Seven Countries,” which identifies dietary and other risk factors.

1972: The School of Medicine-Duluth opens, primarily to prepare physicians for family practice in rural communities. The Raptor Center is established at the College of Veterinary Medicine to rehabilitate injured birds of prey.

1979: The Phillips-Wangensteen building is completed and named in honor of benefactor Jay Phillips and surgeon Owen Wangensteen.

1980: The Minnesota Heart Health Program, which promotes heart health through diet and lifestyle, is tested in Minnesota and adopted across the nation.

1981: The College of Pharmacy and School of Nursing move into a new building, later named Weaver-Densford Hall, to honor former pharmacy dean Lawrence Weaver and former nursing director Katharine Densford.

1982: Lee Wattenberg, Medical School, is recognized for studies of chemicals in broccoli and other vegetables that prevent cancer formation.

1983: The Robert Lewis Hospital for Companion Animals opens at the College of Veterinary Medicine. Lewis, an African American, was a veterinarian and legislator.

1986: The new University Hospital and Variety Club Children’s Hospital opens.

1988: The College of Pharmacy’s baccalaureate program is replaced with a doctorate program to provide more science education and clinical training.

1989: The College of Veterinary Medicine opens a new state-of-the-art Intensive Care Unit for companion animals.

1988: The College of Pharmacy receives a bequest of $13.3 million, the largest bequest in the University’s history, from Mildred and Bill Peters.

1989: Cheryl Perry, School of Public Health, is senior editor of the Surgeon General’s report on adolescent tobacco use.

1990: The College of Veterinary Medicine-Duluth to Duluth.

1991: Jim Collins, College of Veterinary Medicine, patents a vaccine for porcine respiratory and reproductive syndromes, which threatens the swine industry.

1992: The Minnesota Center for Research in Agricultural Safety and Health is established in the School of Public Health.

1993: Functional MRI, an imaging technique that shows the brain in action, is developed by Kamil Ugarbil, Medical School, radiology, in conjunction with AT&T Bell Labs.

1994: The College of Pharmacy receives a bequest of $13.3 million, the largest bequest in the University’s history, from Mildred and Bill Peters.

1995: The College of Veterinary Medicine opens a new state-of-the-art Intensive Care Unit for companion animals.

1996: A mouse model for Alzheimer’s Disease is developed by a team led by Karen He Joe, Medical School, neurology. The model is used worldwide to test new drugs for the disease.

1997: Pharmacy Professor Linda Strand is recognized for her role in developing pharmaceutical care, which enables pharmacists to monitor drug therapy in patients and avoid adverse reactions that cost the U.S. $77 billion a year.

1998: The Cancer Center is designated a Comprehensive Cancer Center by the National Institutes of Health.

1999: The Rural Health School is created at the School of Medicine-Duluth to increase the number of health care professionals in greater Minnesota.

2000: The family of C. Walton Lillehei gives the Medical School $13 million to establish the Lillehei Heart Institute and the School of Nursing $3 million for the Katharine R. and C. Walton Lillehei Endowed Chair in Nursing Leadership, which honors Katherine Densford.

Based on research by David Jacobs, School of Public Health, the FDA allows food manufacturers to make the claim that whole grain consumption reduces heart disease and cancer risk.
Help Wanted:

Will Minnesota have enough nurses, pharmacists, and dentists to meet its needs?
A shortage of these and other health care professionals is raising concerns.

A shortage of health professionals nationally and in Minnesota has University of Minnesota officials concerned about meeting the state’s future health care needs, particularly in rural areas.

There are various reasons for the shortages, but the common theme is that demand is increasing as Minnesota’s population ages. At the same time, a large number of health professionals are approaching retirement years while not enough younger workers are being trained to fill the projected gap.

A recent report by the Minnesota State Colleges and Universities (MnSCU) office and the Minnesota Department of Economic Security stated that there currently are about 1,700 unfilled positions for registered nurses in Minnesota and 180 openings for nurses with specialty training.

“Projected changes in the age distribution of the state’s population in the next quarter century indicate that there will be fewer young people available to enter nursing careers,” says School of Nursing Dean Sandra Edwardson. “At the same time, projected changes in the health care needs of Minnesotans and in medical technology suggest an increasing need for skilled nursing care.”

“The graying of dentists, particularly in outstate Minnesota, is acute,” says Michael Till, former dean of the School of Dentistry. He said that about 45 percent of dentists and dental hygienists in South Dakota will reach retirement age within 10 years. In North Dakota, the number is 40 percent, while it’s about 37 percent in Minnesota.

The number of aging practitioners is also a reason for the shortage of pharmacists, says Henry Mann, associate dean of the College of Pharmacy, who estimates that there are more than 200 openings for pharmacists in Minnesota.

Other reasons include:
- An increased demand for pharmacy services.
- More pharmacists, currently between 15 and 20 percent, now work in related fields that didn’t exist 10 years ago.
- A reduction in the number of pharmacy graduates from North Dakota and South Dakota state universities, which, historically, have supplied a significant number of dentists to rural Minnesota.

Minnesota also has a critical shortage of medical technology specialists—nearly 100 current openings. Technologists perform various diagnostic procedures used in the diagnosis, treatment, and monitoring of disease. Demand is accelerating due to medical advances and the increasing complexity of diagnostic procedures.

In response to these needs, the Academic Health Center is requesting over the next biennium that the Legislature provide:
- $1.13 million to establish a satellite program of the University’s undergraduate medical technology program in Rochester, in collaboration with the Mayo Foundation and MnSCU, as part of the development of the University of Minnesota campus in Rochester.
- $647,000 to create a satellite undergraduate nursing program in the Rochester area, also in collaboration with the Mayo Foundation and MnSCU.
- $3.25 million from the Legislature to expand its enrollment 50 percent in the College of Pharmacy, including the creation of a branch site on the Duluth campus.
- $674,000 to fund a full-service, low-cost dental clinic in partnership with MnSCU and Hibbing Community College, and a second clinic in conjunction with the Otter Tail County Public Health Department. School officials say that about 10 percent of students of such rural programs join existing rural practices upon graduation and that about 10 percent open new practices.

Mark Engebretson
On May 22, Thomas Mackenzie was one of 17 Medical School faculty honored at Eastcliff as charter members of the University of Minnesota’s Academy of Medical Educators. Last year, Mackenzie was the first Medical School professor inducted into the U’s new Academy of Distinguished Teachers.

While he felt honored, Mackenzie says what makes him most proud is when a student compliments him after a lecture. “That’s terribly meaningful,” says Mackenzie, a professor in the Medical School’s Department of Psychiatry. “I think all of us—I think people in general—want spontaneous reaction for their accomplishments.”

Still, Mackenzie also recognizes and greatly appreciates the significance of the official honors. “I was very proud. Clearly, it gave me a recognition and a visibility in our school and in the University that was gratifying,” he says. “But one can feel gratified and at the same time unworthy. I think the awards do identify excellence, but there are so many deserving people.”

Recognizing deserving individuals is why Medical School officials established the Academy of Medical Educators. The idea grew out of a 1997 Medical School retreat, says Gregory Vercellotti, senior associate dean for education. “We wanted to develop a system to recognize and celebrate our best teachers and promote innovation in education,” he says. Vercellotti adds that outstanding clinicians and researchers tend to garner more attention in the medical field than do outstanding teachers. Academy members will advise the Medical School dean on educational issues.

The Academy was established on June 15, 1999 by the Education Council of the U of M’s Medical School. It was modeled after the University’s Academy of Distinguished Teachers, an initiative of President Mark Yudof. Membership in the Academy of Medical Educators is made up of current or emeritus members of the Medical School faculty who have:

- Received the “Outstanding Medical School Teacher Award,” which has been given annually by the Minnesota Medical Foundation since 1986.
- Received the all-University “Award for Outstanding Contributions to Post-Baccalaureate, Graduate, and Professional Education.”
- Been nominated by their department or senior associate dean for education, and selected by a committee appointed by the Education Council.

“Hippocrates reminds us of our responsibility to pass on what we know to students,” says Vercellotti, quoting from the oath: “I will impart a knowledge of the art to my own sons and daughters.”

Mackenzie not only passes on knowledge, he does so with enthusiasm.

“The course that is my favorite to teach is human behavior because when I teach it, I learn as much as the students—maybe more,” he says.

At the same time, he asserts that he’s no expert.

“I get up and try to make sense to someone while insisting that I don’t know what I’m talking about and they should be skeptical of what I say,” Mackenzie says.

“Teaching is the most exciting thing I do.” — Tom Mackenzie

The University’s new Academy of Medical Educators recognizes exceptional teachers in a field where researchers and clinicians typically get most of the kudos.

Other charter members of the Academy of Medical Educators are: Frank Cerra, senior vice president for health sciences; Morris Davidman, medicine; Manuel Kaplan, medicine; Dennis Livingston, biochemistry; Alfred Michael, Medical School dean; Wesley Miller, medicine; Charles Moldow, associate dean; James Moller, pediatrics; Catherine Niewoehner, medicine; James Pacala, family practice and community health; Patrick Schlievert, microbiology; M. Thomas Stillman, medicine; David Thomas, biochemistry; Robert Vernier, pediatrics; O. Douglas Wangensteen, physiology, pediatrics; and Kathleen Watson, medicine.

“Dr. Mackenzie is an exceptional communicator who holds the rare combination of great excitement for his courses as well as the ability to electrify his students with the same interests,” says Frederick Langheim, a medical student who took Mackenzie’s human behavior course last year. He said Mackenzie is effective partly because he personalizes his lectures by referencing current events and behaviors in class.

Says Mackenzie: “Teaching is the most exciting thing I do.”

“Medical students enjoy Tom Mackenzie’s sense of humor and his commitment to teaching.”

Mark Engebretson
Bill Toscano was hooked on Zebrafish the first time he saw a tank full several years ago at a research seminar at the University of Washington in Seattle.

Originally from China, these dime store aquarium fish make good research subjects because they are easy to grow, their genetics are well defined, and because they have large, transparent embryos that develop quickly.

Furthermore, they are vertebrates, like humans. And, unlike mice and rats, they react to the same low-level doses of toxicants as humans.

Consequently, results of studies using Zebrafish can be more reliably applied to people.

So Toscano, who has spent his career studying the effects of dioxin and other environmental toxicants in human cells, began growing and using these fish in his own laboratory at Tulane University, where he was head of environmental sciences and occupational health.

At Tulane, Toscano and his graduate student, Carolyn Mattingly, now a post-doctoral fellow at the Cornell Medical School, came up with the idea to use Zebrafish as biosensors to detect environmental toxicants in polluted water.

“Like to call it a ‘dipstick assay’ to detect low levels of compounds in the environment — levels that humans are likely to be exposed to,” Toscano says.

He adds that the technique can be adapted to detect other harmful compounds, such as environmental estrogens.

But initially, he will continue to work with dioxins, which have been his research focus for most of his career. Dioxins, chemicals produced by bleaching paper, incineration, and plastic production, are also found in pesticides. Known to be carcinogenic, they also cause birth defects, miscarriages, and endometriosis. Even so, only a few sources of dioxins, such as Agent Orange and Phisohex, have been banned.

Dioxins cause harm to cells by interfering with their biochemical communication system, called signal transduction. The second phase of Toscano’s research on transgenic Zebrafish will be to learn how dioxins interfere with cell signaling to cause birth defects.

In 1999, Toscano, who had been on the School of Public Health faculty from 1989 to 1993, returned as head of the Division of Environmental and Occupational Health. The main reason he came back is because of opportunities for collaboration.

“There are opportunities to advance my research through collaboration at the University of Minnesota that simply don’t exist elsewhere,” he says.

One researcher who drew Toscano back to the University of Minnesota is Perry Hackett in the College of Biological Sciences. Hackett developed the Sleeping Beauty Transposon, which is used to insert genetic material into vertebrates. Another is Steve Ekker, in Genetics, Cell Biology, and Development, who is an expert on Zebrafish research.

Toscano is also very pleased to have Elizabeth Wattenberg and Lisa Peterson as colleagues in the Division of Environmental and Occupational Health. Wattenberg is an expert in how chemicals interfere with signal transduction. She is the daughter of professor emeritus Lee Wattenberg, who discovered cancer-preventing chemicals in broccoli and other vegetables. Using natural toxins produced by marine plants and organisms as tools, she studies pathways of normal and aberrant signal transduction. Peterson, who is also a member of the Cancer Center, studies how environmental chemicals trigger the genesis of cancer. She works with compounds found in tobacco and polluted indoor air.

“The development of birth defects and cancer are really very similar processes,” Toscano says. “By working together we make progress more quickly than any of us could alone. That’s really the advantage of a large research institution like the University of Minnesota.”
A woman from Eau Claire, Wisconsin awakens with chest pain. She walks to her kitchen, where she remembers a news story that lists the early warning signs of a heart attack. Realizing that she might be having an attack, the woman asks her husband to call 9-1-1.

In Tyler, Texas, a middle-aged man hears a physician describe those warning signs on the radio. He doesn’t listen closely, but a phrase sticks in his mind: “When in doubt, check it out.” A few days later, 40 miles from home, the man feels tightness in his chest. He drives to a nearby emergency room and is treated immediately—in the midst a heart attack.

A Massachusetts woman attends a presentation about heart attack symptoms for senior citizens. A week later, she’s not feeling well, and notices a refrigerator magnet from the meeting. Reading the magnet’s list of heart attack symptoms, she recalls a woman telling seniors to seek help if symptoms persisted for more than 15 minutes. She dials 9-1-1. On the way to the hospital, her heart stops, the ambulance pulls to the side of the road, and technicians revive her with a defibrillator. She survives.

All three of these people learned about heart attacks through an ambitious public health intervention and study known as REACT (Rapid Early Action for Coronary Treatment), which was designed by University of Minnesota researchers and sponsored by the National Heart, Lung, and Blood Institute. The 18-month-long campaign relied on mass media, community organizations, health care professionals, and educational programs to deliver basically a simple message: Recognize heart attack symptoms and seek help quickly.

The program’s rationale was equally straightforward. Doctors have in recent years made enormous strides in treating heart attacks, but in order for modern remedies such as clot-busting drugs and defibrillators to work, patients must be treated soon after the attack begins. And many people wait too long to seek help.

“The problem is that people who have heart attacks deny it, initially,” explains Russell Luepker, a professor in the School of Public Health and lead author of the REACT study, which was published by the Journal of the American Medical Association in July. “Most of us prefer to think it’s the bad pizza we ate yesterday, and if we only take some Tums it will go away.”

REACT was designed to reduce patient delay and, secondarily, to increase ambulance usage. To measure its impact, researchers chose ten matched pairs of small metropolitan areas across the United States. They implemented REACT in ten cities, including Eau Claire, Wisconsin. The ten other metropolitan areas, including La Crosse, Wisconsin, and Sioux Falls, South Dakota, served as controls. SPH Associate Dean and Professor John Finnegan directed the Midwestern research.

Despite anecdotal evidence of people helped by REACT, though, the results were mixed. The average delay between the onset of symptoms and the beginning of treatment fell in the ten REACT cities almost five percent per year, but it fell nearly seven percent in the other cities—a statistically insignificant difference. Ambulance usage, in contrast, increased 20 percent in REACT communities when compared to the control cities.

Luepker isn’t discouraged. “While the answer isn’t what we expected, it is an answer we can learn from,” he says. “We need to rethink innovative strategies to address this problem.” REACT’s message, he thinks, may also have been lost in the cacophony of noise made by American media.

“The increase in 9-1-1 usage is important, Luepker says, because "in the modern world, the ambulance basically brings the hospital to you."

To learn about REACT, including information about how it was implemented, visit www.epi.umn.edu/react.

Frank Clancy
How brave a new world?

Ethical implications of identifying the human genome*

By Jeffrey Kahn, Ph.D., M.P.H.
Director, Center for Bioethics
University of Minnesota

The Announcement that the Human Genome Has Been Sequenced Is Less About a Conclusion Than About the Beginning of the Era of Genetic Medicine.

With the announcement begins the challenges of dealing with the ethical questions and issues spawned by the successes of genetic research.

The initial sequencing will speed up research into what genes code for, and how differences in their code may affect our health, our susceptibilities, and our physical and psychological traits.

But who owns the information created by sequencing the genome? Will the tests created to identify mutations lead to discrimination against those who are perceived as genetically flawed—and can we prevent that from happening?

How far should we go in using gene therapy to correct the “genetic defects” we discover, and who should have access to this therapy?

Who owns the genome?

Using the increasingly complete understanding of the genome, scientists have begun to unravel what our genes mean. And the companies and institutions that pay these scientists have begun to successfully protect their efforts with patents.

The system of patents exists to protect the interests of both inventors and society. Inventors have the incentive of a limited monopoly on their innovations, allowing them to sell or license their products or techniques for profit. Society benefits from those innovations and the full disclosure of whatever has been patented.

But our system does not allow a patent for the discovery of a law of nature. Gravity could not be patented by Sir Isaac Newton, although he was the first to describe it. Identifying the raw sequence of a gene is viewed much the same way, unless a scientist can show the function of a particular sequence — that it causes a disease like cystic fibrosis, for example. Such a gene would have obvious uses in developing tests or treatment for the disease.

Despite this limitation on patent claims, the U.S. Patent office has granted protection for a number of incomplete gene sequences, and apparently has many more applications pending.

Our 200-year-old patent system never was intended to address the question of patent protection for genes, and a slowly changing system and rapidly changing science make for strained public policy.

This issue is becoming increasingly important not only in this country but also worldwide, as genetic sciences increasingly become a global effort with a global market.

Genetic Testing: the good, the bad, and the unfair

Only a few of the genetic tests now available actually predict whether a person will contract a disease or condition. Instead, most tests offer much more limited information about how much more likely a person is to develop a disease compared to someone who tests “normal.”

This kind of information is not very useful for individuals, who would like to know whether they actually have or will get a particular disease, and what steps, if any, they ought to take to protect their health.

But probabilities are very useful for predicting how many people in a group will contract cancer or Alzheimer’s disease, and so insurance companies and potential employers may well be very interested in measuring their risks using genetic tests.

The genetic codes that will be used in tests to predict health risks often are — and will continue to be — first identified by research on particular groups.

Research on women of Jewish ancestry from Eastern Europe, for example, led to tests that predict increased breast cancer risk in women with the certain genes.

This discovery and others like it point to only a few of what are probably many genetic defects that influence the development of diseases such as cancer, and it is only because of the usefulness of members of a population that their “defects” are cataloged first.

But being first is a double-edged sword. Members of the group are the first to gain access to more information about future health risks and to be able to seek early testing and treatment. But they also are the first to have the information used against them — for example, to determine eligibility and premiums for insurance or to draw broad conclusions about whether or not they are healthy.

Using genetic testing to distinguish individuals might make sense if it were able to single out those truly at greater genetic risk. We all carry some assortment of genetic defects, but for most of us science has yet to discover our particular defects or tests to identify them.

Since genetic tests are available for only a fraction of the diseases that likely have a genetic component, it is unfair to single out those people affected by the few diseases for which we now can test.

By Jeffrey Kahn, Ph.D., M.P.H.
Director, Center for Bioethics
University of Minnesota

Ethical implications of identifying the human genome*
Cures from the inside out?

What if we could fix the defects identified by genetic tests? Gene therapy is on the cusp of becoming effective. This could have a huge medical impact, since these therapies could provide permanent cures at the molecular level—no more drugs, no more treatments after a single “magic bullet” has its effects.

One question will arise around how serious an illness or defect must be to warrant the use of gene therapy. Another will ask whether the technology should be used not to cure, but to enhance performance.

Since such therapies will work at the genetic level, we will need to decide whether they should be used on fetuses, on children, or only on adults. Deciding to treat diseases that have effects in childhood will be easy. But what about other uses, such as enhancing height or athletic ability, changing sexual orientation, or treating late onset diseases? Those decisions will be more difficult.

Should gene therapy be restricted to only serious diseases? Should it be used to enhance traits or characteristics such as memory or intelligence? Maybe the most important question is whether gene therapy should be used on eggs and sperm, so-called germ cells.

There is great promise in a technology that not only can treat disease but also can permanently cure it at the level of our genes. And therein lies the rub.

It is difficult to undo genetic changes, especially when they may persist many generations into the future. So we must think about how we will assure that our genetic legacy is not only what we hope, but also what our descendants can accept.

Looking Forward.

The age of genetics is upon us, and with it come many ethical challenges. We must protect the rights of the genetic innovators as we preserve the public nature of the information they use.

Identifying the genetic code has great promise. It can help us discover causes of disease and better understand who we are. We must recognize, however, that with such promise comes great risk.

Even if we would like to know what future our genes hold, the question we must ask is whether that information should be collected, and more important, who should be able to see and use it.

And when we are able to change the future through the alteration of our very genes, the challenge is to think not only for ourselves, but also about how our decisions will affect those who come after us.

(Reprinted from Ethics Matters, a bi-monthly column written by Kahn for CNN Online. To read other columns, refer to www.cnn.com.)
Healthy Heroes

University veterinarians help keep the Minneapolis Police Department’s top dogs in top shape.

Minnesota Police Department Officer Andy Stender can’t say enough about the gratitude he feels toward the doctors who saved the life of his partner, Sam, who was attacked with a machete by an escaped convict last March.

Sam has only one comment: “Woof.”

A hefty German shepherd with a heart of gold and jaws of steel, Sam was helping Stender and other members of a police SWAT team roust the convict from a barricaded house when he received a life-threatening knife wound to his throat. Stender rushed Sam to the University’s Veterinary Teaching Hospitals. There, fighting fumes from tear gas that clung to Sam’s fur, surgery resident Phil Pacchiana and intern Tony Calo, in Stender’s words, “brought him back to life.”

“I took him over to the U and they performed their miracle,” Stender says. “They were awesome, from the receptionist who met us at the door to the nurses to the doctors, to everybody.”

Though certainly among the most dramatic, Sam’s trip was but one of many the dozen or so members of the Minneapolis Police Department’s canine unit make to the VTH each year. Each canine officer visits the clinic annually for a checkup and immunizations. About once a month, one or another will return for treatment of routine ailments or for injuries sustained while carrying out their official duties, which include sniffing out drugs, chasing suspects, and searching for weapons and crime evidence.

According to unit trainer Gregory Zipoy, the police department chose the VTH as its canine care provider because it offers comprehensive treatment 24 hours a day, seven days a week—an important consideration for dogs whose riskiest moments come in the dark of the night.

“They’re convenient, and they have within their unit all the things that are necessary for animal care,” Zipoy says. “It’s kind of a one-stop shop.”

VTH veterinarians also offer workshops for the dogs’ human handlers, covering topics such as nutrition, grooming, and first aid. They even provide the premium food the hard-working dogs need to perform at their peak.

“Our staff enjoy the opportunity to serve the Minneapolis canine corps,” says VTH administrator Edward Kosciolek. “Clearly, the police officers care very deeply for their canine partners and want the best care for them. We’re pleased to help.”

Mary K. Hoff