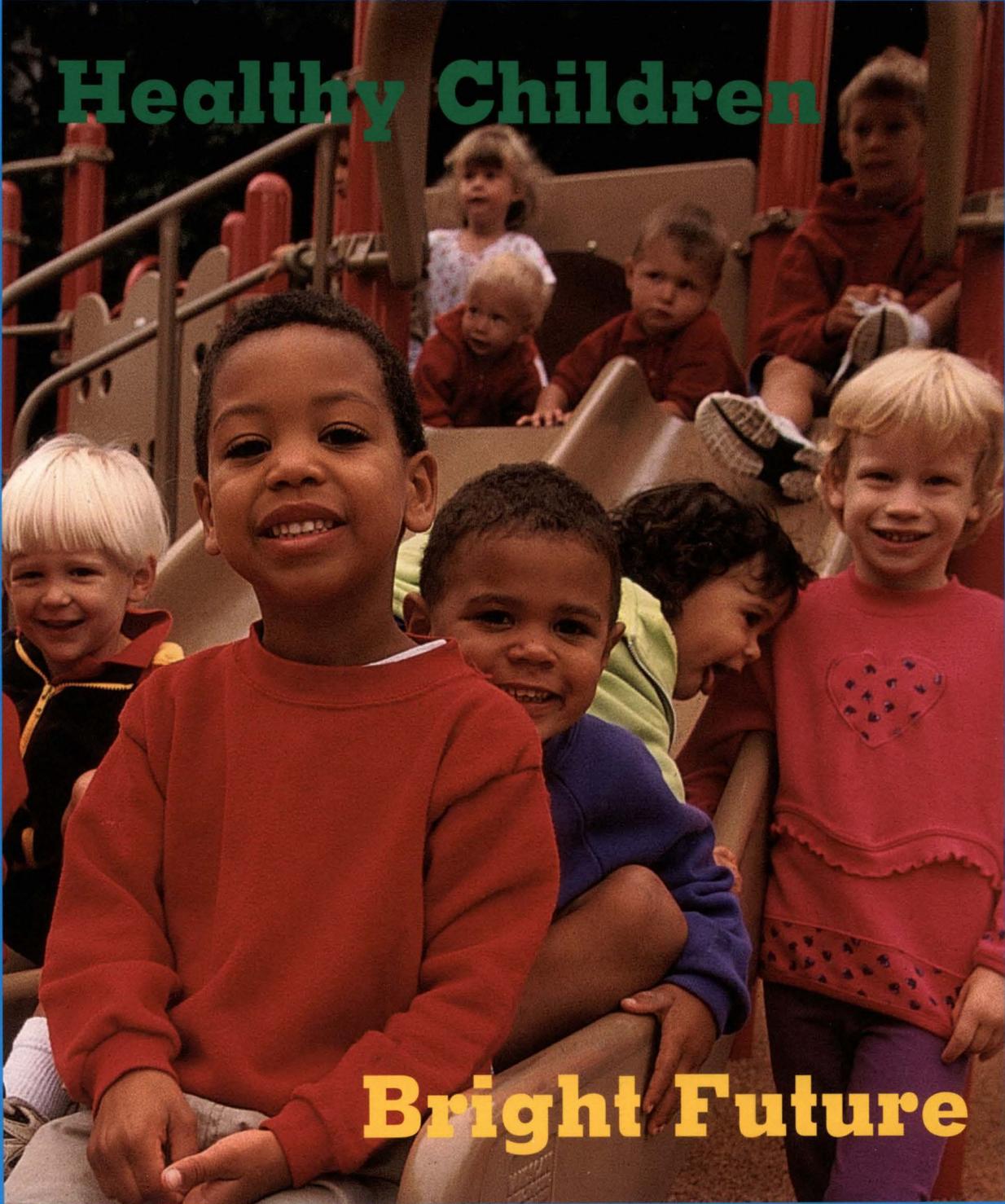


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Medical Bulletin

A PUBLICATION OF THE MINNESOTA MEDICAL FOUNDATION • FALL 1999



Healthy Children

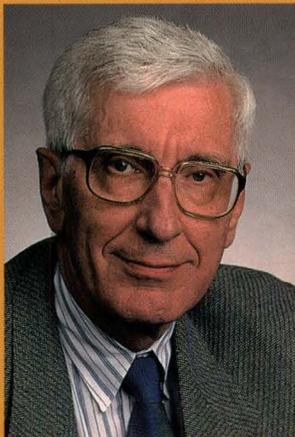
Bright Future

ALSO IN THIS ISSUE: THE MEDICAL SCHOOLS IN A CHANGING WORLD • ALUMNI NEWS

MINNESOTA
MEDICAL
FOUNDATION

at the University of Minnesota

THE MISSION OF THE MINNESOTA MEDICAL FOUNDATION IS TO IMPROVE THE QUALITY OF LIFE FOR THE PEOPLE OF MINNESOTA, THE NATION, AND THE WORLD BY SUPPORTING THE ADVANCEMENT OF HEALTH-RELATED EDUCATION, RESEARCH, AND SERVICE AT THE UNIVERSITY OF MINNESOTA.



DEAN'S REPORT

As a pediatrician, I know there are many questions yet to be answered about childhood diseases. Why do some children develop diabetes or heart disease? Why do others have a learning disorder or mental retardation? Why do cancer treatments work for one child but not another? Why do some premature babies struggle while others thrive?

We know that the beginnings of certain diseases in adults often start in childhood, and we have become increasingly aware that genetic and environmental influences affecting children can be precursors to conditions of later years. This issue of the *Medical Bulletin* looks at how research into children's diseases impacts the health of the adult population.

We have made tremendous progress understanding, preventing, and treating diseases of children. Conditions that caused infections and death at the start of this century will not go with us into the next century. Prevention of disease through safe food and water, immunizations, regular health care, and widespread medical education brings with it the promise of a healthy adulthood for current and future generations.

But we do not have all the answers, and are continually faced with new challenges in the area of children's health. We must understand a disease at its most basic level before we can develop a cure, and faculty at the University are finding answers through increased collaboration between the research laboratory and the clinic. Equally important, we are looking for solutions to problems such as adolescent alcoholism, pregnancy, drug abuse, and violence; to child abuse and neglect; and to home environments where children do not have access to good health care.

We are tremendously excited by the advances that have already occurred in children's health, and through partnership with a supportive community, look forward to a time when today's childhood diseases are also a thing of the past.

A handwritten signature in black ink, appearing to read "Alfred F. Michael".

Alfred F. Michael, Dean
University of Minnesota Medical School, Twin Cities

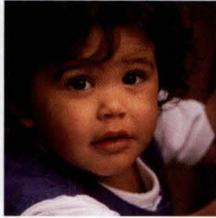
UNIVERSITY OF MINNESOTA MEDICAL SCHOOLS

Medical Bulletin

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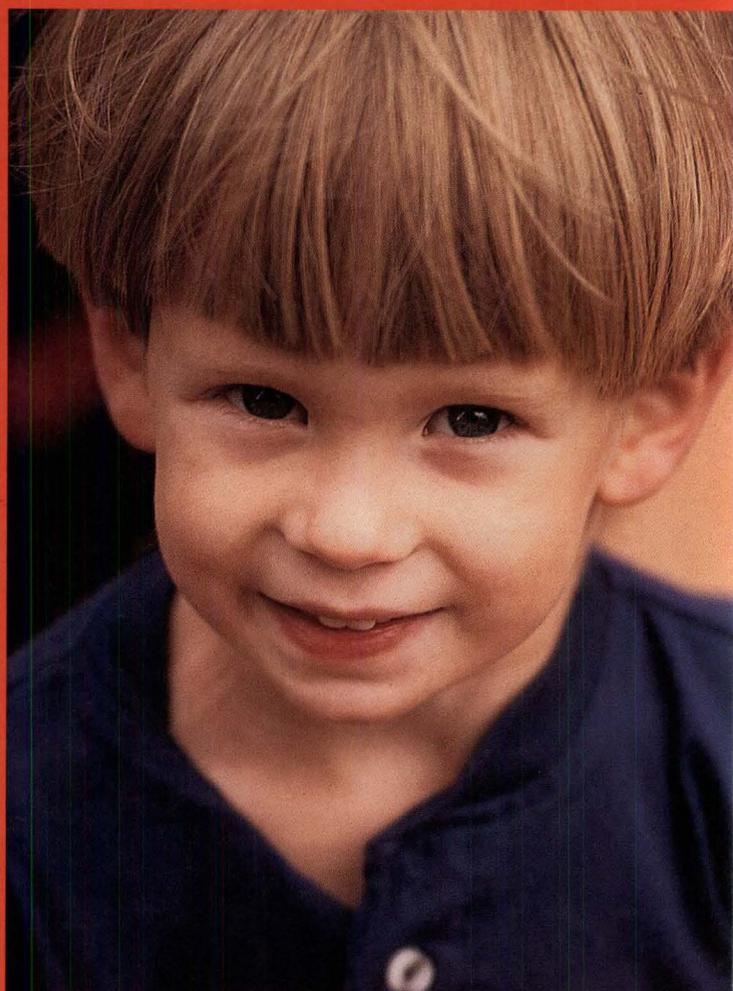
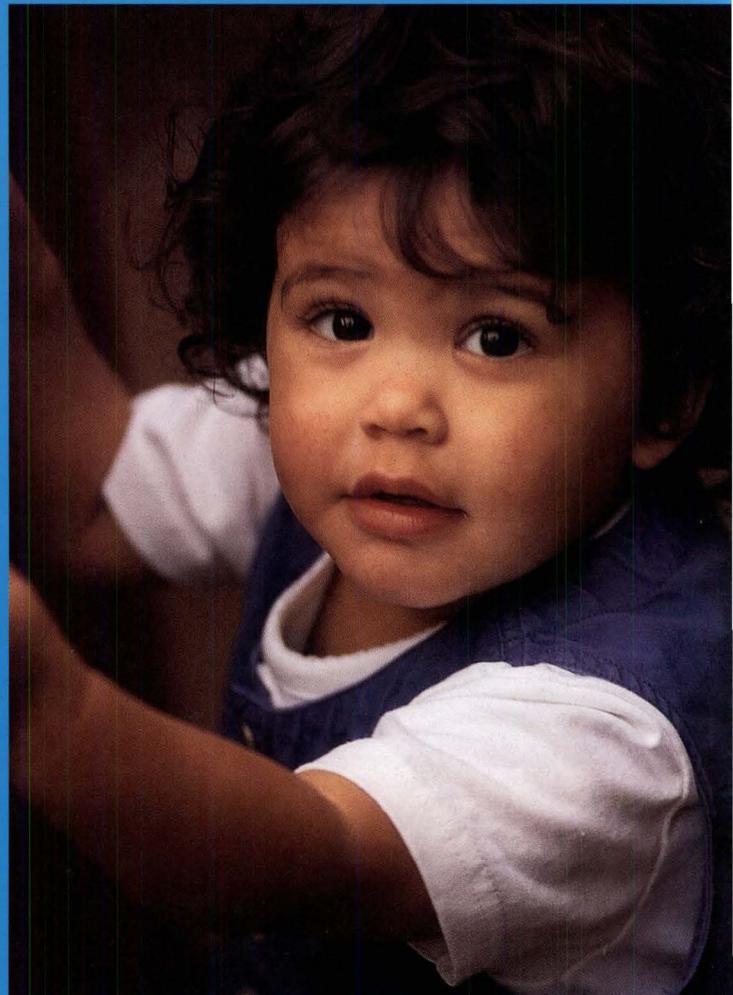
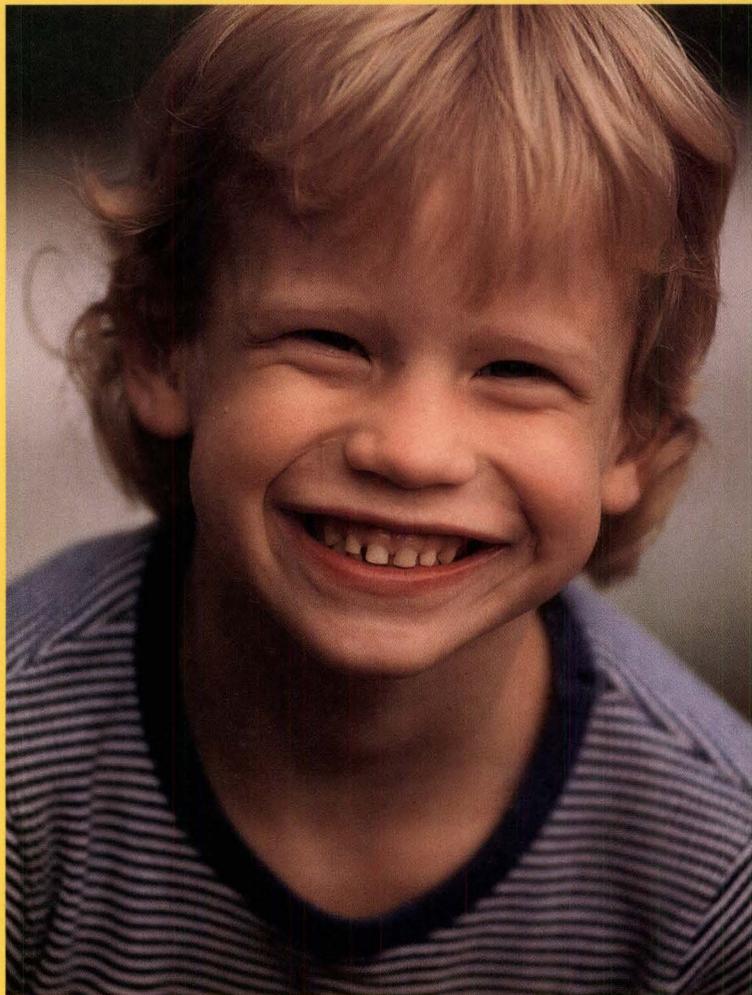
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ON THE COVER:

Photo taken at the Ronald McDonald House, a home away from home for families whose children are being treated for cancer and other life-threatening illnesses at the University of Minnesota.

Cover photo and inside photos of children by John Noltner.



Healthy Children Bright Future

Research into childhood diseases is the key to solving many of the medical mysteries which affect both children and adults. It is during childhood that the influences of nature and nurture can determine a lifetime of health or disease. Studies by University of Minnesota researchers involving premature babies through adolescents bring the promise of a healthy future for many children.



M

any diseases of adulthood – cancer, heart disease, stroke, diabetes – probably have their beginnings in childhood,” says James Moller, M.D., head of the Department of Pediatrics. “An example is the development of atherosclerosis, which could lead to heart attack or

stroke. There is clear evidence that the risk factors of high blood pressure, diet, smoking, and sedentary lifestyle are already playing a role in childhood. Children and adolescents who don’t exercise, or have a high-fat diet, or who smoke are developing areas of atherosclerosis in their arteries. It’s not manifested for 40 or 50 years when that person has a heart attack. That disease process may begin at age 8 or 10.”

In the recent past, child health research was based largely upon preventing infectious diseases and treating disorders that affect only children. Now, researchers are finding that many adult diseases begin in childhood and can be prevented with early lifestyle changes. To ensure better health for children and adults, the research focus is shifting.

Founded in 1915, the Department of Pediatrics, along with other University of Minnesota colleges, departments, and divisions, has an impressive history of advances in child-based research and clinical treatments. These have included accomplishments in infectious dis-

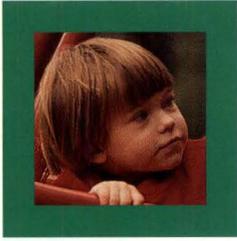
eases; immune system and metabolic disorders; diseases of the brain, liver, kidneys, and lungs; cancer and leukemia; diabetes mellitus; and pediatric health and development.

University Department of Pediatrics graduates account for more than 75 percent of Minnesota’s pediatricians and care for children throughout the United States and around the world.

“This department has done extraordinarily well over the past several decades, maintaining an outstanding program in education, research, and patient care,” says David Brown, M.D., pediatrician and former dean of the Medical School. “In education the Department of Pediatrics has been singled out as having one of the finest pediatric residencies in the United States. Our faculty are well-known locally, nationally, and internationally for extremely high-level expertise in most facets of pediatric care.”

Research has been a clear focus of the department, with innovative treatments and clinical practices growing from the results of extensive study. “We have had a strong tradition of research as a key component. Our National Institutes of Health (NIH) support is the highest of any pediatrics department in the country,” says Moller. “We also have an active clinical program, which comes from the faculty’s research interest and background, that allows us to be on the cutting edge and provide optimum care. In turn, this evolves into a very rich environment for our residents and fellows. It’s an exciting place to work.”

The smallest patients



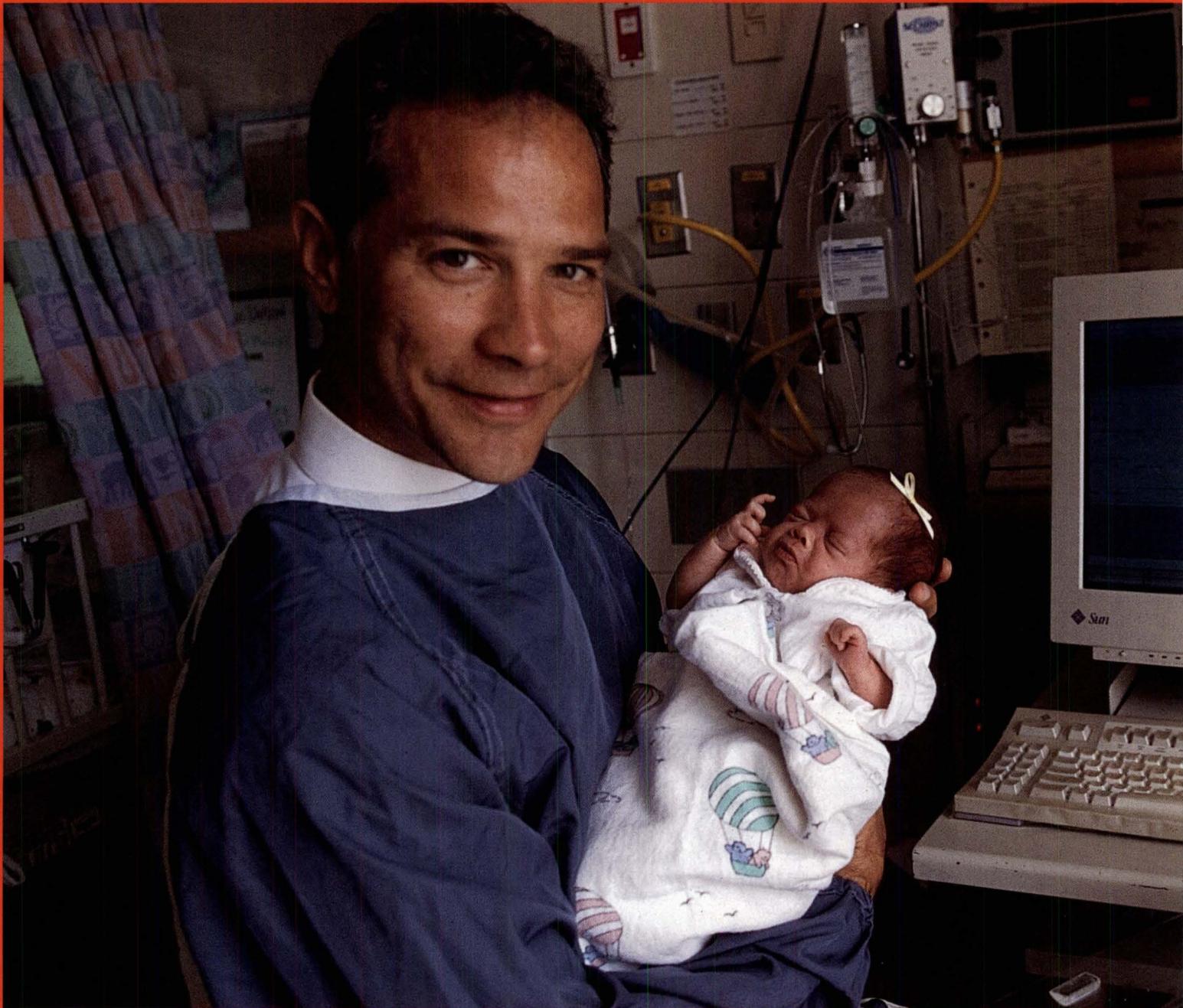
Tiny blanket-wrapped babies await a visit from Michael Georgieff, M.D., in the Neonatal Intensive Care Unit. At one or two pounds they are almost weightless as he holds them and checks their progress.

A professor in the Department of Pediatrics and in the Institute of Child Development, Georgieff is studying newborns who were at neurodevelopmental risk while they were fetuses due to nutritional factors. These babies were born to mothers whose pregnancy complications – such as diabetes mellitus or high blood pressure – placed their infants at risk for nutritional deficiencies which affect brain growth and function.

Collaboration among investigators from pediatrics

and other academic units is key to progress in child-based research. Georgieff is one example, sharing his time between pediatrics and the Institute of Child Development. He is collaborating with Charles Nelson, Ph.D., professor of child psychology and pediatrics, and Raye-ann deRegnier, M.D., assistant professor of pediatrics, to learn more about babies at risk for neurodevelopmental problems.

The main difficulty in studying babies is assessing their development. “Babies’ behavioral repertoire isn’t very sophisticated,” says Georgieff. “A physical exam is not an adequate way to determine their cognitive development or abilities. But Dr. Nelson has adapted a technique, Event Related Potentials (ERPS), that records spontaneous or evoked brain responses (EEG) immediately after the baby is given a cognitive test. He has been able to show in adults down to four-month-old infants that a different EEG pattern is emitted when the subject is shown a new picture compared to a familiar picture.”



"Behaviorally we've known that babies can discriminate something familiar, like the mother's voice, from something new, like a stranger's voice. We needed a test to show this in a reliable, quantifiable, and reproducible manner," says Georgieff. Dr. deRegnier at St. Paul Children's Hospital pioneered such testing in newborns, using auditory stimuli for the ERPS. She has shown that a baby can distinguish its mother from others in its first day of life.

"In two significant risk groups (infants of diabetic mothers and growth-retarded infants) we have found that their patterns are different from full-term babies," says Georgieff. "We will follow these groups long-term to see if these children have mild neurological or behavioral problems. This tells us if these conditions are tied to fetal life or to other factors later in life.

"Our project now is to see if these problems persist beyond the newborn period. So far, the risk group is indeed still showing differences at six and eight months.

The ERPS shows differences at six months and, at eight months, some behavioral differences are apparent. At one year of age the tests showed no real differences in overall development. We will now follow them through five years of age. We've enrolled 120 or more children in the study."

Results from this project will help determine how much nutrition affects fetal and childhood brain development. Further work on neurodevelopmental issues will be done in the Center for Neurobehavioral Development, which was formed to encourage collaboration among multiple colleges and departments, including pediatrics, child psychology, nursing, and others.

Michael Georgieff, M.D., holds 3-pound Breanna in the Neonatal Intensive Care Unit.

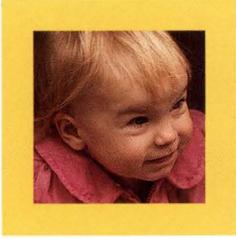
Photo by Tim Rummelhoff

"Minnesota Medical Foundation 'bridge' money helped us get re-funding for the project. It is a classic example of Foundation grant support and it resulted in an additional grant of about one-and-a-half million dollars. We wouldn't have been able to make it without this help."

— Michael Georgieff, M.D.



Learning to grow



Babies, particularly premature ones, have a voracious need for protein. Adults require from .7 to 1 gram per kilo per day of protein, whereas infants need five to six grams per kilo per day if they're to continue to grow at the in utero rate. "Although we don't know for

sure," says Sarah Jane Schwarzenberg, M.D., "we assume that if you're born eight weeks early, you need to grow at the rate you would have grown if you had remained in utero in order for development to proceed as normal."

Schwarzenberg, associate professor of pediatric gastroenterology and nutrition, focuses on two areas of research: finding what regulates protein metabolism in septic newborns under five days of age and learning how the infection affects growth. Sepsis, a serious life-threatening bacterial infection in the blood stream, occurs in 200,000 to 400,000 infants every year.

"We have chosen to study protein metabolism in those babies because it is a central factor in growth," Schwarzenberg says. "Depending on the circumstances, babies may gain weight, and they may lose weight, but muscle growth and length growth is dependent directly on protein metabolism – it's really central to the growth process."

When an infant becomes septic, the metabolism increases to the point where the body breaks down essential proteins in order to fuel itself. "It's sort of like being in a cabin in the woods and breaking down the walls to keep yourself warm – eventually you're going to run into trouble," Schwarzenberg says. Babies have difficulty getting off the ventilator because their diaphragms become so weak, and even moving leg muscles becomes difficult.

Sepsis can be treated with antibiotics, and babies show dramatic improvements within a few days. But Schwarzenberg wants to know what impact the septic period has on future growth and development. "If you look at adult studies, you find that although the sepsis event may be short – one to three days – the period of protein loss is long – 10 to 14 days," she says. "The same is true in a child; you're going from a growth mode to a defensive posture, and that doesn't switch off just because we happened to kill the organism."

An infant's body continues to break down skeletal muscle and other types of protein, a state not advantageous for long-term growth and development. "If a newborn baby is losing protein for the first 14 days of life, that is a huge problem," Schwarzenberg says. Protein metabolism – the building of more body protein – is directly related to growth and development.

"We might be able to make that baby fat during the

14 days, but not long, and not strong," she continues. "Obviously, muscle strength is what you need to get off the ventilator."

Schwarzenberg thinks that if she can document that the extraordinary shift in protein metabolism that occurs during sepsis makes a big difference in development at a later time, then she's in a position to decide how to try and interfere with it. Possibilities include a change in the way babies are nourished during the septic period, or a medical alteration to suppress the agent causing the protein breakdown.

Early studies conducted in conjunction with Drs. Michael Georgieff and Jeanne Mrozek provided preliminary evidence to support the hypothesis that babies were, indeed, losing protein 10 days after a septic incident despite appearing otherwise quite healthy.

"We're going to go after this now with a more subtle and specific method where we use a stable isotope to directly measure the rate of protein synthesis and the rate of protein breakdown in babies with sepsis," Schwarzenberg says.

She contends that many premature babies have significant long-term problems, and that if – on top of that –



an infant fails to have normal protein metabolism for the first two to three weeks of life, a deficit will result that could be difficult to make up.

The heart link



Alan Sinaiko, M.D., professor, is studying risk factors for cardiovascular disease in early childhood. He is looking specifically at obesity, high blood pressure, cholesterol, and insulin levels in school-age children. "We look at these factors at a very early age of child-

hood, and try to see which children are going to be at a greater risk for cardiovascular disease as they get older," he says.

The research isn't looking to prevent heart disease, at least not yet. His group is working to understand what relationship exists between cardiovascular disease in adults and risk factors present in children. "And if we understand that," Sinaiko says, "then the goal would be to determine what we can do in children to prevent the

disease from occurring."

Sinaiko has worked with three groups of children who have been recruited at different times beginning in 1978, with the most recent group having started in 1996. "The purpose of the study is to try to understand how blood pressure and risk factors in children evolve into hypertension and cardiovascular disease itself," he says.

Taken together, obesity, high cholesterol, and high blood pressure form what's known as the insulin resistance syndrome. Insulin resistance is highly associated with both cardiovascular disease and Type II diabetes. "We wanted to look at these factors in children, and to try and understand what is taking place during those first years of life before there are any signs of heart disease," Sinaiko explains.

If people have a better understanding of the importance of developing early intervention strategies, the likelier it is that the disease can be prevented. "Eating patterns, exercising patterns, and lifestyle patterns are established very early on in childhood. If you could interrupt bad patterns, children who are at risk could grow up with a better philosophy about taking care of themselves," Sinaiko says. "I don't have any delusions that we're going to totally abolish premature cardiac diseases, but we can make an impact and help people start to understand the link between their childhood lifestyles and their probable health when they become adults."

In 1996, Sinaiko measured the blood pressures of over 12,000 sixth, seventh, and eighth grade students in the Minneapolis school system, and kids were randomly invited to participate in the study in order to determine how insulin affects risk factors. "Now these kids come to the Clinical Research Center and get what we call insulin clamps," Sinaiko says. "We measure how much glucose, or sugar, it takes to balance out a certain amount of insulin that they receive." Sinaiko also measures lipid levels, as well as height and weight. Kids who require less sugar per unit of insulin are insulin-resistant. "We think being insulin-resistant identifies the kids who are heavier and most at risk for future heart disease."

Sinaiko is collaborating with Drs. Julia Steinberger and Tony Moran in the Department of Pediatrics, as well as with the Division of Epidemiology in the School of Public Health. "The research that we're doing has direct applicability to patients in the community – everything is directly applied to taking care of children, and helping specialists and pediatricians do a better job."

Alan Sinaiko, M.D., administers an insulin clamp to young volunteer Ava at the Clinical Research Center.

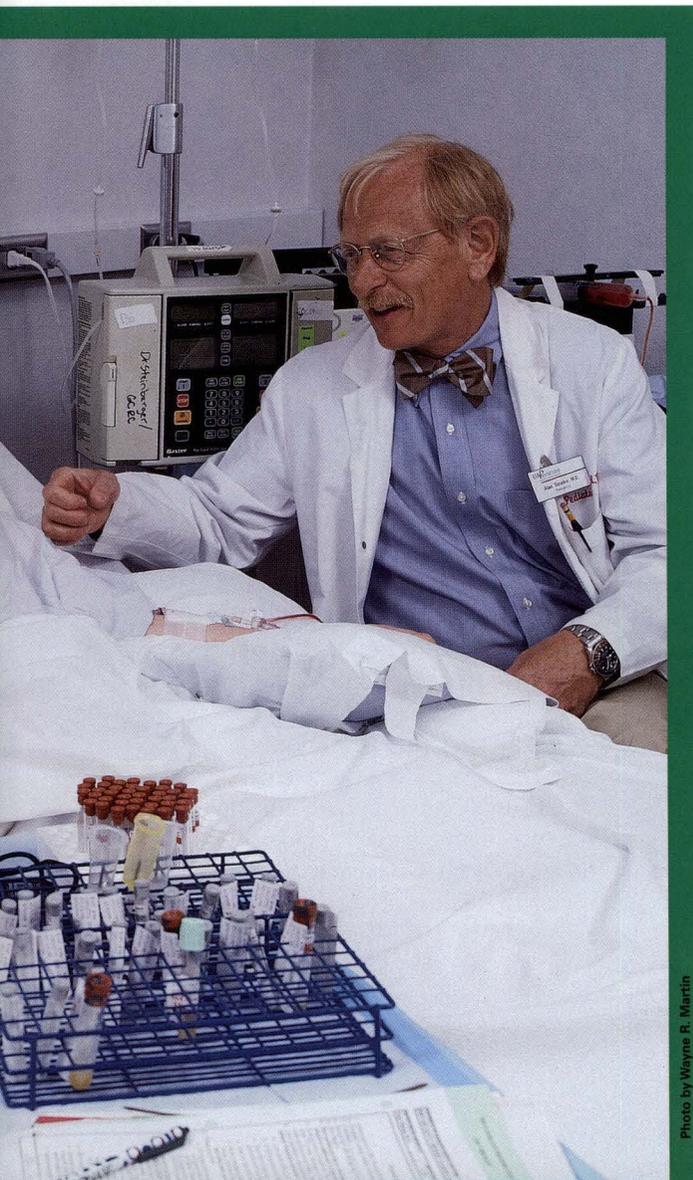
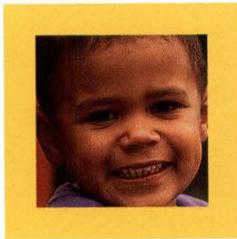


Photo by Wayne R. Martin

Cancer clues



Discoveries in the research lab and significant advances in treatment methods have dramatically reversed the survival rates for childhood cancer. Thirty years ago less than one in three young cancer patients lived into adulthood – today three out of four pediatric

cancer patients survive.

The statistics are better, but they are not good enough. In fact, University of Minnesota Cancer Center faculty would prefer to have no statistics at all. They know it is far better if children never get cancer in the first place, and are focusing on the genetic and environmental factors that lead to the early development of cancer. The key to eliminating childhood cancer may come through prevention – with newly developed genetic tools playing a vital part.

Pediatrics Department Head James Moller, M.D., explains that dietary or other preventive measures need to be undertaken before the earliest changes in cellular transformation occur. He emphasizes, for example, that the degree to which nutritional factors may influence the development of bowel cancer suggests that childhood and adolescence are the times to establish nutritional patterns for a lifetime.

“Once the (cellular) transformation occurs,” says Moller, “cure depends upon conventional approaches using surgery or chemotherapeutic agents which are variably successful. The same conclusion is likely to apply to recently discovered genetic factors influencing other common cancers such as those of the lung, breast, ovary, and prostate.”

There is another reason why early detection or, ideally, prevention of childhood cancer is very important, and it has to do with the long-term effects of cancer treatment. University of Minnesota researchers have taken a leadership role in studying these effects.

Joseph Neglia, M.D., associate professor of pediatrics and epidemiology and faculty member of the University of Minnesota Cancer Center, says that while overall pediatric cancer survivors have a good quality of life, long-term survivors may be at an increased risk for a number of health problems. “The nature of these problems is varied,” he says, “and individuals who had cancer as a child may exhibit a variety of late effects, including second cancers, organ damage, and psychosocial effects. These problems may be predictable and possibly preventable depending on the type of cancer, the treatment regimen, and personal characteristics such as age, sex, and genetic makeup.”

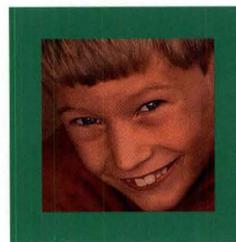
He explains that childhood cancer survivors, for example, are five times more likely to be diagnosed with a subsequent cancer than members of the general population. “The risk of a second cancer is, however, very much influenced by the type of initial therapy and the genetic make-up of the patient. The highest risks are

often associated with the use of radiotherapy, particularly to the thyroid or chest.”

A number of studies are underway around the country, investigating the health of individuals who have been treated for cancer as children since the 1950s. The University of Minnesota Cancer Center’s Les Robison, Ph.D., is currently heading a \$13 million nationwide National Cancer Institute-sponsored study of approximately 15,000 childhood cancer survivors in order to develop a comprehensive picture of the health risks associated with childhood cancer.

“Clearly, the gains made in the long-term survival of children with cancer outweigh the adverse effects from the therapies,” says Neglia. “It is important to remember that late effects can occur, and awareness, early prevention, and early diagnosis may reduce their occurrence and/or severity.”

Behavior for life



Child health concerns continue beyond the cuddly infant or the rambunctious grade-school child. Young people today face many threats to their well-being,

including violence, substance abuse, and sexual health issues. The Division of General Pediatrics and Adolescent Health, based within the Department of Pediatrics, focuses on these and other adolescent health matters.

Iris Borowsky, M.D., Ph.D., assistant professor of pediatrics, is one researcher who specifically examines youth violence and related risk and protective factors. Four years ago, Borowsky and her colleagues received a Centers for Disease Control and Prevention (CDC) grant to study these factors. “We found that things such as family connectedness, discussing problems with family or friends, and emotional health significantly reduce the odds of violent behavior among youth,” she says.

“In one study we found that adding protective factors was more effective in reducing the probability of a youth suicide attempt than was decreasing risk factors. Based on our research, we have made recommendations to health care providers and others who work with youth. It is a strong goal of this division to bring research results to program leaders, policy makers, and others who can use the information.”



Photo by Tim Rummelhoff

This outreach effort reflects the philosophy of the Konopka Institute for Best Practices in Adolescent Health, which emphasizes strengthening bridges between the University and the community to improve youth health and well-being. The Konopka Institute was formed in 1998 as a program of the Division of General Pediatrics and Adolescent Health. It is interdisciplinary and promotes health and resilience in youth.

Borowsky also looked at violence prevention counseling through another study, funded by the Vikings Children's Fund (see p. 11). She examined what primary care physicians were doing in areas like exposure to family violence, television viewing, guns in the home, and corporal punishment as discipline. A national questionnaire of pediatricians and family physicians surveyed their attitudes, knowledge, and the questions they asked of their young patients.

"The study found that most pediatricians do not ask questions regarding exposure to family and community

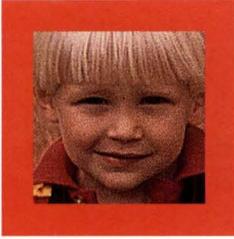
violence, involvement in peer violence, or access to weapons," says Borowsky. "More pediatricians ask about TV viewing and discipline, drug and alcohol use, and depression." One of the main factors in determining if violence counseling was done was whether or not the physician had training in medical school, residency, or through Continuing Medical Education in violence prevention. The majority, over three fourths, said they had received no training or inadequate training in this area.

In July, Borowsky began an effort to develop an intervention in clinical settings to prevent youth violence, funded by the Robert Wood Johnson Foundation. She and fellow colleagues are collaborating with Health-Partners to develop this intervention, which will involve focus groups with adolescents and parents, with experts in violence, and with practitioners. All youth will be followed for the next 18 months to see whether exposure to the intervention results in reductions in fighting behavior and violence-related injury.

Iris Borowsky, M.D., center, studies adolescent health matters.



New tools, new hope



From premature babies to adolescents, University faculty are working to find the answers to the many conditions that affect children – to give them a healthier childhood and a healthier adulthood. Thanks to new-found genetic tools, many of the factors which

identify afflictions such as cardiovascular disease, diabetes, and diseases of the brain, kidneys, and liver can be detected in early childhood. When abnormalities are found early on, lifestyle changes can occur to help prevent the diseases in later life.

According to pediatrics head Jim Moller, “The genetic information revolution will benefit individuals and populations by improved methods to understand disease mechanisms, by improved diagnostic technical skills and techniques, by the development of new therapeutic technologies and, most importantly, through innovative approaches to targeted disease prevention.

“Child health,” he emphasizes, “is the keystone in the health of the nation and the world.”

For more information, see the Pediatrics Department website at: www.peds.umn.edu

“Healthy Children”

by Andrea Bie, Jean Murray, and Jodi Ohlsen Read

University of Minnesota

FIRSTS

- First successful pediatric bone marrow transplant
- First kidney biopsy in a child
- First pediatric open-heart surgery
- First to develop safe neonatal and pediatric hemodialysis
- First to develop successful pediatric renal transplant strategies
- First to develop charcoal hemoperfusion for poisonings
- First to use an incubator to transport infants on planes
- First cystic fibrosis vest

The University WORKING

Community-University Health Care Center/Variety Children's Clinic

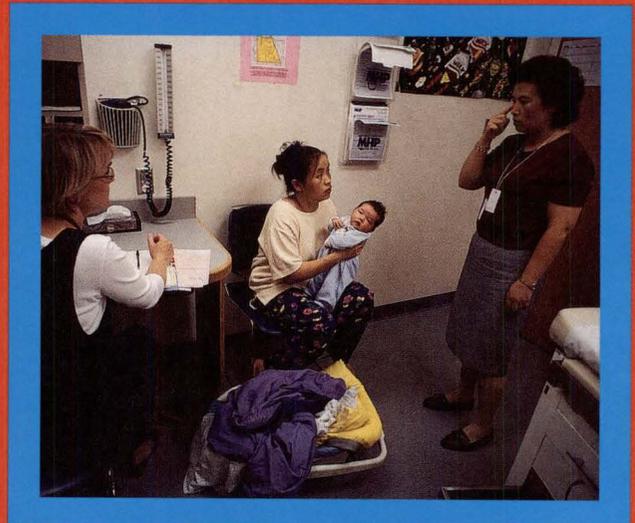
Located in one of the most disadvantaged neighborhoods in Minneapolis, the Community-University Health Care Center/Variety Children's Clinic (CUHCC) provides affordable, accessible health care to more than 8,600 patients each year. The clinic, which was founded in 1966, addresses the health care needs of people in the diverse, multi-cultural Phillips neighborhood.

Dental, medical, mental health, and legal services are all housed under one roof. Patients have access to interpreters, social workers, and even pro bono legal counseling. Many of the services CUHCC has to offer are made possible by the dedication of volunteers. The Legal Clinic, opened in 1993 by Leonard Street & Deinard, addresses problems that doctors and nurses are ill-equipped to solve. “We do mostly family law,” says Anita Martin, Legal Clinic coordinator. “Child custody cases, child support and visitation, substandard housing – there are a lot of uninhabitable houses with people being evicted because they can't pay the rent,” she says. “We make landlords do repairs and fix it up.”

Of the firm's 150 lawyers, over 70 percent participate. “It's the best part of our week,” Martin says. “Being a corporate law firm, the lawyers don't always get a chance to interact with people – this lets them meet a real person with a real problem and they help resolve it in a short amount of time.”

The board of directors for the Variety Children's Association – a long-time supporter of CUHCC – also plays a pivotal role in helping doctors help children. By coordinating events such as the Carousel Gala, the board and other volunteers helped Variety raise over \$700,000 in support of children's health this past year.

For more information, call Variety Children's Association at 612-624-6900.



The CUHCC clinic provides health care and other services to people in the multi-cultural Phillips neighborhood.

and the Community: TOGETHER FOR CHILDREN

University Children's Foundation

Some remarkable people are so committed to increasing children's chances of growing up healthy that they invest their own time and talents to make it happen. These dedicated volunteers contribute in many ways as supporters of the University Children's Foundation – they organize special fund-raising events, give through private philanthropy, and speak out about the need for continued research.

The University Children's Foundation, established in 1988, works to improve lives of children and adolescents through research, which leads to the prevention and treatment of disease. This goal is supported by the research efforts of the University of Minnesota Department of Pediatrics.

"The University Children's Foundation plays a vital role in sustaining the Department of Pediatrics' enviable record of achievements. It provides crucial funding which allows us to encourage and nurture young physicians to become future leaders in pediatrics," says James Moller, M.D., head of the Department of Pediatrics. "UCF supports young scholars whose research is particularly promising. And, much research fostered by UCF support has attracted national funding. Ultimately, UCF helps Department of Pediatrics researchers become world-renowned leaders."

Advancements in research lead to progress in treatment, prevention, and, ultimately, to better health for children. Through the unwavering support of volunteers and community members, the University Children's Foundation is able to continue progress toward a healthier future.

For more information, contact the University Children's Foundation at 612-625-1471 or at www.peds.umn.edu/ucf

Vikings Children's Fund

A visit from a hometown hero delights any child, especially a child dealing with cancer treatments or struggling with another illness. Minnesota Vikings players regularly visit young patients at Fairview-University Children's Hospital as one way to show their support for children's health.

The relationship between the Minnesota Vikings and the University of Minnesota Department of Pediatrics goes back a long way. In 1978, the Vikings Children's Fund was established to provide a way for the Minnesota Vikings organization to help in the fight against childhood diseases. Since then the Vikings Children's Fund has contributed more than \$2.8 million dollars to prevent and treat numerous childhood diseases. This funding has supported research efforts of many University investigators for projects in areas including infectious disease; kidney and urinary tract conditions; general pediatrics and adolescent health; hematology, oncology, and immunology; genetics; and metabolism and endocrinology.

Supporters raise funds by participating in a variety of events, including a snowmobile rally, a Vikings NFL draft party, a motorcycle rally, and a fishing day with the Vikings. In addition, several Vikings players contribute to the fund through pledging \$500 per touch-down reception.

"This support is very, very important," says Alfred Fish, M.D., Department of Pediatrics. "The funding provides grants to support research and helps new doctors get their research off the ground." Seed money from the Vikings Children's Fund has often led to larger grants from agencies such as the National Institutes of Health.

For more information about the Vikings Children's Fund, call Patrick Leopold, 612-828-6578.



Photo by William Stein

Vikings kicker Mitch Berger chats with a patient at Fairview-University Medical Center.

The University of Minnesota Medical Schools in

THE CHANGING WORLD OF MEDICAL EDUCATION

As we enter a new century, those in the field of medicine – students, researchers, physicians, faculty, medical school administrators – face unprecedented possibilities coupled with unprecedented challenges. Incredible breakthroughs in cellular and molecular medicine, the neurosciences, and medical technology bring the promise of cures, treatments, and even eradication of some diseases – but they come with an extremely high pricetag. Research studies require expensive equipment, staff, and dedicated time. Top faculty members who will solve the mysteries require the best possible compensation. Medical students struggle with prohibitive tuition levels, an ever-expanding body of information to digest, ethical dilemmas created by new technologies, and a revolution in the health care delivery system.

A President's Perspective

An interview with University of Minnesota

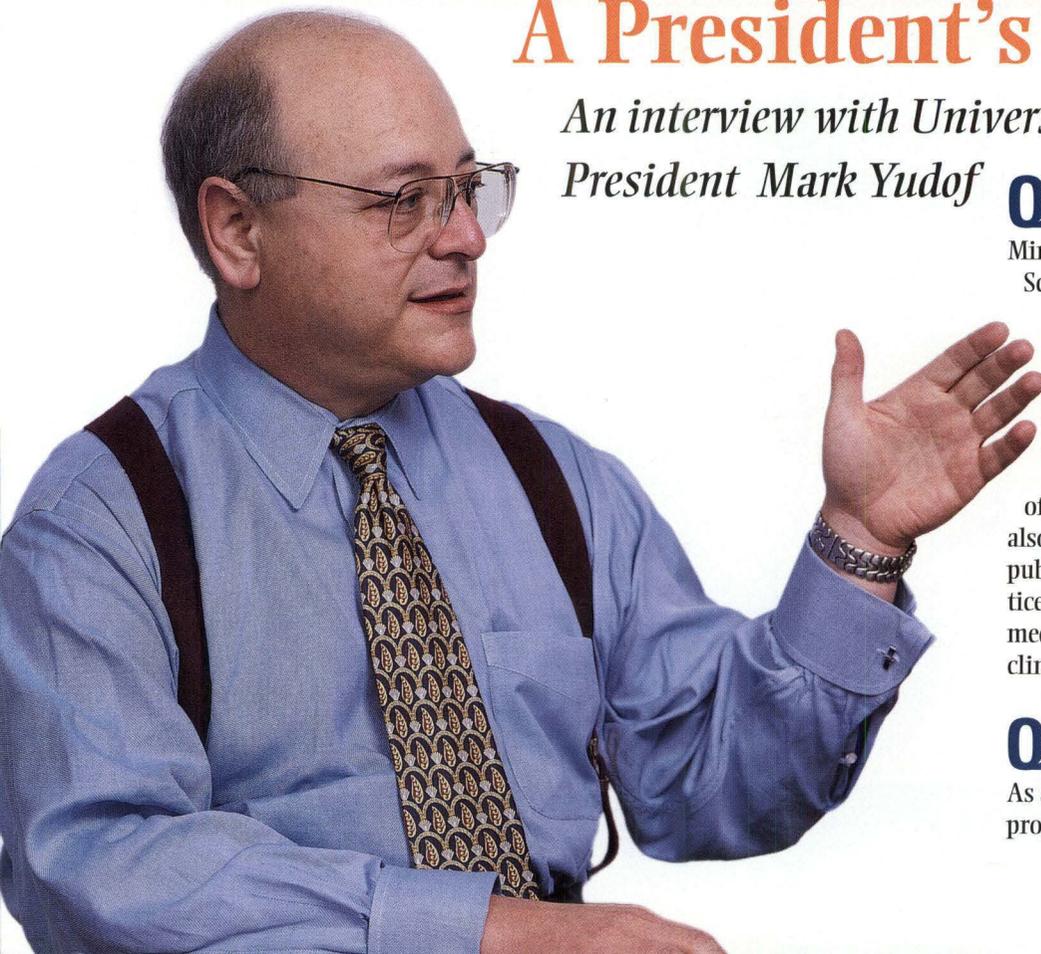
President Mark Yudof

Q What does the Medical School mean to Minnesota?

Minnesota without the University's Medical School is unthinkable. We live in one of the nation's healthiest states. Why? At least partially because Minnesotans have access in their own hometowns to primary care physicians and specialists trained at the University; they have access to the newest treatments and therapies through University of Minnesota physicians; and the University also prepares the state's pharmacists, dentists, public health professionals, and advanced practice nurses. I am proud to be associated with this medical faculty. Their research, education, and clinical accomplishments enrich us all.

Q What role can a president play to strengthen a medical school?

As a president, my job isn't to blindly support a program, but to challenge it to be the best it can



be. I am holding the Medical School to the highest level of performance and accountability. I also am working hard to increase its financial base, including securing legislative funding and encouraging private philanthropy.

Q Speaking of legislative funding, what was your reaction to the actions of the 1999 legislature?

The legislature took an important first step to stabilize our financing by providing the Academic Health Center with \$8 million per year from an endowment funded with tobacco settlement proceeds. You may know that the state provides only 14 percent of the Medical School's budget; in some departments, the support amounts to only 2-3 percent. The legislature's actions, however, do not solve the problem. Funds from the 1999 legislature will replace some of the lost patient care revenues, will expand interdisciplinary health programs, and will begin the move of health professional education into the community. But, it is only a beginning.

Q If you had all of the money you needed, what would you want the Medical School to do?

The challenge isn't to improve the caliber of our programs, but rather, to enable the faculty to do more of what they do best. The quality of the Medical School faculty is outstanding. I'm amazed how often I pick up the *New York Times* and see articles about research that is done here at the University. We need additional funding, including significant gifts from the friends of the University, to expand our research enterprise. We must pay faculty physicians to teach – to reduce the reliance on patient care revenues, which have funded education in the past. I would also use funds to extend the reach of our programs to larger numbers of Minnesotans.

Q What do you tell your friends and colleagues about the Medical School?

I tell them that I'm awed by the faculty and staff. In every meeting and conversation with them, I hear the balance

between cutting-edge science and a deep concern for patients. The University Medical School is among the finest in the world, but our health professionals always have time for the personal concerns of those experiencing pain or fear. I also believe we are fortunate to have the leadership of Dean Al Michael and Senior Vice President Frank Cerra. Their problems and challenges are many, but they manage in open and direct ways that encourage involvement and value intellectual discourse.

Q Does anything about the Medical School keep you awake at night?

Yes. I am concerned about the possibility that we will be left out of the biological revolution. Our investments in molecular and cellular biology along with a state-of-the-art new building will jumpstart us, but it isn't enough. We must continue our commitment to biomedical engineering and, at the same time, build the same type of world-class enterprise in biology. The Medical School is a key player in this extraordinary effort. We already have a tremendous academic base in medicine and agriculture that can be expanded. But we must do it quickly or we will fall behind.

Q How do you think the merger with Fairview Health Services is going?

The sale of the hospital and the affiliation with Fairview were the right decisions for the University to make. Nobody at the time could foresee the difficulties of combining two very different organizations. Even so, we are making steady progress, and the future looks promising. If we hadn't made this painful change, our future would be dark indeed.

Q Who else deserves credit for the progress that is being made in the Medical School?

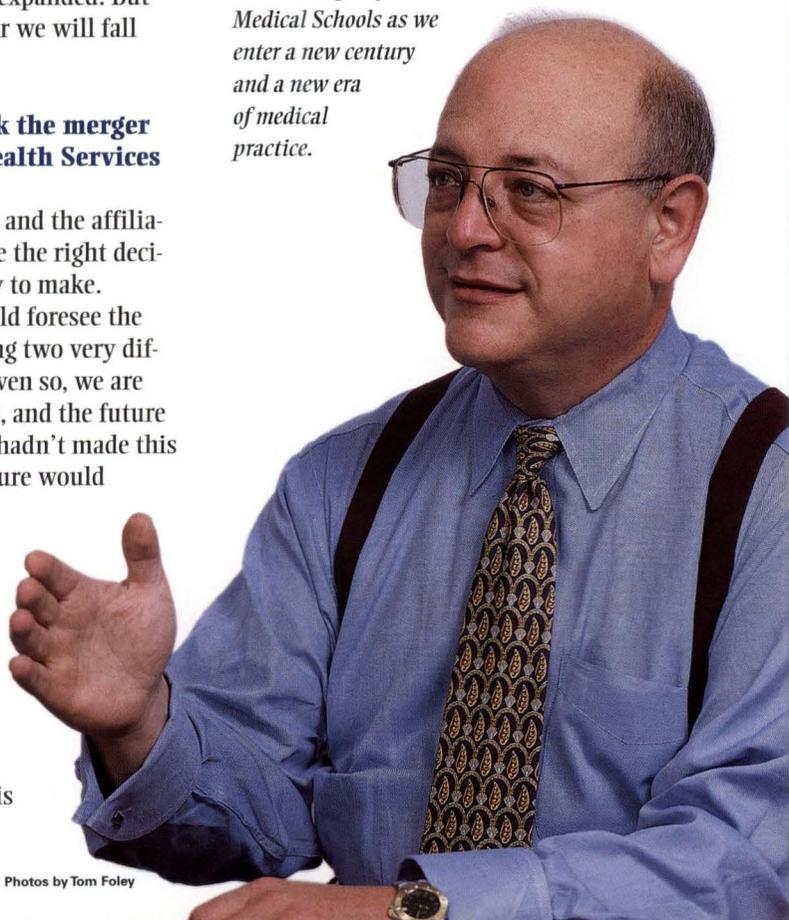
The list is a long one: Governor Ventura for his

tobacco endowment proposal; the Minnesota legislature for its first step to stabilize our finances; the Board of Regents for its firm guidance and endless dedication; the faculty for being the best in the world; the physicians who care for us; the staff who make everything work; our friends and donors who give generously of their time and resources; and the students for whom we all exist. It has taken the whole group to bring us this far. It will take all of us to continue.

Q Any final comments?

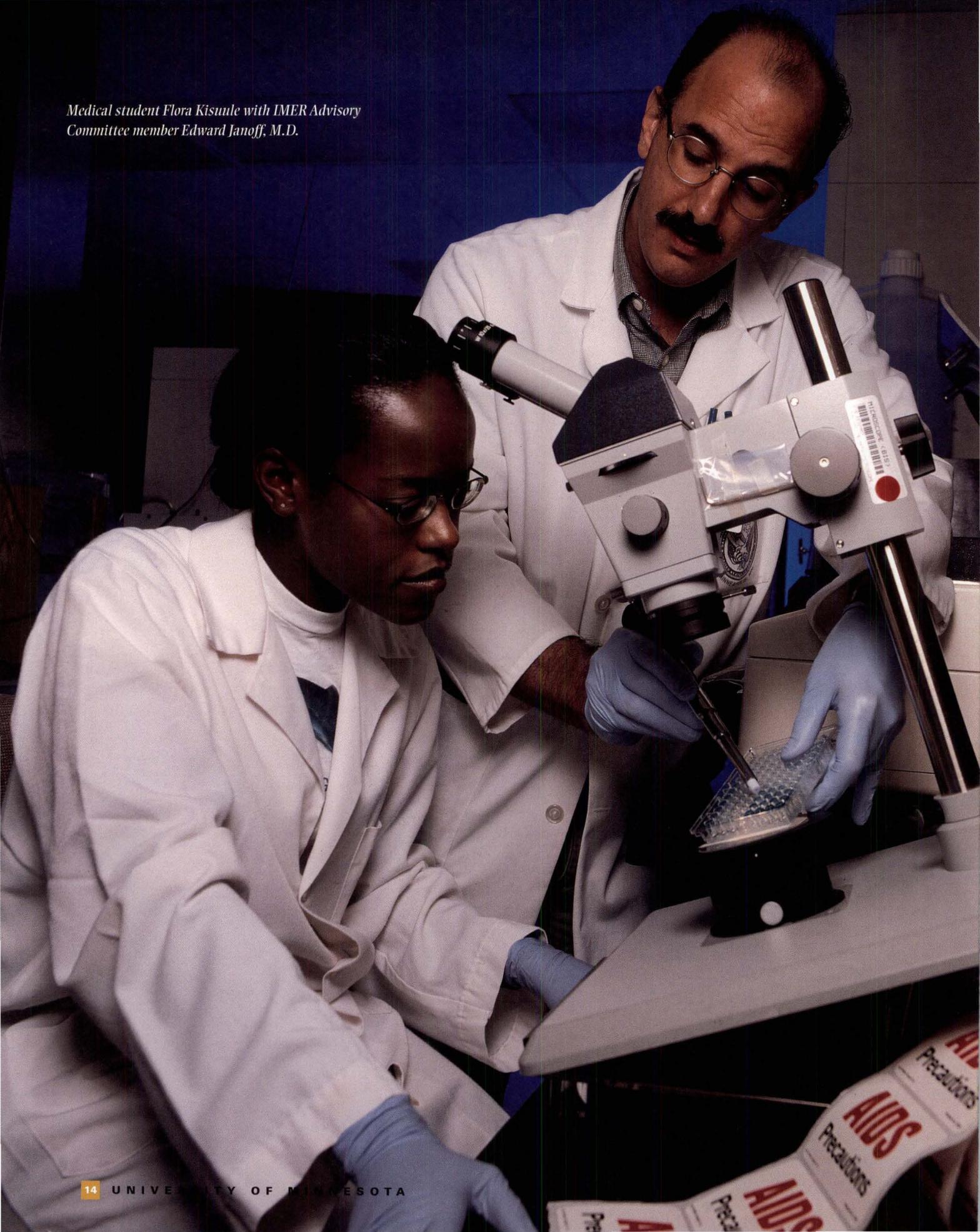
The Medical School is very different than the one that existed several years ago. The research, education, and clinical missions continue to be strong, but the school is better led, more effectively managed, more enlightened about its statewide and national responsibilities, more focused on service (although we have a ways to go), and more a part of the broader university. It continues to get stronger and stronger. For that, we should all be proud.

University President Mark Yudof addressed the challenges of the Medical Schools as we enter a new century and a new era of medical practice.



Photos by Tom Foley

Medical student Flora Kisuule with IMER Advisory Committee member Edward Janoff, M.D.





International Medical Education & Research Program

The world seems to be shrinking as more and more people travel around the globe and as information and products are shared between distant lands. Changes like these are having an impact on health care in Minnesota.

More travel to countries where public health measures and medical care are compromised increases the risk of not only acquiring infections uncommon to Minnesota, but also of spreading them after return. Food-borne infections associated with the globalization of our food supply can bring new challenges for physicians treating the unfamiliar organisms. Greater numbers of refugees and immigrants in Minnesota also create a need for a medical school curriculum that teaches physicians how to handle health problems and cultural perspectives of diverse groups.

To prepare medical students for these challenges and to meet their interests in broadening their educational and professional experiences, the International Medical Education and Research Program (IMER) was formed at the University in 1998. "The driving force behind the formation of IMER was the realization that our medical students are going to be dealing with international medical issues in their practices, even if they never leave Minnesota," says Phillip Peterson, M.D., director, International Medical Education and Research program office.

"Every student that goes abroad comes back and feels that this was the best thing they did when they were in medical school."

DR. PHILLIP PETERSON

"The program's initial focus has been on the medical curriculum. We are trying to provide an infrastructure for University medical students who want to

go abroad, generally in their fourth year. Students have been doing this on their own but there has been no formal way to help them identify sites where they can experience international medicine. This is a very important program. Paul Quie, M.D., [co-director of IMER] and I agree that every University of Minnesota medical student should have the opportunity and be encouraged to have an international experience," says Peterson.

"They gain an opportunity to see health problems that affect a vast majority of

Photo by Tim Rummelhoff

people in the world. When you go to developing countries, you become absolutely overwhelmed with what's going on in most of the world. I think it's very important for all students to find out what is actually the reality for this planet. Every student who has this experience in a developing country has their perspectives, their visions, expanded enormously," he says. "These students have a lot of responsibility that they wouldn't get here because frequently there aren't enough people to deliver health care. They get a lot of hands-on experience. For example, at the clinic in Gambia that Dr. Quie and I visited, the doctors see 200 patients in a morning. It's a very major educational experience as far as global health issues."

From Uganda to Minnesota to China

Flora Kisuule is one University of Minnesota medical student who is taking advantage of this opportunity. Originally from Uganda, she is already experiencing life in a foreign land – Minnesota. Kisuule chose to study medicine here partly because of her desire to travel. "Curiosity and adventure drew me to travel. My parents strongly believe that education isn't complete unless you have traveled. The world is getting much smaller and what is happening in the rest of the world can be happening in your own back yard. To read about something is great; to experience it is entirely different," says Kisuule. Next year, she plans to travel to China to further expand her exposure to new cultures.

"If you've never been to a place, a mentor or adviser is great to help with the contacts," she says. "It takes time to acclimate, to adjust. Having a mentor to ease some of the basic issues makes it that much easier to get into what you really need to do. I chose China for next year and my adviser, Dr. Phil Peterson, has some contacts there so it will fall together easily.

"It's been great for me to be here. I know that I've grown a lot through this experience. I've learned tolerance, resilience, how to manage on my own, how to reach out to people and to leave my comfort zone to forge a friendship. I can take all those lessons into medicine," says Kisuule, former co-chair of the Students' International Health Committee.

The goal of the committee is to raise awareness of international health issues on campus and to establish collaboration between the health disciplines. For more information, visit www.student.ahc.umn.edu/chip/sihc



A journey to Tanzania, South Africa, and India

Medical student Rachel Zent spent the past academic year working and learning in the countries of Tanzania, South Africa, and India. "It was a phenomenal, life-changing experience that will forever impact who I am and who I am to become," she says. "I learned a lot about disease and



Medical student Rachel Zent spent part of last year studying in South Africa.

how to treat it. At times, I was a patient's last resort and the person signing all the orders. But I also learned that there are medical problems that cannot be treated in some situations. Sometimes being a patient's last friend is more important than a last resort."

Zent wholeheartedly encourages every medical student to have experiences in other cultures. "Medically, it can help students find confidence in their own skills as they focus on the

patient – and not on imaging and lab studies because they aren't available in most places. It can also educate students on how to deal with differences in culture and communication barriers."

All students are eligible for the IMER program and all are encouraged to participate. There are no special requirements, other than being in good academic standing, and they sign up for this elective as for any other. Students are encouraged to

plan ahead, beginning in their first year. In the second year, they should choose a site and identify an adviser on the faculty who knows something about that site. There are approximately 45 faculty advisers involved in the program who have contacts in 20 to 25 countries.

The IMER program is fostering similar exchanges with medical students from other countries, inviting them to study at the University of Minnesota. In addition, University students will be able to work with Minnesota organizations which are involved locally with people from many cultures such as the Minnesota Department of Health, Hennepin

County Medical Center, and Regions Hospital. The students rotate through clinics and sites within the Twin Cities that deliver care to these diverse populations.

As international health issues become more wide-reaching, the IMER program plans to continue to grow in scope. One part of the larger vision is to create areas or centers of interdisciplinary excellence that have international health dimensions, such as a possible International Institute of Health, Nutrition, and Food Safety.

For more information, call 612-626-2558 or visit www.med.umn.edu/curr/IMER.

International Medical Education and Research Advisory Committee

Kumar Belani, M.D., Professor, Department of Anesthesiology

Paul Bowlin, M.D., Associate Professor, Department of
Medicine

Robert Elde, Ph.D., Dean, College of Biological Sciences,
Professor, Department of Cell Biology and Neuroanatomy

Barbara Forster, Minnesota Medical Foundation Board of
Trustees

Neal Gault, M.D., Professor Emeritus and Dean Emeritus,
University of Minnesota Medical School

James Hart, M.D., Assistant Professor, HealthPartners Medical
Group, Regions Medical Center

Peter Hesslein, M.D., Associate Professor of Medicine,
Pediatrics

Norbert Hirschhorn, M.D., Public Health Physician

Maynard Jacobson, M.D., Professor, Department of Medicine

Edward Janoff, M.D., Professor, Department of Medicine,
VA Medical Center

David Johnson, Ph.D., Vice President of Programs, Minnesota
Medical Foundation

Christine Johnston, Medical Student Representative

Edward Kaplan, M.D., Professor, Department of Pediatrics

Sarah Kesler, Medical Student Representative

Flora Kisuule, Medical Student Representative

Mary Jo Kreitzer, Ph.D., Director, Center for Spirituality &
Healing, Assistant Professor, School of Nursing

Alan Lifson, M.D., Ph.D., Associate Professor, Division of
Epidemiology, School of Public Health

Robert McCollister, M.D., Associate Dean, Curriculum
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Medicine

Kristine Olson, Medical Student Representative

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Public Health

Phillip Peterson, M.D., Director, University of Minnesota
International Medical Education and Research Program,
Professor, Department of Medicine, Hennepin County
Medical Center

Paul Quie, M.D., Co-Director, University of Minnesota
International Medical Education and Research Program,
Regents' Professor, Department of Pediatrics, Associate to the
Dean, Admissions

Jonathan Ravdin, M.D., Nesbitt Professor and Head,
Department of Medicine

David Thomson, M.D., Instructor, Department of Pediatrics,
Hennepin County Medical Center

Gregory Vercellotti, M.D., Senior Associate Dean for
Education, Professor, Department of Medicine

Patricia Walker, M.D., D.T.M.&H., Medical Director, Center
for International Health, Regions Hospital

Hugh Westgate, M.D., Coordinator of Physician Education
and Children's HeartLink

David Williams, M.D., Professor, Department of Medicine,
Hennepin County Medical Center

Susan Jackson, Coordinator, University of Minnesota,
International Medical Education and Research Program

UMD medical students go to Russia



UMD students toured medical facilities in Russia. Pictured are Deb Erickson, Margaret Redfall, Beth Keller, and Ann Ryan.

Imagine checking into a hospital and being told you have to provide your own medication and bed linens. For many patients in Petrozavodsk and Karelia, Russia, this scenario is not out of the ordinary.

Even though Russian physicians are well-educated, and medical students learn up-to-date information about clinical medicine, problems resulting from the socio-economic conditions in Russia have made it difficult or impossible for doctors to practice medicine efficiently. In many cases, hospitals lack basic necessities – adequate beds, linens, medications, and even bandages.

University of Minnesota, Duluth, School of Medicine students decided they could help make a difference. In 1991, first- and second-year medical students formed the Petrozavodsk Student Exchange Committee (PSEC) in order to promote academic and cultural exchange between medical faculties and students at the Petrozavodsk State University in Duluth's sister city in Russia.

In response to the urgent need

for supplies and medications, the PSEC decided to collect items desperately needed by the people of Petrozavodsk. The project had a two-prong purpose: collecting donations of a variety of medical supplies, and raising funds to get the supplies to Russia. After amassing over 500 pounds of supplies worth more than \$27,000 and raising \$9,850 from cookbook sales, concert proceeds, and outright donations, a delegation of five students and one faculty adviser left for Russia this past July 5.

The donation of humanitarian aid was accepted by the mayor of Petrozavodsk on July 9 at a ceremony attended by city officials, members of the medical community, and various news representatives. The mayor, in an official proclamation, accepted the medical supplies and established a structure for distribution and future acceptance of other medical aid.

The UMD students toured medical facilities and visited with clinicians to determine specific needs for future donations. "One can't help but admire the dedication, persistence, and creativity of all health care personnel in providing the best possible medicine for the patients they can deliver under the circumstances," says Edwin W. Haller, M.D., associate professor and PSEC faculty adviser. "Against odds which would frustrate most medical personnel trained and practicing in the United States, these physicians, nurses, and support staff carry on a daily struggle with the single-minded purpose of saving lives."

For more information, contact Dr. Haller at 218-726-8551.

Annelisa Carlson: First-year medical student

A long-time Minneapolis resident and graduate of Macalester College, Annelisa Carlson began her first year of medical school early by enrolling in the summer anatomy class. Carlson is a non-traditional student in that she recently completed a master's of music degree in piano performance. "I finished my degree about a month before starting medical school," she says. "I knew I had a strong interest in medicine, but I am also a musician. I wanted to improve on that facet of my life before going on to medical school."

Carlson wanted a career that would allow her to work directly with people. "I wanted to use my skills to be of service to others and to be challenged with a lifetime of learning and education," she says. "I picked the University of Minnesota because it has a terrific reputation, and they're working to keep the curriculum on the cutting edge. A lot of the really excellent physicians in the area went here, so they definitely turn out a lot of successful doctors."

Her expectations for medical school are similar to other students – she expects a lot of work, but is hopeful the University will provide a supportive environment. "I'm

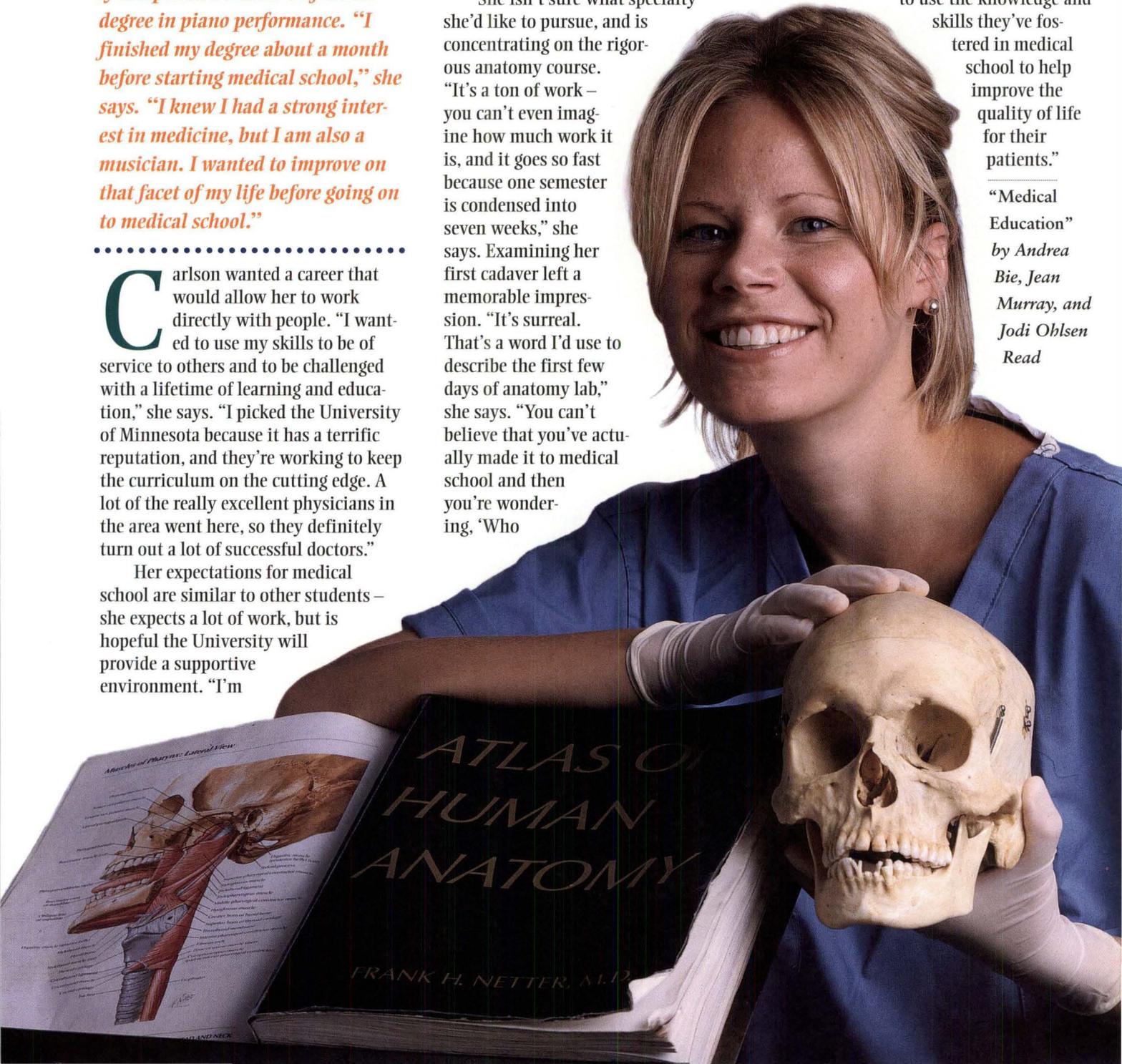
hoping to learn as much as I possibly can in order to be a competent and able doctor," she says. "I expect that I'll be challenged every day, but that I'll be in a supportive environment where faculty and administration look out for the students, and where we're given relevant information on lots of different areas of medicine."

She isn't sure what specialty she'd like to pursue, and is concentrating on the rigorous anatomy course. "It's a ton of work – you can't even imagine how much work it is, and it goes so fast because one semester is condensed into seven weeks," she says. Examining her first cadaver left a memorable impression. "It's surreal. That's a word I'd use to describe the first few days of anatomy lab," she says. "You can't believe that you've actually made it to medical school and then you're wondering, 'Who

is this person, what were they all about?' It takes a little while to adjust to learning from an actual human body."

Though anatomy is just the first step toward becoming a doctor, Carlson is looking forward to the years ahead. She believes "a doctor should most of all be kind and compassionate, and able to use the knowledge and skills they've fostered in medical school to help improve the quality of life for their patients."

"Medical Education"
by Andrea Bie, Jean Murray, and Jodi Ohlsen Read



1998-1999 STUDENT PROGRAM EXPENDITURES

The following medical student expenditures were made possible during the 1998-1999 academic year through the financial contributions of Medical School alumni:

STUDENT PROGRAM AND ACTIVITY SUPPORT

ANATOMY MEMORIAL SERVICE.....	\$ 400
COUNCIL FOR HEALTH INTERDISCIPLINARY PARTICIPATION SPRING RETREAT.....	1,500
CULTURAL DIVERSITY PROJECT TEXTBOOKS.....	800
ENGLISH-SPANISH TRANSLATOR FOR MEDICAL PROFESSIONALS.....	350
GLOBAL HEALTH FORUM.....	1,000
GRADUATION ACTIVITIES, MINNEAPOLIS.....	4,000
GRADUATION ACTIVITIES, UMD.....	2,500
GRADUATION SPEAKER, MINNEAPOLIS.....	2,000
MATCH DAY.....	800
MISCELLANEOUS REQUESTS.....	2,500
NEW STUDENT AND SECOND-YEAR ORIENTATION.....	2,000
OBJECTIVE STRUCTURED CLINICAL EXAMINATION (HONORARIA TO STUDENT PARTICIPANTS).....	4,600
ON DOCTORING (THIRD- AND FOURTH- YEAR SCIENCE, MEDICINE, AND THE SOCIAL FABRIC COLLOQUIA)....	500
PARENTS DAY, UMD.....	2,000
PETROZAVODSK MEDICAL SUPPLY PROJECT, UMD.....	2,000
SCHOLARSHIP, HONORS, AND AWARDS RECEPTIONS.....	6,000
SCUT NIGHT (WARD ORIENTATION FOR SECOND-YEAR STUDENTS).....	1,000
SPRING DANCE, UMD.....	900
STUDENT COMMITTEE ON BIOETHICS.....	1,000
WHITE COAT CEREMONY, MINNEAPOLIS.....	5,000
WHITE COAT CEREMONY, UMD.....	500

STUDENT FINANCIAL AID

SCHOLARSHIPS.....	\$ 666,483
LONG-TERM LOANS.....	540,261

STUDENT RESEARCH

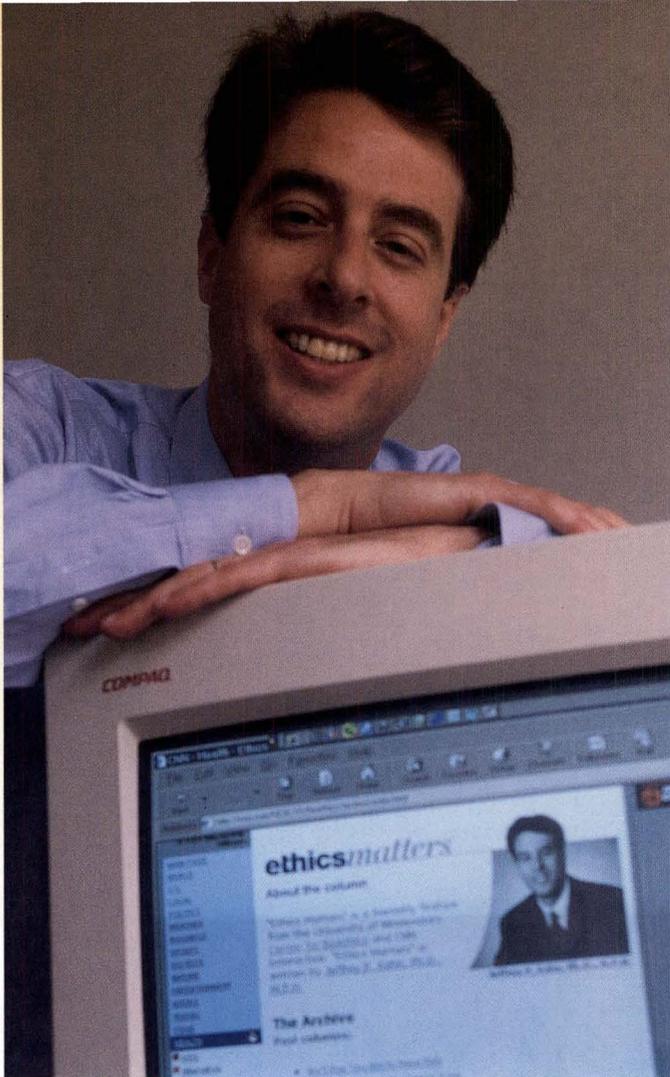
CURRICULUM DIVERSITY PROJECT RESEARCH GRANT.....	\$ 5,000
INDIVIDUAL RESEARCH GRANTS.....	48,000

University of Minnesota MINI MEDICAL SCHOOL

The University of Minnesota's Mini Medical School is a free, six-week lecture series presented by the University's "star faculty." The lectures are open to the public and will cover topics such as anatomy, physiology, infectious diseases, genetics, cancer, and complementary care.

The series will be held on the University of Minnesota's Minneapolis campus Wednesday evenings, 6:30 - 8:30, from October 13 through November 17. For more information or to register, call 1-800-864-0819.

Annelisa Carlson participated in the summer anatomy class.



ETHIC

As a columnist for CNN Interactive, Center for Bioethics Director Jeff Kahn is reaching a broad audience of people whose lives are affected by bioethical issues.

A wealthy couple wants desperately to have a child, but the woman is infertile. Should they be allowed to offer thousands of dollars, plus expenses, to entice a young woman to donate eggs?

A genetic test shows that a woman has a higher-than-normal risk of developing breast cancer. Should an insurance company be allowed to use this result?

A 65-year-old man who is impotent asks his doctor for a prescription of Viagra. Who should pay for his pills?

These are the sort of complex and difficult questions that have long occupied the attention of Jeffrey Kahn, Ph.D., M.P.H., director of the University's Center for Bioethics. Since July of 1998, however, Kahn has found a new and novel audience for his characteristically thoughtful consideration of such matters – visitors to CNN Interactive, the on-line version of the cable news giant.

For Kahn, who posts a new "Ethics Matters" column every other week, cnn.com holds a simple appeal – in a typical day, the web site logs over 10 million "hits." "Even a tiny portion of that is going to sur-



S. Charles Schulz is new head of psychiatry

S. Charles Schulz, M.D., has been named head of the Department of Psychiatry at the University of Minnesota. He was previously professor and chair of the Department of

Psychiatry at Case Western Reserve University and director of psychiatry at University Hospitals in Cleveland.

"Dr. Schulz's outstanding attributes make him ideally suited to lead the psychiatry department and mental health programs of the Medical School," says Alfred Michael, M.D., dean of the Medical School. "His leadership experiences at Case Western Reserve Medical School and at the National Institutes of Health, as well as his contributions to schizophrenia research, will add further luster to our Department of Psychiatry."

He received his medical degree and residency training at the University of California, Los Angeles, and has held positions at the National Institute of Mental Health, the Medical College of Virginia, the University of Pittsburgh, and Georgetown University. He is internationally recognized for his research in schizophrenia.

Ashley Haase named Regents' Professor

Ashley Haase, M.D., professor and head of the Microbiology Department, was recently named a Regents' Professor, one of only 20 such distinctions at the University of Minnesota. Alfred Michael, M.D., dean of the Medical School, said the selection of Haase reflects "his outstanding scientific contributions to AIDS research, his international reputation, and his leadership in microbiology."

Haase's research interests lie in the pathogenesis and control of agents that cause slow infections. His current focus is on the lentiviruses and in particular, HIV and AIDS. He recently discovered a procedure to measure precisely what happens in the lymphatic tissue of HIV-infected patients, which is important because HIV replicates and is stored in the lymph tissue. He is one of only a handful of researchers to discover this, and the first one to develop a method to quantitate it.

SONLINE

ing to market forces; like scarce organs, Kahn writes, they should be distributed "according to medical need and waiting time."

In other columns, Kahn has written about a wide array of subjects, including human testing of an AIDS vaccine, allowing strangers to donate kidneys, and

pass the readership of anything I write for a journal," Kahn says. "It is a different audience, but it has obvious potential."

While this is Kahn's first venture into commercial cyberspace publishing, he has frequently written for, been quoted in, and appeared on other popular media, including public television's News Night Minnesota, National Public Radio, Minnesota Public Radio, *Time* magazine, the *Washington Post*, and the *Star Tribune*, since he took over from Arthur Caplan as director of the center in August 1996. Although these outlets aren't traditional academic venues, Kahn believes they all advance the center's primary mission, which is to contribute to the development of public policy on bioethical issues. "The question is, 'How do you get the most reach with what you do, without descending to sound-bite journalism?'" he says. "Because we all believe the issues are much too complicated for 10-second sound bites."

Kahn has also been discussing with several publishers the possibility of packaging his work along with other material and sending it directly to physicians – obviously an ideal audience for a bioethicist.

Kahn's first CNN column discussed the ethical implications of allowing infertile couples to offer ever-increasing payments to donors (in New York City, a reported average of \$5,000 per donation). Society shouldn't allow eggs to be sold, Kahn argues, just as it forbids the sale of other organs, including kidneys, which can be transplanted while the donor is alive. In Kahn's view, women should at most be reimbursed for expenses plus "a standard monetary incentive to encourage altruism." Nor should donated eggs be allocated accord-

HIV reporting. In a four-part series on genetic testing, Kahn argued that insurance companies should not be allowed to use test results to determine coverage or rates because our knowledge of genetic risks is so sketchy. If companies used this information, he argued, they would effectively discriminate against those few whose genetic risks were discovered first.

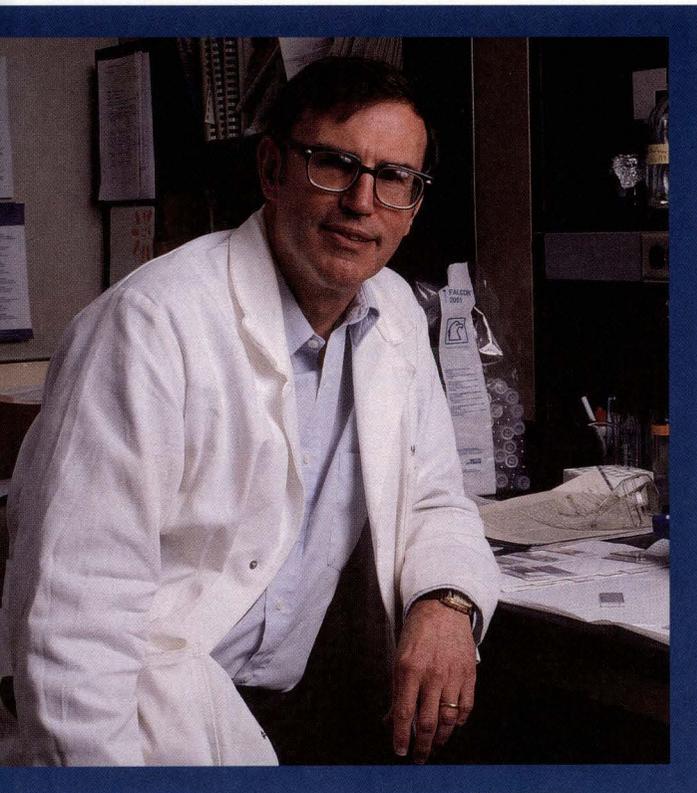
Though Kahn doesn't know how many readers his column attracts, CNN, like many web publications, makes it easy for readers to respond. The column that generated the most response was – surprise! – on Viagra. What makes the issue of payment so difficult, Kahn says, is not merely Viagra's high cost; it is the fact that other drugs with "lifestyle benefits" will surely follow in its wake. Kahn provides a framework for making payment decisions on those drugs as well. The key, he argues, is to "protect our access to drugs and treatments that improve our health by protecting normal functions." So, while some men might use Viagra to enhance their sex life, most rely on it to restore a normal human function. And thus it should be covered.

Sound-bite journalism it's not.

You can find Kahn's columns, including a full archive, at www.cnn.com/health.

by Frank Clancy

Reprinted from the Academic Health Center's publication *Pictures of Health*.



U of M offers country's first graduate-level minor in complementary healing

Doctoral and master's students at the Medical School now have the chance to take classes in therapeutic touch, spiritual and faith practices, and other "complementary therapies." The University of Minnesota is the first school in the nation to offer a graduate level minor in complementary therapies and healing practices, beginning this fall. The courses offer both classwork and research opportunities.

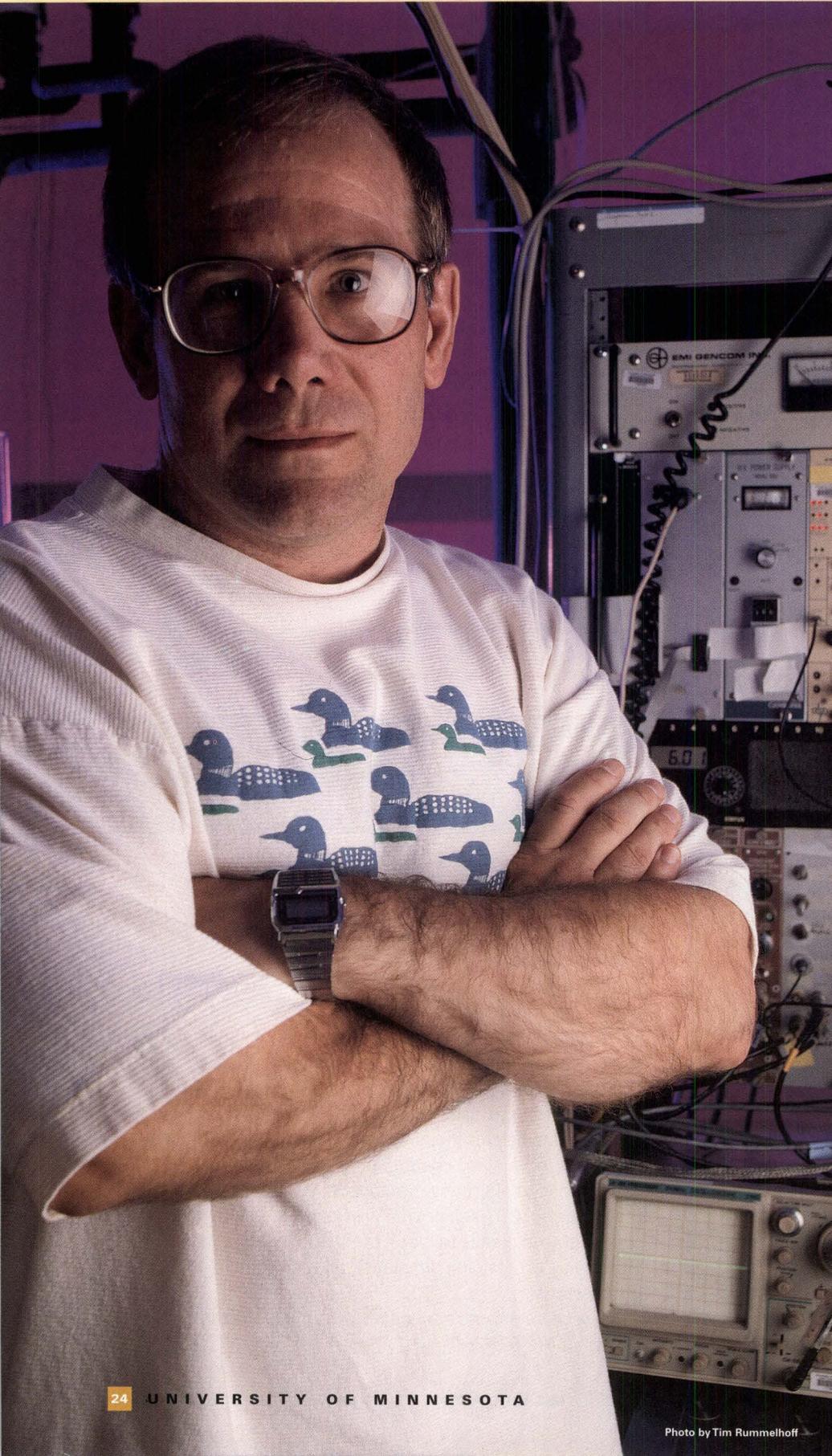
"With the increasing public interest in complementary therapies, it is important that the University prepare practitioners and researchers who can provide persons with the quality care they desire," says Mariah Snyder, director of graduate studies for the minor and a professor of nursing.

The program will encourage scientific research to study which kinds of alternative treatments work. According to Frank Cerra, M.D., senior vice president for health sciences, the program's goal is to teach professionals what types of treatments are gaining popularity, and how to evaluate their effectiveness.

For more information, contact the Academic Health Center at 612-625-2640.

MINNESOTA MEDICAL FOUNDATION GRANT RECIPIENT: DAVID THOMAS, PH.D.

TURNING ON THE



Without a person's conscious effort, the heart muscle pumps blood rhythmically in and out of the chambers. What tells the muscle to contract or relax? Perhaps it isn't necessary to understand how or why it works in order for the heart to continue pumping. But, to know how to repair a malfunctioning heart, researchers do need to understand what makes this crucial muscle work.

David Thomas, Ph.D., director of the Division of Structural Biology and Biophysics in the Department of Biochemistry, Molecular Biology, and Biophysics, is studying the proteins that turn on heart muscle and how they are affected by adrenaline and drugs. He recently received a research grant from the Minnesota Medical Foundation to support his work.

"Two of the proteins found in muscle, actin and myosin, make force, but only in the presence of calcium. You can think of actin and myosin as the molecular motor that creates the force. And, calcium is what the muscle cell uses to turn on its machinery – it's the 'on' switch," says Thomas. "Calcium floats around in the muscle cell, inducing force and movement, and the calcium pump moves it out of the cell so the muscle can relax. Every time the heart beats the pump is pumping calcium out rhythmically. It pumps calcium out to relax and fill the heart with blood; then another protein lets the calcium back in when the heart must contract and pump blood out," he explains.

David Thomas, Ph.D., received a Minnesota Medical Foundation grant to study how the heart works.

HEART

To learn what makes this process happen, Thomas and his colleagues work with isolated muscle fibers, closely examining the roles of specific proteins. "We make the muscle contract and relax, and then we can ask, 'How do the proteins move when you turn the muscle on?' That's the real question, 'How do individual muscle proteins move to make the whole muscle work?'"

Studying specific molecules involves attaching probes (transmitter molecules) directly to them. "It's like putting a bugging device on the molecule. The probe, or label, is only attached to one place on one protein, so that the signal that's coming back is specific for that site. In order to achieve this 'site-directed labeling' we modify the gene for the protein to produce a mutant protein molecule with a built-in labeling site," says Thomas.

"The probe molecules have spectroscopic properties. Spectroscopy is a field of physics in which you shine light on the probe molecule and the molecule absorbs and re-emits the light, and that can be detected by instruments called spectrometers. It's like using your garage door opener; the probe is the only thing in the whole muscle that responds to the signal you send."

The next step is finding out how the protein movements change. "If a protein movement occurs when the muscle is working correctly and doesn't occur when the muscle malfunctions, then that is probably an important protein movement to study," says Thomas.

If he and his colleagues can determine how individual molecules move, he believes they will then understand how muscle works. "It's a pretty good hypothesis that when muscle doesn't work right it's because those molecules aren't moving right," he says.

Many things can affect how well the heart muscle functions, such as drugs and adrenaline. For example, a general anesthetic, which works on the brain and on the muscles, can stop the heart, and this poses a significant hazard for surgical patients.

"We're trying to understand why general anesthetics affect muscle performance, especially heart performance," says Thomas. "We measure molecular motions of the calcium pump, with and without anesthetic being present. What we found is that the calcium pump protein is more susceptible to anesthetic effects in the heart than in other muscles.

"We think this explains why anesthetics affect your breathing less than they affect your heartbeat. Now we're trying to understand which parts of the calcium pump are most affected by anesthetic. We have already identified some movements within the calcium pump that are slowed down by anesthetic. This could lead to a molecular explanation for why anesthetics affect your heart muscle.

"We hope that just this basic understanding – why the calcium pump in the heart is physically more susceptible to the effects of anesthetics – is going to be useful information for clinicians who want to make anesthesia more safe in the future," he says.

That's the idea behind basic research that we do. If you understand in detail how the heart works normally, then you have a chance to understand in detail why it doesn't work when exposed to drugs or disease. Then we can work with clinicians to devise targeted, incisive molecular solutions to medical problems."

Foundation approves faculty grants

The Minnesota Medical Foundation Research and Special Grants Committees recently approved awards totaling \$236,260 – \$101,260 for research projects and \$135,000 for equipment purchases.

FACULTY RESEARCH GRANTS include: *W. Dale Branton, Ph.D.*, Physiology, Structure and function of retina calcium channels; *Eric Dieperink, M.D.*, Psychiatry, Etiology and treatment of depression in patients with Hepatitis C treated with Interferon-Alpha and Ribavirin; *S.H. Fatemi, M.D., Ph.D.*, Psychiatry, Role of Reelin as a biologic marker in schizophrenia; *Linda K. Hansen, Ph.D.*, Laboratory Medicine and Pathology, Regulation of hepatocyte growth and differentiation by B-Catenin; *Clifford E. Kashtan, M.D.*, Pediatrics, Renal failure in hereditary nephritis: genesis and therapy; *Joseph R. Prohaska, Ph.D.*, Biochemistry, Molecular Biology, and Biophysics, Role of altered dopamine-B-monoxygenase in abnormal brain development of copper-deficient rats; *Alan G. Rose, M.D.*, Laboratory Medicine and Pathology, Detection of Chlamydia pneumoniae in senile calcific aortic stenosis and calcified congenital bicuspid aortic valves; and *Michel M. Sanders, Ph.D.*, Biochemistry, Molecular Biology, and Biophysics, Role of the transcription factor AREB6 in prostate cancer.

FACULTY EQUIPMENT GRANTS include: *David M. Brown, M.D.*, Laboratory Medicine and Pathology, General clinic research center - DEXA; *Ashley T. Haase, M.D.*, Microbiology, Instrumentation for genomic profiles; *Ross G. Johnson, Ph.D.*, Genetics, Cell Biology and Development, Shared equipment for gap junction communication studies at the single-channel level; and *William R. Kennedy, M.D.*, Neurology, CARV confocal microscope system equipment request.



UNIVERSITY OF MINNESOTA
ALUMNI ASSOCIATION

50,000 in Y2K!

In its quest for 50,000 members by the year 2000, the University of Minnesota Alumni Association (UMAA) has surpassed the 43,000 mark – a record number. With your help, we can realize that goal of 50,000!

If you're not already a UMAA member, there's no better time to join. Membership provides many benefits, including a free subscription to *Minnesota* magazine, special Internet/e-mail access rates, hotel and car rental discounts, special prices on many University athletic events, and more. One of the newest benefits to be added is special auto and home insurance opportunities through Liberty Mutual.

Your support helps the UMAA sponsor Medical Alumni Society initiatives as well as special mentoring, scholarships, and award opportunities for students. For more information on membership, call 612-624-2323 or 1-800-UM-ALUMS (862-5867) or visit the web site at www.umaa.umn.edu

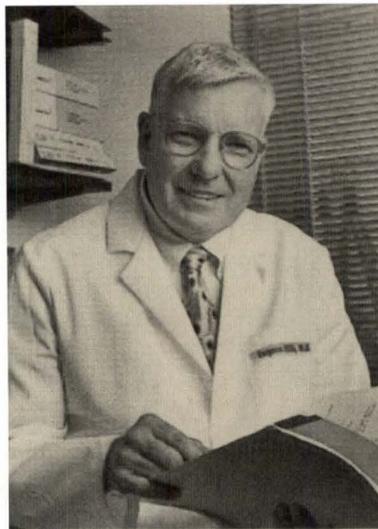
President's Report

With the changing of summer heat to cooler fall, our thoughts turn to the many exciting autumn events, Gopher football, and the start of the school year for medical students. Those of us serving you on the Medical Alumni Society board will be helping start an enthusiastic new program with the Dean's Office. Our goal is to provide each medical student with an active physician mentor.

This program is part of a new theme at the University which focuses on making the entire student experience overwhelmingly positive. By creating a comprehensive educational environment, we hope to create physicians with humanistic values, intellectual curiosity, commitment to self-directed learning, and stimulating and satisfying medical careers.

The members of the MAS board are taking an active role in recruiting metro area alumni and physician friends of the Medical School to serve as mentors to the entering first-year class. The goal is to obtain a mentor for every first-year medical student by the end of October. Eventually, we would like to have enough mentors to pair one with every medical student on the Twin Cities campus.

Clearly, this will require widespread support, and we look to you to help us realize this objective. If you find the project of interest and we have not yet contacted you, please call Dr. Helene Horwitz, associate dean in the Medical School Student Affairs Office, at 612-624-8101.



Our first fall MAS board meeting is always very important, focusing this year on discussing projects that will fit in with President Yudof's vision of service. There truly is a "new" energy to the Medical Alumni Society and the Medical School that I wish all of you could witness.

It does make me proud to be an alumnus of the University of Minnesota.

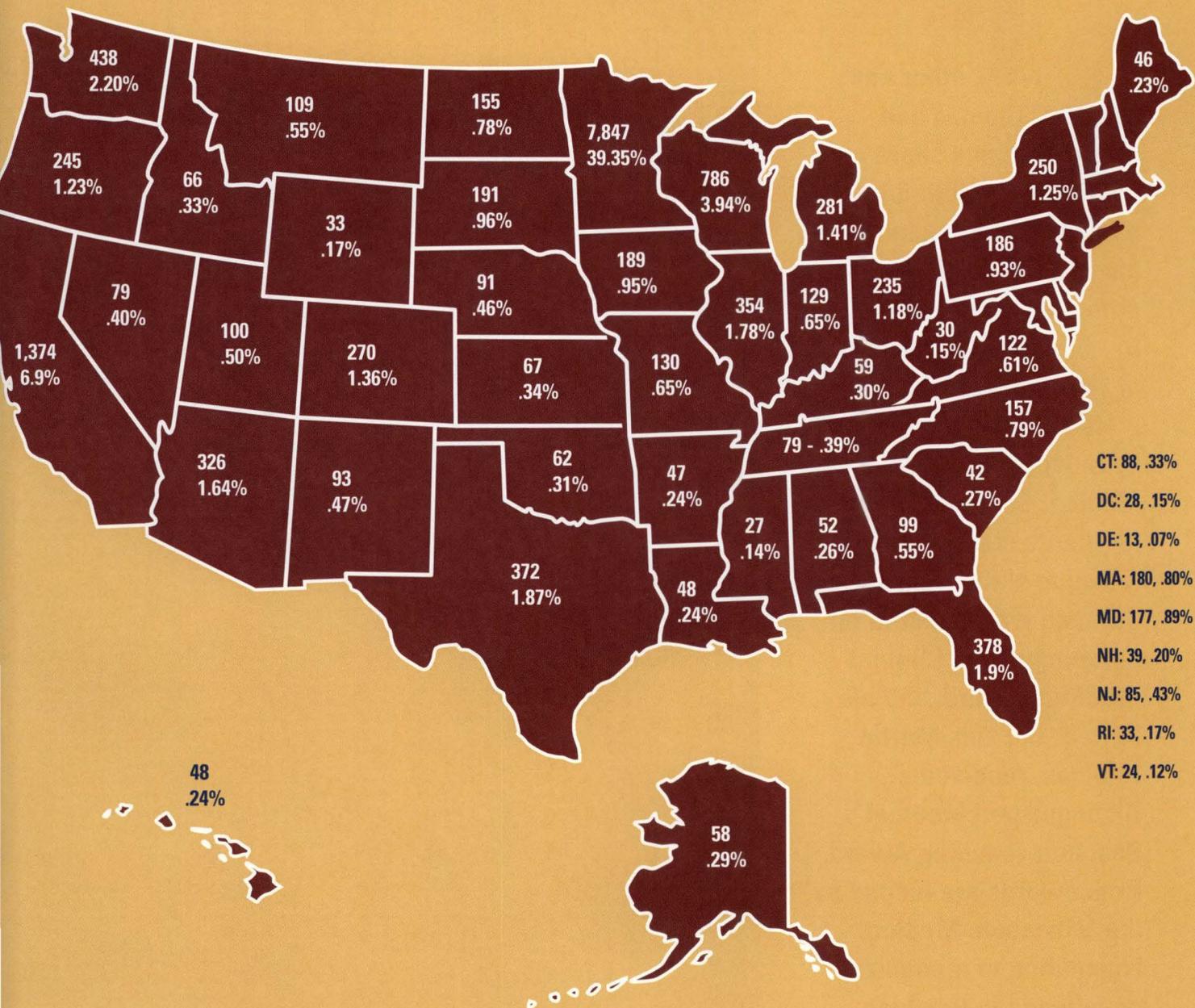
If you have any suggestions for ways to enhance the alumni relations program or assist medical students in their challenging course of medical training, please share them with us. Ideas can be communicated to me via e-mail at olefin@worldnet.att.net or by calling Julie Crews Barger, the director of alumni relations, at 612-624-9161 or 1-800-922-1663.

We look forward to an exciting year of growth and activity and to your participation in our new and ongoing efforts. Until I share our progress with you in the January issue of the *Medical Bulletin*, best wishes for a wonderful fall and holiday season, and of course, celebration as we ring in the year 2000.

Eugene Ollila, M.D., '70
President
Medical Alumni Society Board

Looking for a classmate?

University of Minnesota Medical School alumni are found in every state and many countries of the world. If you have lost track of a classmate, or are curious about which other alumni are in your area, contact the Medical Alumni Society at 612-624-9161 or MAS@main.mmf.umn.edu.



Top figures: Number of alumni in each state

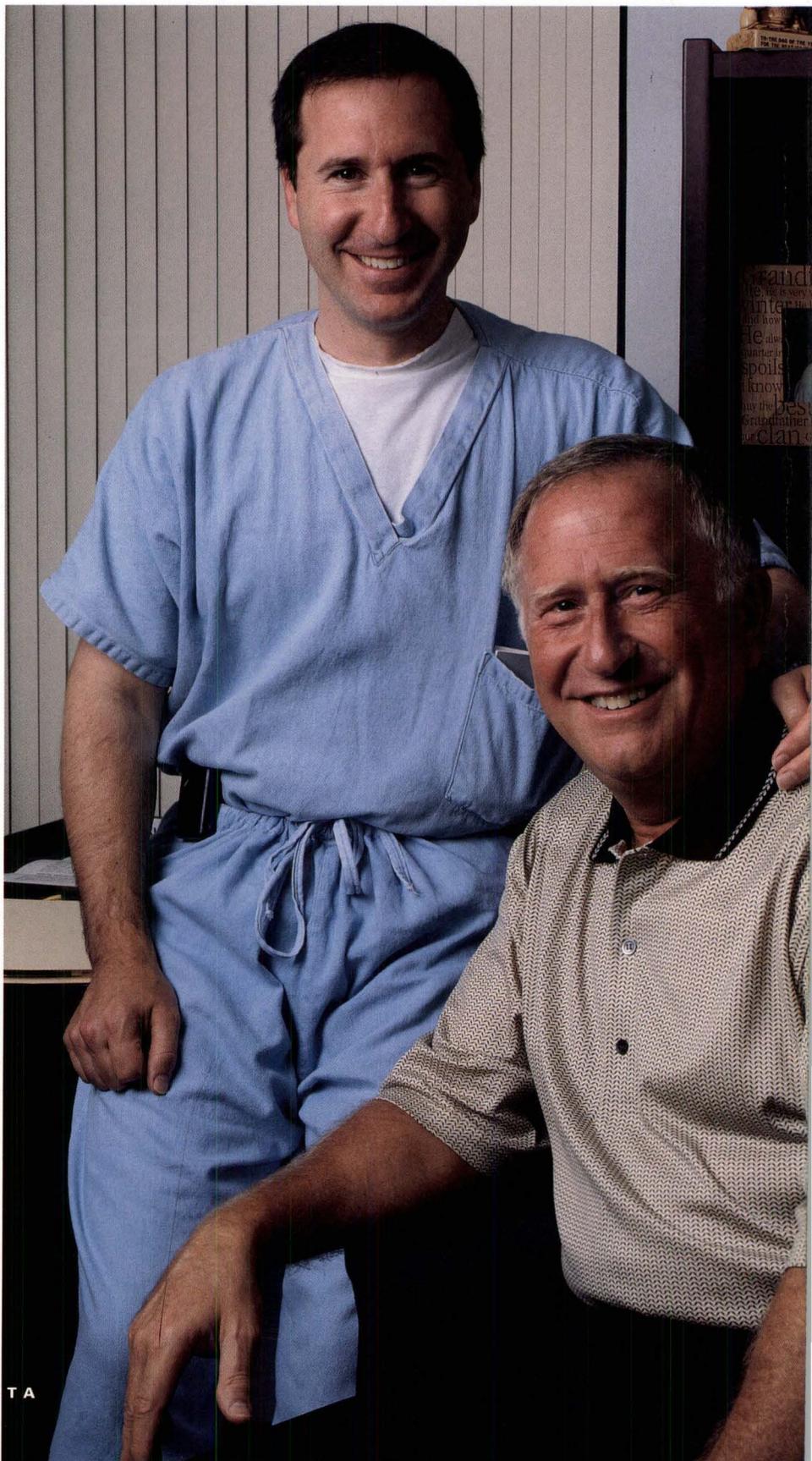
Percents: Percent of the total number of alumni

In the Family

Drs. Thomas and Martin

Father and son, Drs. Thomas and Martin Stillman share a passion for practicing medicine and teaching but have followed distinctly different career paths. Graduates of the classes of 1964 and 1997, both were recently recognized by University of Minnesota Medical School students for their exceptional teaching skills. Tom Stillman was selected for a Distinguished Clinical Teaching Award, and his 33-year-old son, Martin Stillman, received a Distinguished Medical Resident Teaching Award. Both awards are funded by the Minnesota Medical Foundation to recognize excellence in teaching.

University of Minnesota Medical School alumni Drs. Martin and Thomas Stillman.



Stillman



The Stillmans' enthusiasm for teaching – for igniting the process of learning – is contagious. "My style is to get the students to enjoy learning," says Tom Stillman. "I try to help them relax and look upon me as one of them, certainly with respect but without fear, without hierarchy. I want them to feel that it's fine not to know everything."

He uses music, humor, and plain old fun to help his students feel at ease and to make some of the lessons less stressful. Laughing, he tells of using Disney CDs to lighten the mood. "We have fun in many ways, but it is always with respect for the patients. At the end of six weeks, we've really bonded and it's almost sad to part. This style really allows students to feel comfortable and learn a lot about medicine." University medical students apparently agree. They've elected Tom Stillman for a Distinguished Clinical Teaching Award for four years in a row.

Martin Stillman (Marty) echoes his father's sentiments. "Starting new clinical rotations can be stressful and intimidating for medical students. Putting students at ease and supporting them during the educative process is important. When people feel comfortable and not threatened they learn better, feel more confident, and speak up more. Much more learning can be accomplished this way," he says.

"Teaching is obviously very important and enjoyable, but one aspect I especially like is showing people that there is a lot of opportunity in patient care for good-natured fun along with medicine. The patient care always comes first and the supportive and enjoyable environment adds to that care. I do think that one thing my dad and I have in common is our belief that you can get a lot done, teach, and have fun in the process."

Tom and Marty Stillman both practice and teach at Hennepin County Medical Center (HCMC), Tom in rheumatology and Marty as a resident in internal medicine. HCMC is one of a number of medical centers in the Twin Cities area that serve as teaching hospitals for medical students. Although the Stillmans' paths have brought them to the same hospital, the routes have been very different.

"I'm 60 now," says Tom Stillman. "I've been at HCMC since I was a student in 1962, then as an intern, resident, and staff. I served as head of the

rheumatology section for over 25 years. As I approached 55, I was searching for a way to make a difference here. Then, I had an opportunity to see Marty as a student and I became more interested in the life of the medical student. I studied with him, talked with him, worked with him. I decided I'd like to get involved with students again. In 1996, after doing some part-time student teaching, Chief of Medicine Dr. Bill Keene asked me to take over student education for a while. For the last three years, I have been full-time director of Undergraduate Medical Education. It's been a wonderful change in my career."

Marty Stillman's young career has taken a few more shifts, beginning with an undergraduate degree in child psychology, followed by a law degree from the University of Minnesota. While he was finishing his second year of law school, Marty was drawn back to medicine. He took a year off from law school to complete the University pre-med requirements and applied to medical school. Meanwhile, he finished law school and passed the bar exam. Immediately that fall, he became a University of Minnesota Medical School student.

"Medicine seemed like a better fit for me. I can serve as a supportive care giver and be exposed to the interesting science and clinical aspects of medicine," explains Marty. "When I began law school, it had been a natural next step after an internship in the public defender's office. My ultimate goal is to practice primary care medicine, but I've also seen a wonderful use for my legal training in advising and education. I'd like to put together some educational course work for students, residents, and practicing physicians where health and law combine – such as in the areas of ethics, insurance, third-payer liability, malpractice. I'm just beginning to explore this because my focus has been on learning as much medicine as possible."

Tom and Marty Stillman are quick to compliment each other, showing their mutual respect and affection. "He was always very supportive of whatever choice I felt would be rewarding," says Marty. "He never pressured me to follow him into medicine, but I could see the enjoyment and fulfillment he received being a doctor. I had firsthand insight into the rewards of the profession. Now, we don't work together on a regular basis but we do run into each other in the hospital. It is always positive because we enjoy being with each other."

CLASS NOTES

The Class of 1989 celebrated its 10-year reunion in June. Some of the class members provided updates on their careers.

1989

Dr. Brenda L. Wilcox Abraham, Roseville, Minnesota, was co-chair of the Twin Cities Marathon Sports Medicine Conference in October of '98 and '99, and also co-founded the St. Mary's Carondelet Clinic at the Park Avenue Methodist Church.

Dr. Paul T. Amble, Easton, Connecticut, has given presentations at international conferences in San Antonio, New Orleans, and Washington, D.C. on the treatment, evaluation, and placement of high-risk patients. He provides consultation to the FBI, Justice Department, and state agencies on high-risk individuals.

Dr. Robert J. Andruss, Ogden, Utah, received a Meritorious Service Award in 1998 from the United States Air Force.

Dr. Bryan S. Delage, Ortonville, Minnesota, was nominated for the Minnesota Family Physician of the Year in 1998.

Dr. Lisa A. Drage, Rochester, Minnesota, was Teacher of the Year in dermatology at the Mayo Clinic in 1998.

Dr. Susan C. Hasti, Bristol, Connecticut, was La Leche League Practitioner of the Year in 1996.

Dr. Julie M. Hauer, Minneapolis, was named an Outstanding Teacher in Pediatrics at the University of Minnesota in 1998.

Dr. Ida L. Hellander, Chicago, received a personal thank you letter from Dr. Bernard Loun – a Nobel Peace Prize winner – for her work in universal health care. She also has photography on permanent display at the Olivio Health Center for Mexican immigrants.

Dr. Roberto Pineda II, Somerville, Massachusetts, was a visiting faculty member on ORBIS in Jinon, China. ORBIS is an airplane which brings advanced ophthalmic care to patients and educational opportunities to ophthalmologists in developing countries.

IN MEMORIAM

DR. WILLIAM H. "BILL" GOODNOW, Class of 1948, Duluth, Minnesota, died May 3 at age 77. While serving in the U.S. Army Air Corps, Goodnow received premedical training, and was a medical officer in Japan from 1949-50. After eight years of service, Goodnow attended the Medical School, where he was a member of the Alpha Omega Alpha Honorary Society. He practiced in the Department of Internal Medicine at the Duluth Clinic from 1956 until his retirement in 1986. During this time he also served as chief of staff at St. Mary's Hospital and as president of the Minnesota Society of Internal Medicine. He is survived by his wife, Arlys, one daughter, and three sons.

DR. HARRY B. HALL, Class of 1935, Bloomington, Minnesota, died May 19 at age 87. He received the first master's degree in orthopaedic surgery ever given by the University in 1938. He served as a surgeon at the Armed Forces Hospital in England during World War II. Hall started a private orthopaedic practice in Minneapolis in 1942. He spent three months with his son John on a missionary ship in Vietnam called Project Hope, where he performed surgery and taught



Members of the Class of 1989 celebrate their 10-year reunion.



DR. C. WALTON LILLEHEI, St. Paul, died July 5 at age 80. Considered the father of open-heart surgery, Lillehei's pioneering work has had a global impact. As professor of surgery at the University of Minnesota from 1951-67, he was involved in the world's first successful open-heart surgery, the development of the first clinically reliable bubble oxygenator for use during heart surgery, and the first use of cross-circulation for cardiopulmonary bypass. He developed the first wearable pacemaker with Medtronic cofounder Earl Bakken.

Lillehei trained many of the world's notable cardiac surgeons, and his innovations have influenced thousands of students, researchers, and physicians. He published more than 700 clinical papers and was instrumental in the development of Minnesota's Medical Alley, a consortium of approximately 500 medical technology companies which has created one of the state's major industries.

Lillehei is survived by his wife, Kaye, one daughter, and two sons.

C. Walton Lillehei (left) in surgery with Dr. Richard Varco.

medical and surgical techniques. He retired from practice in 1985. He is survived by his wife, Betty, two sons, and two daughters.

DR. WILLIAM B. HALME, Class of 1943, Maplewood, Minnesota, died July 6 at age 80. He was in private practice in Cloquet and Wadena, Minnesota, until 1972. He then joined the psychiatric staff of Willmar State Hospital and in 1978 joined the staff of the VA Medical Center in Tomah, Wisconsin. Halme served with the Army Medical Corps in Japan from 1953-55. He is survived by one daughter and one son. Memorials are preferred to the Minnesota Medical Foundation.

DR. IRWIN H. KAISER died March 17 at age 81. A prominent figure in his field, Kaiser was director of the Department of Obstetrics and Gynecology at the Albert Einstein College of Medicine in the Bronx, New York. He earned his M.D. at Johns Hopkins University in Baltimore, and was commissioned into the U.S. Army Medical Corps upon graduation. He later received a Ph.D. in obstetrics and gynecology from the University of

Minnesota in 1953. During his career, Kaiser held several important positions in medical education, including chair of the National Board of Medical Examiners Test Committee for Obstetrics and Gynecology. He was an instructor and associate professor at the University of Minnesota from 1950-59, and a Professor Emeritus at the Albert Einstein College of Medicine. He is survived by his wife, Barbara, and six children.

DR. SHELDON W. KAYUTE, Class of 1947, Oshkosh, Wisconsin, died January 14 at age 74. He served in the United States Navy and then spent much of his career working in the field of psychiatry. He is survived by his wife, Arlene, and two daughters.

DR. JOSEPH SORKNESS, Class of 1924, Jamestown, North Dakota, died August 31 at age 97. Sorkness interned at Minneapolis General Hospital and Philadelphia General Hospital. He practiced in Rockford, Illinois, and Hankinson, North Dakota, before relocating to Jamestown. He completed postgraduate work at the Universities of Edinburgh and Vienna in 1936, and at

the University of California Hospital in San Francisco from 1940-41. He practiced in Jamestown until 1971. Sorkness was instrumental in the founding of Jamestown Hospital, which opened in 1935. He served on the Board of Trustees at Jamestown College for 32 years, and was board chair for 13 years. He received an Honorary Doctor of Science from the college in 1960. He is survived by two daughters.

DR. HAROLD THYSELL, Class of 1951, Coeur d'Alene, Idaho, died May 11 at age 76. Thysell served with the Army Air Corps during World War II as a P-38 pilot, flying missions in Italy and North Africa. He earned the Distinguished Flying Cross, the French Croix de Guerre, and the Air Medal with seven oak clusters. Upon graduation, Thysell practiced at a medical clinic in Crookston, Minnesota, and in 1967 moved to Idaho to begin a family practice. He is survived by his wife, Midge, and two sons.

Dr. N.L. Gault, Jr.: A LIFETIME OF GIVING

In 1955, when Dr. N.L. “Neal” Gault, Jr. of St. Paul was assistant dean of students at the University of Minnesota Medical School, he observed that some of them were struggling financially. “I saw students who didn’t have enough money to eat,” he recalls. So Gault – who, along with his wife Sarah, attended medical school thanks to the G.I. Bill – would write out checks to tide over these students. “I never had anyone who did not pay me back. Some were afraid they would fail if they didn’t,” Gault chuckles.

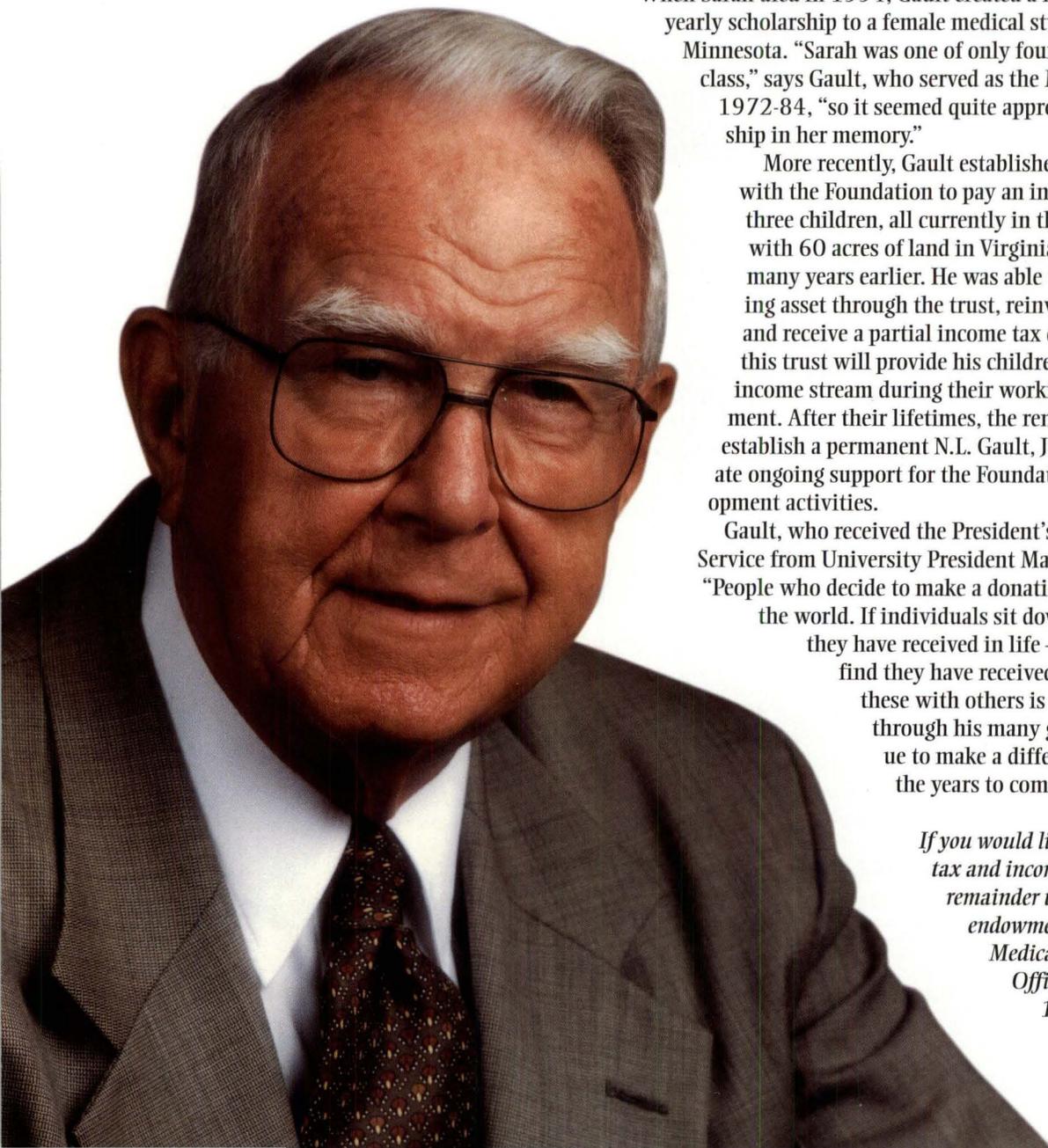
The desire to help is a recurring theme in Gault’s life. When he and Sarah traveled to Korea in the early 1960s to aid in rebuilding the Korea National Medical College, they observed doctors and nurses often working without sufficient electricity, heat, or research equipment. This and other experiences led the Gaults to establish the Medical Student International Study Fund at the Minnesota Medical Foundation in 1986. So far, the fund has helped more than a hundred medical students gain experience in international health issues and conduct research abroad.

When Sarah died in 1994, Gault created a fund in his wife’s name to give a yearly scholarship to a female medical student at the University of Minnesota. “Sarah was one of only four women in our medical school class,” says Gault, who served as the Medical School’s dean from 1972-84, “so it seemed quite appropriate to create this scholarship in her memory.”

More recently, Gault established a charitable remainder trust with the Foundation to pay an income for life to each of his three children, all currently in their 40s. He funded the trust with 60 acres of land in Virginia, purchased with his wife many years earlier. He was able to sell this non-income producing asset through the trust, reinvest it free of capital gains tax, and receive a partial income tax deduction. Gault’s hope is that this trust will provide his children with a steadily increasing income stream during their working years and, later, in retirement. After their lifetimes, the remaining balance will be used to establish a permanent N.L. Gault, Jr., M.D., Endowment to generate ongoing support for the Foundation’s administration and development activities.

Gault, who received the President’s Award for Outstanding Service from University President Mark Yudof in 1998, says, “People who decide to make a donation are the happiest people in the world. If individuals sit down and think of all the gifts they have received in life – gifts of all kinds – they will find they have received so many that to share some of these with others is the way to live.” Certainly, through his many gifts, Dr. Neal Gault will continue to make a difference in the lives of others in the years to come.

If you would like more information about the tax and income benefits of a charitable remainder trust or about permanent named endowment funds at the Minnesota Medical Foundation, please call the Office of Gift Planning at 612-625-1440 or 1-800-922-1663.



The Minnesota Medical Foundation is a non-profit organization which raises and disburses funds for education and research at the University of Minnesota Medical Schools in the Twin Cities and Duluth and the School of Public Health.

For more information about the Minnesota Medical Foundation or to update your address, call or write: Minnesota Medical Foundation, Box 193 Mayo, 420 Delaware Street SE, Minneapolis, Minnesota 55455-0392. Phone 612-625-1440 or 1-800-922-1MMF. Web address: www.med.umn.edu/mmf

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Graphic Design: Feigenbaum Design Group
Printing: Sexton Printing, Inc.

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