

University of Minnesota

Medical Bulletin

A PUBLICATION OF THE MINNESOTA MEDICAL FOUNDATION



Winter 1994

**Granting Support:
MMF Funds Young
Investigators**

The Minnesota Medical Foundation supports the research and educational missions of the University of Minnesota Medical Schools by encouraging private contributions.



ON THE COVER:

Dr. Amy Skubitz of the Department of Laboratory Medicine and Pathology pursues her research in the area of ovarian cancer, helped by an MMF grant for vital laboratory equipment. Left to right, Aris Charonis, M.D., Ph.D., associate professor, Lab Medicine and Pathology; Amy Skubitz, Ph.D., assistant professor, Lab Medicine and Pathology; Effie Tsilibary, M.D., Ph.D., associate professor, Lab Medicine and Pathology; Xiaoling Wang, assistant scientist in Dr. Furcht's lab, Lab Medicine and Pathology; Ting Lu, junior scientist in Dr. Furcht's lab; Aaron Binstock, medical student and junior scientist in Dr. Aris Charonis' lab; and Resa Jones, undergraduate directed research student in Dr. Skubitz's lab. Photos by Nancy Mellgren.



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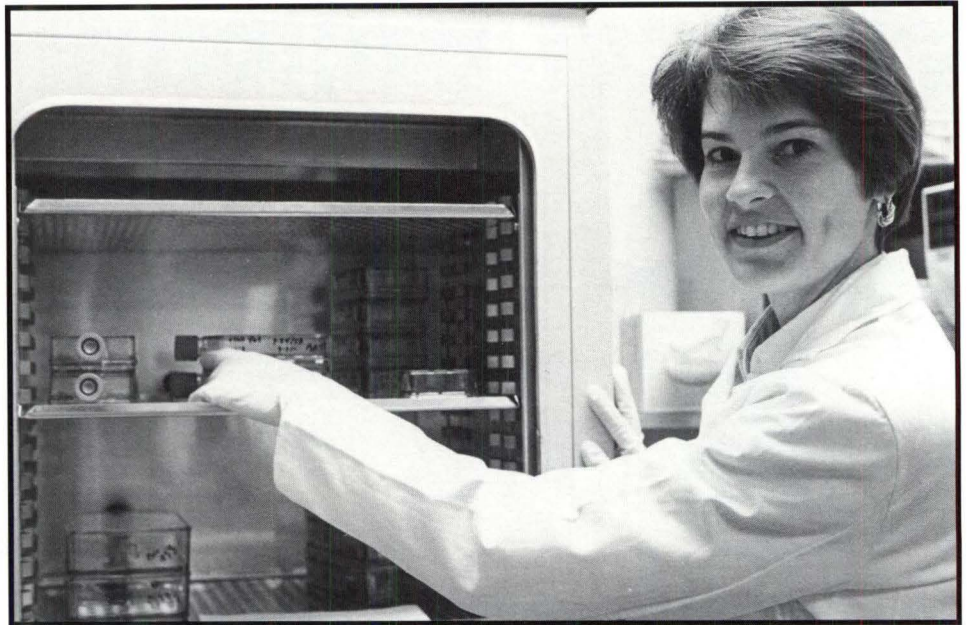
by Peggy Rinard

Research at the University of Minnesota is yielding new approaches for treating this mysterious disorder.

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**Dr. Amy Skubitz
checks flasks of
ovarian cancer cells
to monitor growth.**



Granting Support: MMMF Funds Young Investigators

A single Minnesota Medical Foundation grant can impact the research of many investigators. In turn, the results from that research can affect many more patients and their families.

In the spring of 1992, the Minnesota Medical Foundation awarded \$12,000 to Amy Skubitz, Ph.D., assistant professor, Laboratory Medicine and Pathology, as a matching grant to purchase equipment for ovarian cancer research. When Skubitz applied for the grant, she not only described her research needs and the potential benefits of adding new equipment, she also explained how the machine would help other researchers.

The grant was used to help purchase a scintillation counter, a machine used by many researchers in the Department of Laboratory Medicine and

Pathology and other departments to conduct a wide range of research. Some of the work involving data from the scintillation counter includes research in ovarian cancer, melanoma, breast cancer, prostate cancer, cell division, skin diseases, cutaneous T cell lymphoma, and diabetes.

BY JODI OHLSEN READ

Photos by Nancy Mellgren

Changing the odds

Skubitz's research has focused on laminin and its role in ovarian cancer. Her own life was touched by ovarian cancer when her mother was diagnosed with it over 10 years ago. She knows what it's like to face the daunting odds. Ovarian cancer is the fifth most common cancer and the fourth most frequent cause of cancer death in women in the United States. Only 38 percent of ovarian cancer patients survive for five years. Fortunately, Skubitz's mother survived her battle with cancer and is currently in remission. Information Skubitz gains from her research may help change the odds.

Ovarian cancer usually arises from the surface cells of the ovary, called the epithelial cells. On a healthy ovary, the epithelial cells stick to a membrane surrounding the ovary, the basement membrane. In most cases of ovarian cancer, the epithelial cells divide uncontrolled and may invade through the basement membrane, still multiplying, or they may detach from the basement membrane and float away from the ovary.

Cancer cells that have only invaded the ovary can often be controlled by removing the ovary, and the survival rate is relatively high. However, when the cancer cells float free from the ovary, creating ascites fluid in the abdominal cavity, the cancer is usually much more difficult to manage. Gallons of cancerous fluid can come in contact with many organs, potentially spreading cancer to any part of the body that it touches. At this point the cancer becomes very difficult to stop.

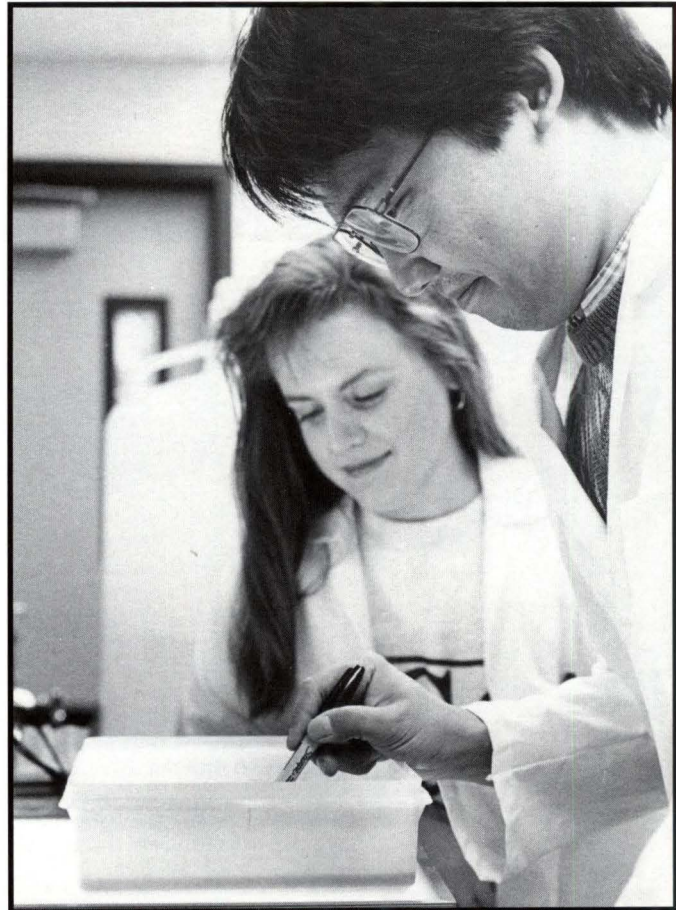
Why do some of the cancer cells invade the ovary and others float away? "The cells' growth, development, and differentiation are controlled by components that make up the basement membrane," explains Skubitz. "One of the components, laminin, is a large protein in the membrane and may play a critical role in the cells' ability to stick or float free."

Skubitz obtains ovarian cancer cells from faculty in the Department of Obstetrics and Gynecology, with whom she collaborates. "Through our research, we hope to find out whether specific parts of laminin can encourage the ovary's epithelial cells to bind to the basement membrane, to spread, or to migrate. We also hope to determine if laminin affects the cancerous cells' ability to invade the ovaries."

Each of laminin's various parts may serve a different function. "To determine which parts of laminin attract ovarian epithelial cells, we test fragments of laminin as

well as small chemically synthesized parts of laminin for their ability to promote cell adhesion," says Skubitz.

Skubitz evaluates different concentrations of the laminin fragments with radioactive cells at varying lengths of time, to see which parts of laminin encourage the cells to stick. To run these tests, Skubitz uses the scintillation



Jennifer Knutson, pathobiology graduate student in Dr. James McCarthy's lab, examines a gel with George Iida, Ph.D., research associate in Dr. McCarthy's lab.

counter purchased with the help of the MMF grant. The scintillation counter counts radioactive material, typically cells. With the machine, Skubitz is able to run the cell adhesion assays quickly and accurately.

Saving time and money

Before the new scintillation counter was in place, Skubitz and other researchers used an older machine that was much less efficient. The new counter is able to analyze more samples at once, using less material. Results that used to take over two hours are now available in 16

minutes, allowing more people to use the machine. Previously it was not unusual for someone to wait two days to analyze data, but now over 30 people can run their tests in the same day.

Not only is the new counter faster, it also saves money and materials. "This machine has saved several investigators over \$5,000 per year in scintillation fluid and

counter supports the work of a group of promising young faculty members, according to Dr. Leo T. Furcht, head of the Department of Laboratory Medicine and Pathology. One of the investigators, James McCarthy, Ph.D., associate professor, Department of Laboratory Medicine and Pathology, is studying the role of another protein, fibronectin, in melanoma.



Dr. Amy Skubitz and Dr. Fred Boyd, assistant professor, lab medicine and pathology, discuss results displayed on the scintillation counter.

plastic vials," says Skubitz. "In addition, we have been able to decrease the amount of radioactive waste considerably." The machine uses 25 times less scintillation fluid to analyze each sample, resulting in 25 times less radioactive liquid waste. With the new counter, there is no need to transfer the samples from plates to vials, which saves money and time, and increases accuracy.

Not only are the results more accurate, the data are also easier to read and interpret. Unlike information from the old machine, the new data are saved on computer memory and the printout is brief and easy to read.

More information about laminin and its role in ovarian cancer could help researchers develop new ways to diagnose and treat the disease. Because ovarian cancer affects the lives of so many women, new developments in treatment and diagnosis could affect an enormous number of cancer patients.

Several other researchers are also conducting studies using data from the new scintillation counter. The

"The Minnesota Medical Foundation is a tremendous help and a valuable support."

McCarthy examines cell adhesion molecules to find out how receptors impact tumor migration and invasion and how they work on inflammatory cells. This research helps

the investigators better understand how tumors invade and how the inflammatory reactions develop. The scintillation counter allows the researchers to analyze how the cells behave and to understand how they are structured. With this extremely versatile instrument, researchers can look at molecules that otherwise could not be seen.

"Without the scintillation counter, we couldn't be doing what we do," says

McCarthy. "The support from MMF is invaluable — not just for this machine. The Minnesota Medical Foundation is a tremendous help and a valuable support." Hopefully, information gained will allow scientists to develop better therapies and diagnosis for melanoma skin cancer.

Research associate Sally Palm, Ph.D., a member of the research team that works with Dr. Leo Furcht, describes some of the research the group does using the scintillation counter, "In our lab we do cell adhesion assays to determine which peptides cells stick to. We coat plates with these peptides and radiolabel cells to test adhesion.

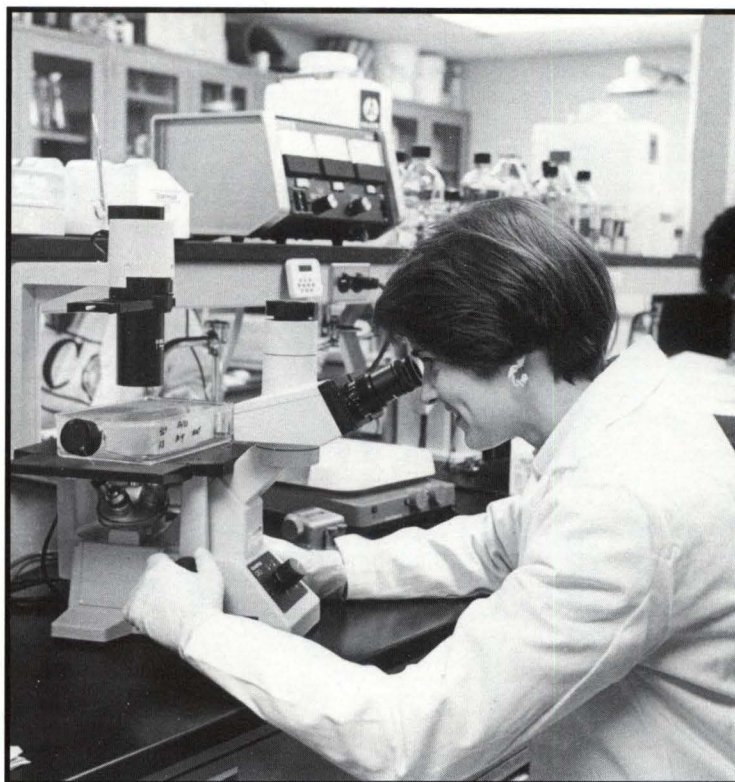
"Results of this research will be important for people interested in biological surfaces, implants, and heart valves. It will tell us if we can treat things like replacement heart valves with peptides to increase their acceptance. Another area that the information can be used in

is tumor cell metastasis," says Palm. "This counter is an all-around winner for us. It really speeds things up and the total volume of sample is much smaller, which cuts down on waste."

Dr. Skubitz examines cultures of ovarian epithelial cells.

Many other investigators and areas of research benefit from the scintillation counter, which is just one example of the numerous ways MMF supports innovative research by Medical School faculty. Minnesota Medical Foundation grants not only allow researchers to purchase equipment and supplies, they often enable them to secure further funding. Small projects are difficult to fund but can provide research data needed to obtain major grants from government and other sources.

The Minnesota Medical Foundation has given 79 grants over the past year, each grant supporting various research projects. One grant, one piece of equipment can affect many areas of research. And the results of that research can affect many lives. ■



More than 50 people use the new scintillation counter, including investigators within the Department of Laboratory Medicine and Pathology, several other researchers, and assistants. Following are a few researchers from the Department of Laboratory Medicine and Pathology and just a sample of the range of research being conducted:

Dr. Fred Boyd, assistant professor, is studying the role of growth factors in suppressing cell division. The focus of his research is to identify and characterize genes capable of acting as dominant suppressors of cellular division and that are involved in the response of cells to the cytokine TGF- β .

Dr. Elizabeth Wayner, assistant professor, is studying the role of T lymphocytes in skin diseases and cutaneous T cell lymphoma. She is examining the biology of a newly described receptor/ligand pair in determining T lymphocyte mediated migration into the epidermis in cutaneous inflammation and cutaneous T cell lymphoma.

Dr. James McCarthy, associate professor, Department of Laboratory Medicine and Pathology and Biomedical Engineering Center, is studying the role of another protein, fibronectin, in melanoma cancer.

Dr. Mark Wilke, instructor, is studying interactions between human keratinocytes and the extracellular matrix molecules type IV collagen, laminin, and fibronectin. Results from this research could be vital information for wound healing and control of skin cancer.

Dr. Aris Charonis, associate professor, is conducting research with basement membrane proteins to understand the molecular basis of diabetic complications.

Dr. Effie Tsilibary, associate professor, is studying the interaction of type IV collagen with other basement membrane components as they relate to diabetic complications. ■

Making the Grade: Changes in the Residency Training Program

Stress and sleepless nights have long characterized residency programs; the Departments of Medicine, Pediatrics, and Neurosurgery deal with these challenges.

By Peggy Rinard

When Dr. Tom Ferris went through his first year of residency training at Johns Hopkins in 1956, he worked day and night without a single day off in exchange for \$25 a month, clean white uniforms, and three meals a day.

“It was an ordeal, like Marine boot camp,” recalls Ferris, now head of the Department of Medicine. “You showed how macho you were by going without sleep as long as you could. It was part of the sacrifice you made to become a doctor, the way you developed discipline. In spite of the hardship, it was one of the most memorable years of my life. But it was unreasonable, and things have changed for the better. For one thing, it isn’t a macho competition. Thirty to 40 percent of my residents are women. And a lot of the residents are married and have families. It’s a different world.”

The tradition of transforming rookie medical students into seasoned physicians by overwork and sleep deprivation has pretty much yielded to internal and external pressures to reform the practice over the past several years. The catalyst for change was the death of an 18-year-old female patient who was under the care of four residents in a prestigious private New York hospital. A grand jury considered charging the young doctors with homicide, but upon reviewing the case, they concluded fatigue caused them to make errors in judgment and indicted the system instead. As a result, New York passed a law limiting residents to 80-hour work weeks in 1989.

The Association of American Medical Colleges subsequently recommended limiting work weeks to 80 hours and most schools, including the University of Minnesota Medical School, have adopted that policy, according to Ferris. Other improvements include less frequent overnight duty and delegation of routine tasks such as drawing blood and starting IV lines to nurses and technicians. Overall, the system has become much more humane and responsive

to the needs of residents, Ferris says. Many academic changes are also being made that reflect advances in medical science and reorganization of the health care delivery system.

Medicine

"If you're not responsive to students' needs these days, you'll kill your program," Ferris says. "Getting internal medicine residents has become very competitive. A third of medical school graduates used to go into internal medicine — now it's only 16 percent. The fact that we're filling all of our slots indicates that we have an attractive program. We pick 46 residents every year from about 300 graduates of American medical schools who apply."

Dr. Mary Salter has been through Medicine's residency program and now works under Ferris as chief resident, overseeing scheduling of the department's 120 residents through one-month rotations at University Hospital and Clinic, St. Paul-Ramsey Hospital, and the Veterans Affairs Medical Center. She came here from the University of Chicago.

"When I was looking for a residency program I had the sense that people here were pretty responsive," she recalls. "Most of the major changes in cutting back hours and frequency of on-call duty had already been made, and this was certainly a very respected program. I felt the residents were happy. I was attracted by the camaraderie of the house staff — people excited about learning and teaching and helping each other out. The faculty were enthusiastic teachers. That wasn't the case with some other programs I visited. I think some of the big teaching hospitals in the East have been much slower to make reforms."

But even in the most responsive program, Salter firmly believes, stress is an inevitable part of becoming a doctor.

"At University Hospital, we have very sick patients because we're a referral hospital and tend to get the complicated cases," Salter says. "Many of our patients are in intensive care and critically ill. That's stressful because you need to be very much

on top of everything that's going on with those patients, monitoring changes and taking action quickly. Often we have to manage several critically ill patients with very different problems at the same time. But most of us wouldn't want to give that up. Even though it's stressful it's what we like about our job and it's the way we learn."

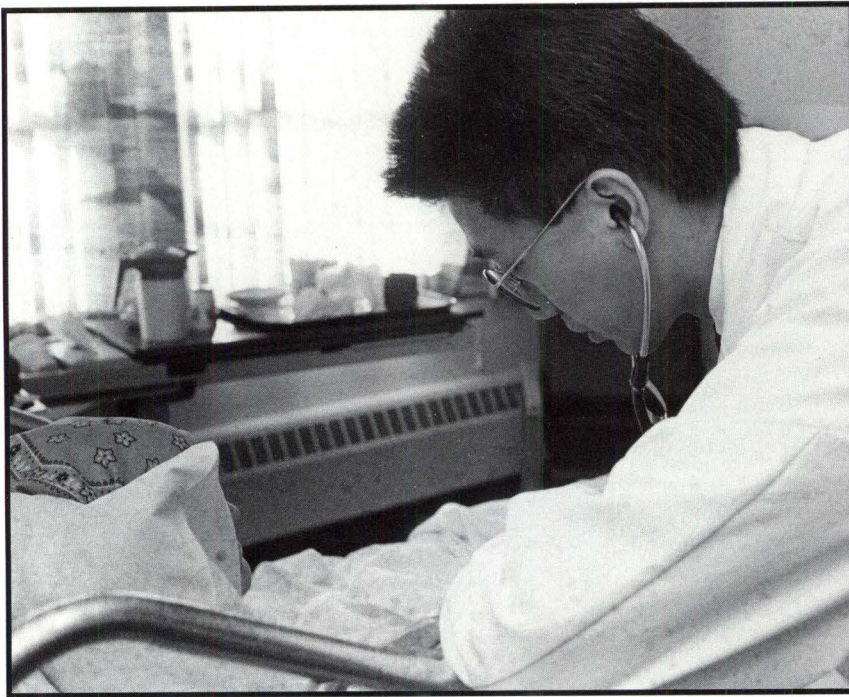
Concern about stress has focused on night call duty, in which residents take turns staying after the rest of their team has gone home to care for patients through the night and admit new patients. While on call, residents are likely to be busier and to make more independent decisions than during the day. In past years, residents had on-call duty as often as every other night.

Several years ago, most medical schools began to reduce the frequency of on-call duty. At University Hospital, the Medicine Department cut back on-call duty to every fifth day for first- and second-year residents and once a week for third-year residents several years ago.

In 1988, the Department of Medicine, Hennepin County Medical Center (HCMC), and the Veterans Affairs Medical Center (VAMC) collaborated on a study to take a closer look at the night experience. They followed 35 internal medicine residents at University Hospital, HCMC, and VAMC for five nights and learned that, overall, house staff spent more time with paperwork than with patients, were interrupted more often than desirable by pages while evaluating patients and while sleeping, and spent 12 percent of their time doing work that could have been done by non-physicians.



Top: Dr. Mary Salter, chief resident in the Department of Medicine, oversees scheduling of 120 residents. Above: Dr. Thomas Ferris, head of the Department of Medicine.



Dr. Yale Wang, first-year resident in the Department of Medicine, checks on a patient.

The study was published in the *New England Journal of Medicine*.

As a result of the study, the Department of Medicine reduced frequency of call at all of the residency program hospitals and restructured workloads to give residents more time with patients and more time to read and learn about individual cases. The fewest changes were made at University Hospital, according to co-investigator Dr. Connie Parenti, assistant professor of medicine and coordinator of internal medicine residents at the VAMC, because many changes had already been made and because the system served residents and the patient population well. At the VAMC and St. Paul-Ramsey, which are busier than University Hospital, teams of physicians were added to work nights only to assist on-call residents, and support staff were also added to handle non-physician duties. At the VAMC, a faculty-medical student service was added to reduce the workload for residents.

"Few changes were made at University Hospital because the team structure, which was designed for patients with complex medical needs, was working well," Parenti says. "The trade-off with night float teams is that you lose some continu-

ity of care. That continuity is much more important for sicker patients so we don't use night float teams at University Hospital. But with the way the on-call schedule is structured, I really don't think there's a problem with sleep deprivation."

Dr. Yale Wang, a first-year resident, agrees. After a rotation at St. Paul-Ramsey, he's now working on a team at the University's Masonic Cancer Center. Working eight to 10 hours a day with every fifth night on call and one day off a week, he doesn't have any complaints about the schedule.

"It's about what I expected," Wang says. "I feel challenged, but not overworked. The experience at each hospital is very different, and I think that's good. St. Paul-Ramsey is very busy — I worked longer hours and saw a lot more patients. Here, the pace is slower and it's more teaching oriented. The attending physicians work very closely with the teams and have a lot of control over the patient's care, which gives the residents less autonomy. But the atmosphere is very supportive, and the attending physicians are very easy to talk to. Some residents tend to prefer the VA because they have the most autonomy there."

Pediatrics

Like the Medicine Department, Pediatrics has taken a long, hard look at its program over the past several years and made a number of progressive changes. When Dr. Alfred Michael took over as head of the department in 1986, he organized a task force to look at the issues and named Dr. Mike Shannon, who had recently been through the system, as its director.

"I was only three years out of my residency and very acutely aware of the problems," Shannon says. "At that time, pediatric interns were averaging 100 hours a week, taking on-call duty every third night, and days off were unheard of unless you happened to have no patients on a weekend. It wasn't uncommon to go three or four months without a day off. It was clear what needed to be done."

Now, pediatric interns (first-year residents) are on-call every fifth night, second-year residents every sixth night, and third-year residents only once a week. The department also limits residents to 80-hour weeks, and tries to keep the patient load at three to six patients at a time for interns and six to 12 patients for supervising residents. During Shannon's internship, he often cared for 10 to 12 patients at a time.

Shannon, Michael, and the faculty have also overhauled the program itself to make it both more responsive to the changing health needs of children and more compatible with the career needs of residents, most of whom go into primary care. They have also added clinical instruction in behavioral and developmental pediatrics, adolescent physical and mental health, caring for patients in underserved rural and inner city areas, caring for abused and neglected children, and caring for children with community physicians — all based on feedback from residents.

"The program had been 80 percent inpatient care and 20 percent outpatient care," Shannon says. "Most of the inpatient training was at University hospital, which is sub-specialty oriented. We had a very strong reputation in specialty training, but half of the graduates were going into general pediatrics and most of those were seeing kids as outpatients. At the same time, pediatricians who went into sub-specialties felt they needed a stronger foundation in general pediatrics.

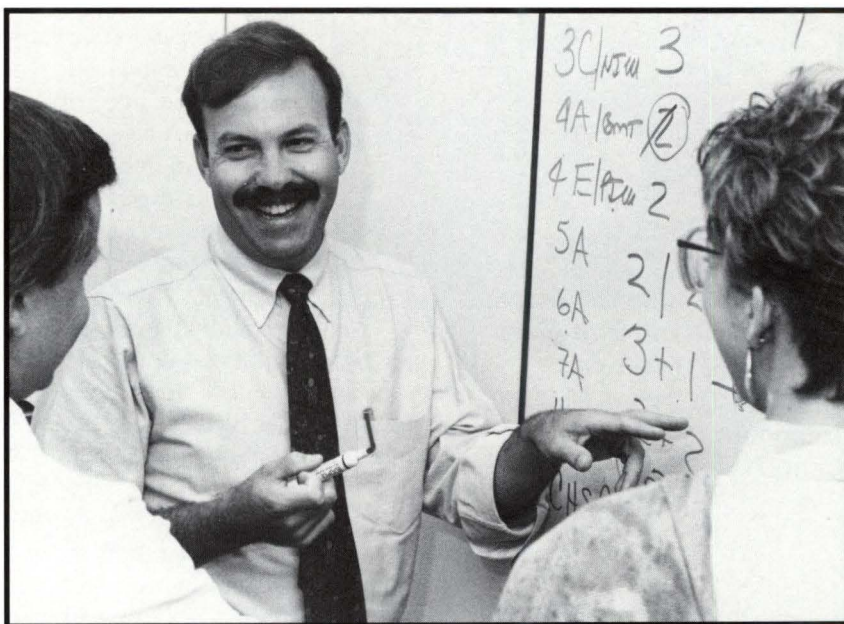
"Currently," he says, "the program provides about a 50/50 split between training in hospital wards and clinics, and between the University hospital and affiliated community sites. Major portions of the general pediatric program are located at Children's Hospital of St. Paul, Hennepin County Medical Center, Gillette Children's Hospital, Ramsey County Medical Center, and Minneapolis Children's Medical Center."

Like Salter, Shannon believes that residency training is going to be stressful no matter what the call schedule or patient

load is or how well the program addresses residents' needs and interests.

"We think there's a lot of stress built into the transitions you have to go through to be a doctor — the transition from medical school to internship, and from internship to being a senior resident with teaching and supervisory responsibilities," Shannon says. "To help people in our program make those transitions more comfortable, we're holding workshops at strategic points during the program to deal with transition issues.

"Usually stress comes from having inappropriate expectations or being put into situations you don't feel equipped or comfortable in," Shannon says. "We want to help people have appropriate expectations.



Dr. Mike Shannon directs the pediatrics residency program.

A certain amount of stress may help people learn. If you're not forced to stretch, you probably won't learn to grow and develop. The question is, how much stress is appropriate? Often, that depends upon the individual. We try to help everyone feel as comfortable as possible yet meet the board's requirements for 36 months of training."

Dr. Ellen Bendel-Stenzel, a second-year resident, has an unusual perspective on the changes that have taken place in Pediatrics. She has two older sisters who preceded her through the program. Her

oldest sister was a resident seven years ago, before the changes went into effect.

"There's a big difference between the experience she had and the experience I'm having," says Bendel-Stenzel. "The schedule is much more reasonable, more accom-

modating, especially for residents who have spouses and families." Bendel-Stenzel's husband, Michael, is also a second-year resident. The two met in medical school and took a week off from their training this summer to get married. "Whenever possible, they schedule our nights off and days off together."

Bendel-Stenzel feels that the Pediatrics Department makes every effort to create a supportive framework that benefits residents, patients, and families alike, but nevertheless, a look at her schedule shows that there are times when stress and fatigue are unavoidable.

The most intense part of the training is two month-long rotations in newborn intensive care and pediatric intensive care. During those rotations, Bendel-Stenzel says, her work becomes her whole life. Each case is a struggle to save a life, and because these patients are so fragile and their conditions can change so quickly, continuity of care is imperative. Residents typically work longer hours on these rotations, are on-call every third night, and have only two days off each month. But Bendel-Stenzel wouldn't have it any other way, and she thinks most other residents would agree with her. The ICU rotations are scheduled to follow a month with no on-call duty and every other weekend off, which helps to offset the stress.

"I've never felt my judgment has been compromised by fatigue," she says. "There are always other residents and attending physicians to back you up when you need it. The day after a night of on-call duty, they usually get you out by 1 p.m. so you

can go home and rest. I'm a night owl, anyway. It might not be for everyone, but it works for me."

Neurosurgery

While residency programs in many specialties have changed rapidly over the past few years, changes are being made more slowly in surgical training programs. For the most part, becoming a surgeon is still a trial by fire.

In neurosurgery, for example, junior residents work about 95 hours a week and take on-call duty every third night, according to Dr. Stephen Haines, director of the residency program. That's better than it was 20 years ago when Haines was on call every other night and worked 110 hours a week during parts of his own residency training at the University of Pittsburgh, but he agrees that things haven't changed that much.

"There's no question that the training is still arduous, intense, and stressful," he says. "In a sense stress has been added by external demands to shorten length of stay. At the same time, technology has made the job more complex. CT and MRI scans allow us to diagnose problems earlier and evaluate them more accurately, but they have also led to the development of more sophisticated and difficult surgical procedures. It's also become more involved to prepare patients for surgery and help them through recovery than it used to be."

faculty and residents alike are at a loss as to how to make the program less demanding without diminishing the training experience or compromising patient care.

"We could limit hours arbitrarily, but that would mean working in shifts, transferring patient care in the middle of an operation or a difficult management problem," Haines says. "Many times decisions during or after surgery depend on an intimate knowledge of what went on earlier in the operation. It just isn't known when it becomes safer to have a fresh surgeon who

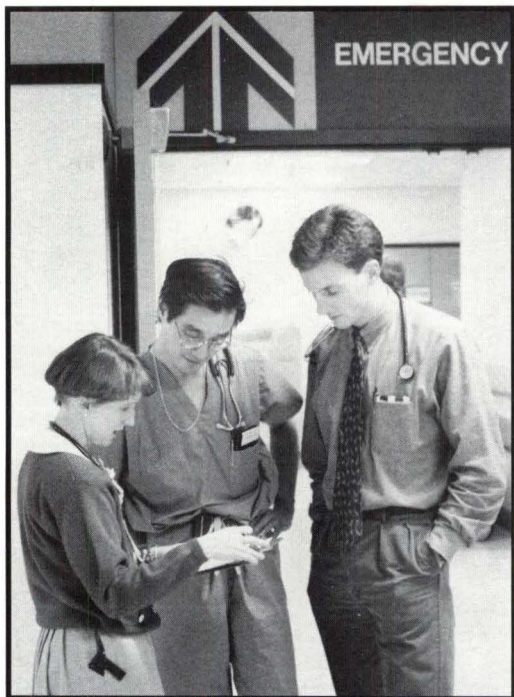


Photo by Rob Beckton

Drs. Ellen Bendel-Stenzel and Henry Thompson confer with Dr. Al Tsai at Hennepin County Medical Center.

is less familiar with the patient take over from the surgeon who may be developing fatigue. For now we emphasize continuity of care and dedication to the patient.”

“I don’t know what could be done differently,” says Dr. John Mullan, chief neurosurgical resident. “There isn’t a shortage of neurosurgeons, so it wouldn’t make sense to train more residents. There wouldn’t be jobs for them. Who else is going to do the work? The attending staff are already working long hours because of their teaching and research responsibilities. If there was a simple way to fix the system, we would have thought of it by now. There just isn’t one.”

The effect of the long hours on the residents’ performance is a primary concern. Haines emphasizes that a resident who stays through the night is always backed up by a chief resident available by phone who is in turn backed up by the attending neurosurgeon.

“There is never a situation in which a doctor who has been up 36 hours has to make a decision alone,” Haines says. “It’s also important to emphasize that no neurosurgical operations are done in this hospital without the attending neurosurgeon present. But part of the training is to help residents acquire the stamina they’ll need to work long hours whether in surgery or following patients postoperatively, because as practicing neurosurgeons they will be expected to do that. We gradually develop that skill and stamina in a supervised situation.”

Neurosurgical training at the University of Minnesota is similar to other programs, according to Mullan. “Some may be less demanding, some more. We’re probably in the middle. The programs at Duke University and UCLA, which are very respected, still require residents to be on call every other night instead of every third night.”

For the most part, the neurosurgical residents are philosophical about their training. “My goal is to be a neurosurgeon, and this is what it takes,” Mullan says. “I

knew what I was getting into. I could have chosen another specialty.”

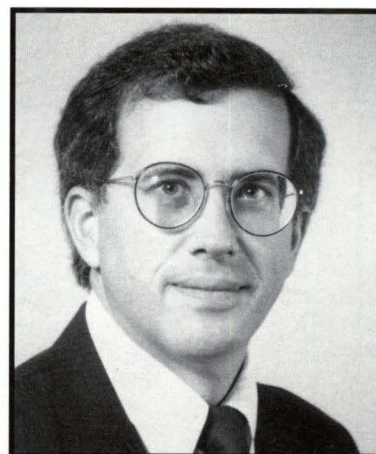
Residents do feel that there are a number of small improvements the Medical School and University Hospital could make that would make their long hours more tolerable, however. These include IV teams at University Hospital, more comfortable lounges and on-call rooms for residents who remain in the hospital overnight, coordination of calls through nurse managers so residents aren’t paged or awakened unnecessarily, hot food after 10 p.m., closer parking, and employee benefits such as dental insurance and tuition remission.

As grueling as the experience is, however, competition to get into surgical programs is intense. The Department of Neurosurgery picks only two residents from 100 applicants every year.

The Future

Although residency training has been going through a transition period for the past decade, new forces are emerging that promise further changes. Health care reform could shift competition from subspecialty programs like neurosurgery to primary care programs like internal medicine and pediatrics. Surgery training programs could well have to revamp if demand and/or salaries decrease. But however things shift, one thing will remain constant — becoming a doctor isn’t easy. As Connie Parenti puts it:

“Even when you’re rested, even when someone else is doing your scut work for you, when the rubber hits the road, it’s a hard job.” ■



Top: Dr. Stephen Haines is director of the neurosurgery residency program. Above: Dr. John Mullan is chief neurosurgical resident.



The Enigma of Epilepsy

Research at the University is yielding new approaches for treating this mysterious disorder.



To the ancient Greeks and Romans, persons with epilepsy were oracles and sages who communed with the gods during seizures. The early Christians feared and shunned them, believing they were possessed by evil spirits. The aura of mystery that surrounded epilepsy in millennia gone by hasn't been completely dispelled by modern medicine. Although it's known that seizures result from a burst of uncontrolled electrical activity in the brain, little is known about the underlying causes. In spite of that, however, great strides have been made in controlling it, thanks to medical research at institutions such as the University of Minnesota.

One of the first of four clinical epilepsy research programs funded by the National Institutes of Health (NIH) in 1975, the University's program under the direction of Dr. Robert Gunnit has attained the distinction of being one of the longest continuously funded programs of its kind in the United States. It also encompasses a particularly broad spectrum of inquiry.

Over the years, efforts have extended from developing surgical methods and evaluating new drugs to studying the epidemiology of the disorder, and, more recently, developing a new method for correlating drug metabolism with dosage in individual patients, mapping genes associated with the disease, and investigating causes of sudden death in epileptics — a rare phenomenon that has only lately been recognized. Current NIH funding for epilepsy research at the University, which is coordinated by the Department of Neurology, is

By Peggy Rinard

Peggy Rinard is a science writer for the University of Minnesota office of Health Sciences Public Relations.

Photos by Nancy Mellgren and DeeDe Van Slyke.

\$750,000 per year through 1996.

Epilepsy, a word of Greek derivation meaning “to seize,” is the generic name for a group of brain disorders characterized by brief episodes in which movement, consciousness, behavior, and sensation are altered. There are more than 30 types of seizures, the most common of which are classified as either partial or generalized. Partial seizures typically arise in and remain confined to one part of the brain and often affect only part of the body. Generalized seizures appear to involve the entire brain from the onset, and range from a brief loss of awareness — called absence or, in older terms, petit mal seizures, to convulsions affecting the entire body — called generalized tonic-clonic or grand mal seizures.

In some patients epilepsy can be traced to brain tissue damaged by head injuries, strokes, brain tumors, infectious brain disease, or abnormal brain development. In more than half the cases, however, the source is unknown and no damaged brain tissue can be found. Experts speculate these are caused by disturbances in brain chemistry.

There are an estimated 2.5 million persons with epilepsy in the United States. Standard anticonvulsant medications control seizures in about 70 percent of those treated, but the medications sometimes carry side effects such as drowsiness, behavioral changes, nausea, hair loss, weight gain, dizziness, and blurred vision.

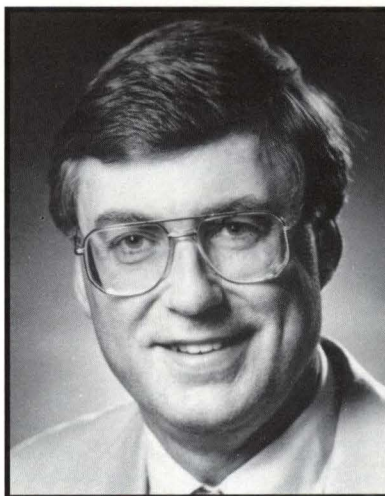
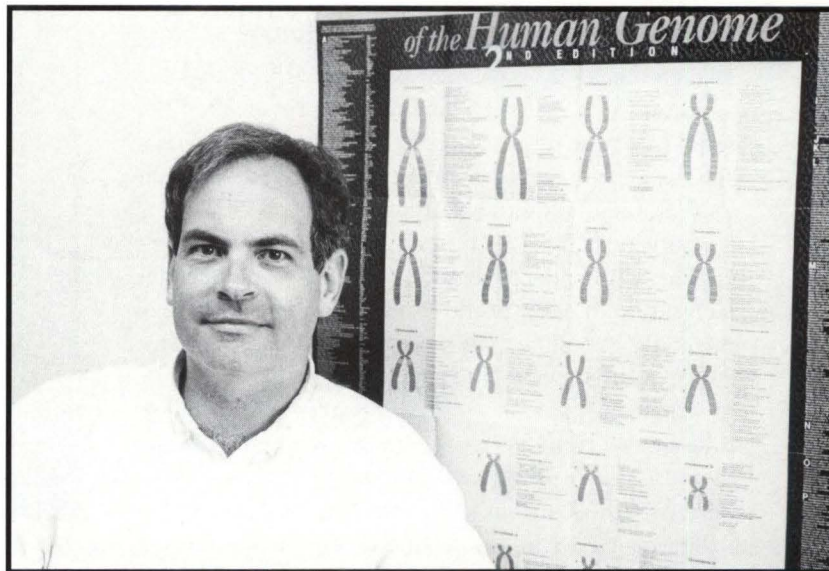
Surgery center

Clinical research at the University of Minnesota focuses on developing new methods to control intractable epilepsy (seizures that can't be controlled by standard medications) and improve pharmacotherapy for all epileptics. One of the most dramatic approaches for treating intractable epilepsy is surgical removal of epileptogenic tissue — tissue where electrical activity is generated.

The University has been involved in the development of epilepsy surgery since the 1950s, and its surgeons have performed more than 600 operations for epilepsy since 1980. Depending upon the type of epilepsy and the focus or foci of electrical activity, seizures can be relieved by removing part of a lobe of the brain, the cortex, severing the corpus callosum — which connects the two halves of the brain — or even removing an entire

hemisphere of the brain.

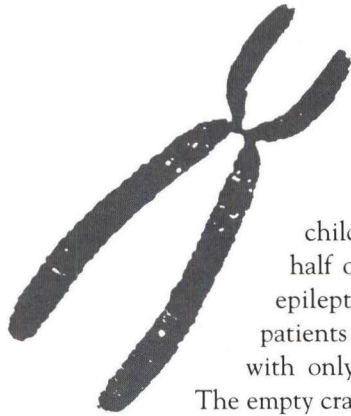
The most frequently performed surgery is removal of the anterior temporal lobe because epilepsy is often generated from that part of the brain. Severing the corpus callosum stops erratic electrical activity from spreading from one half of the brain to the other and



Above: Dr. Harry Orr.
Left: Dr. Ilo Leppick.

prevents severe seizures that cause people to lose consciousness suddenly and sometimes to fall and injure themselves. Surgeons at the University have done about 160 of these operations — more than any other medical center in the country.

Although hemispherectomies have recently been featured in the media, the procedure actually dates back to the 1940s, and they have been done at the University since the 1950s. These operations are typically done on



children who have tissue in one half of their brain that is entirely epileptogenic. Surprisingly, these patients are able to function quite well with only the remaining hemisphere.

The empty cranial cavity fills with fluid and function isn't usually impaired by the operation.

"These children already have significant loss of function on one side because the affected half of the brain is severely damaged," says Dr. Robert Maxwell, professor of neurosurgery. "Actually, function improves after the surgery because prior to surgery the abnormal electrical activity generated in the damaged half makes it difficult for the other half of the brain to work."

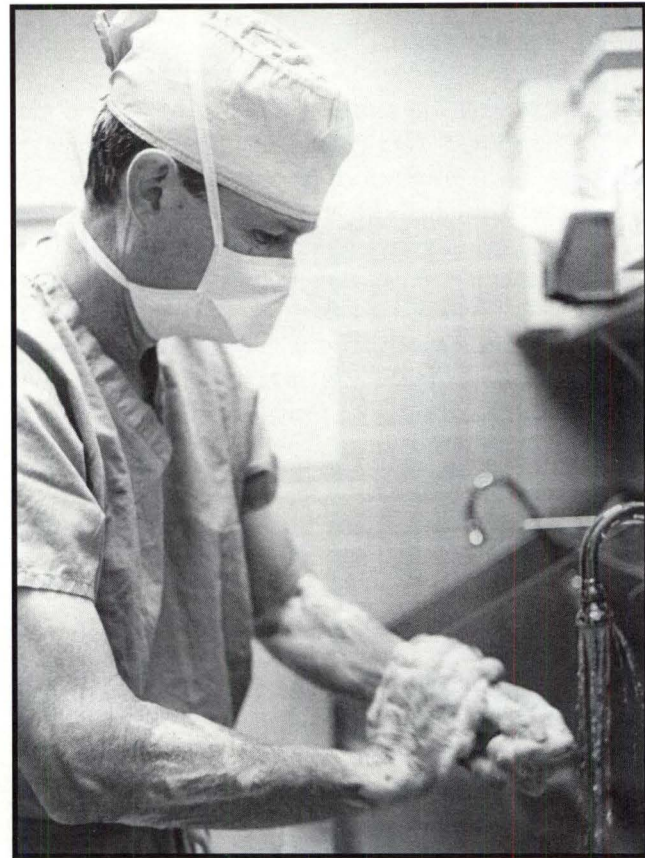
Surgery controls seizures in about 75 percent of patients who undergo surgery, and lessens the need for medication in many of the remaining cases. In spite of this, only a small percentage of people with intractable epilepsy actually have the operations.

"So many patients who could benefit aren't," Maxwell says. "I think it's partly because both patients and their doctors just aren't aware of these surgeries and the difference they can make. But also there's an inclination to let well enough alone. If patients are getting along on medication, even though seizures may be interfering with their lives, surgery isn't usually considered. There's also a fear of brain surgery itself and of complications. I think it's really a shame that we as doctors can't avail more people of this surgery. I've had patients who have had surgery after years of disability, and who have been very upset that they didn't have it earlier. If medication isn't allowing patients to drive, work, enjoy recreational activities, and socialize as they would like to, then evaluation for surgical treatment may be indicated."

BOLD new techniques

It's understandable that most people would just as soon avoid brain surgery. But refinements in techniques for locating epileptic foci and in the surgical techniques themselves make these operations more appealing. University neurologists and neurosurgeons have helped develop electrode grids used to locate epileptic foci and chart a surgical course that avoids areas that control important functions. The grids have replaced lengthy exploratory operations during which the patient was required to be conscious to assist in identifying functional areas.

Recently, the University's Center of Magnetic Reso-



Dr. Robert Maxwell

nance Imaging developed a new application for MRI called blood oxygen level dependent (BOLD) imaging that measures changes in blood volume, flow, and oxygenation to produce pictures of the brain in action. BOLD imaging is being used experimentally by Dr. Richard Latchaw, professor of radiology and neurosurgery, to prepare epilepsy patients for surgery. Latchaw believes this and other imaging techniques may someday replace invasive preoperative procedures.

Maxwell has just begun participating in clinical research on a new minimally invasive surgical procedure for controlling epileptic procedures called vagal nerve stimulation. The vagal nerve is a cranial nerve that controls heartbeat and certain visceral reflexes such as producing stomach acids.

"Preliminary work at other centers suggests that stimulating the nerve can improve control of seizures," Maxwell says. The research is being privately funded.

A new generation of drugs

It's been 15 years since any drugs for epilepsy have come on the market, but a new generation of medications is

now waiting in the wings for FDA approval. Their debut is eagerly anticipated because the drugs — felbamate, gabapentin, and lamotrigine — appear to control forms of epilepsy that have been unresponsive to standard medications and because their side effects are minimal and they are less toxic than drugs now used.

Dr. Ilo Leppik, a clinical professor of neurology and pharmacology who was named in the 1992 edition of *The Best Doctors in America*, directs clinical research of new epilepsy medications for the University. He has been closely involved with testing of all three new medications, and has co-authored articles on felbamate published in the *New England Journal of Medicine* and *Neurology* this year. Articles he co-authored reporting results of testing with the two other drugs are in press.

Felbamate (just recently approved) has been shown effective in controlling seizures in Lennox-Gastaut syndrome, a severe form of childhood epilepsy that doesn't respond to available medications, and in some forms of adult epilepsy. It appears to control electrical activity in the brain without dulling the senses or producing other undesirable side effects.

Gabapentin is unique among drugs for epilepsy because it is not metabolized by the liver and thus does not interact with many other medicines, making it easier and safer to use than other drugs. Lamotrigine appears to have very few side effects and has controlled seizures when other drugs have not.

Leppik is also leading development of individualized drug therapy for epilepsy and a new way of evaluating a patient's medication needs which he calls pharmacogenetics.

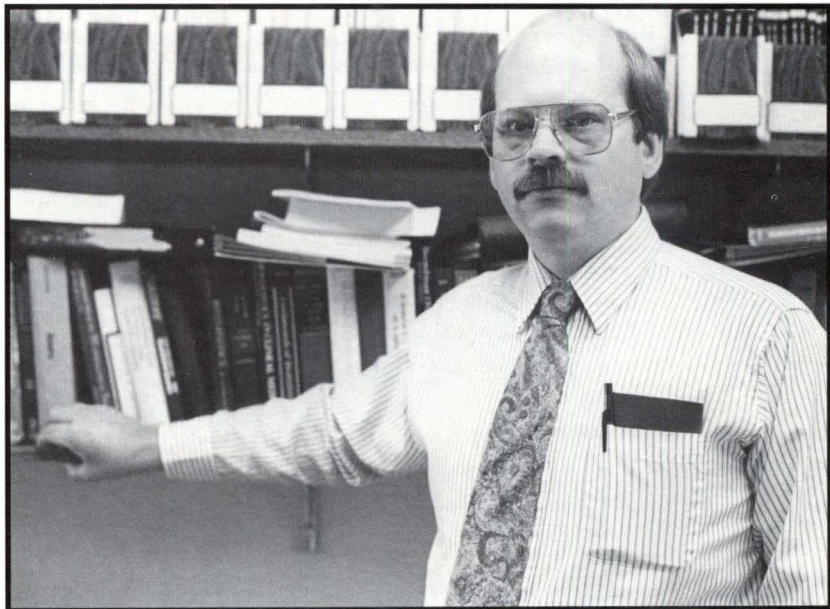
"Looking at the pharmacokinetics of patients on an individual basis is one of the most promising approaches in clinical research for epilepsy," Leppik says. "Up until now, you looked in the medical books and they said to give x amount of medication, and you wrote out a prescription. We're finding out that patients need to be looked at individually for a variety of reasons; younger adults, for instance, need more medication than older adults. What we're hoping to do is develop a set of population statistics so age, sex, weight, other medications being taken, and other factors can be considered for each patient to get the average dose for those specifications."

The premise of pharmacogenetics is that some persons with epilepsy appear to metabolize drugs much differently than others, and that this difference can be

identified and adjusted for.

"In our clinic we see a lot of people who were sent to us because the standard doses of medications their doctors were giving them weren't working well," Leppik says. "We have been analyzing the way those patients metabolize drugs and have found that about 5 percent of people are significantly abnormal metabolizers. Some need only a third or a quarter of the medication to get the same blood levels of the drugs as other patients on full doses. What happens is, they don't take their medications because the dose makes them sick. We also have had patients who are very rapid metabolizers. They may be responsive to medication, but just need a higher dose to control their seizures."

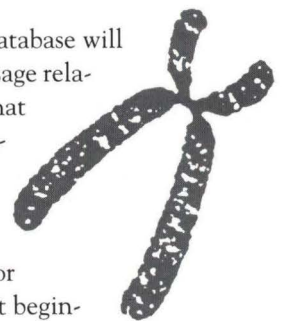
To better study drug metabolism in persons with epilepsy, Leppik, James Cloyd, and Nina Graves, faculty in the College of Pharmacy, have compiled a database on 3,000 epileptic patients from MINCEP, which is Leppik's clinical practice in St. Louis Park, the Mayo Clinic, and



Dr. Stephen Rich

the Marshfield Clinic in Wisconsin. The database will provide a means of analyzing medication dosage relative to sex, age, weight and other factors that can affect drug metabolism such as other medications being taken, smoking, and alcohol consumption.

This study, which has been funded by the NIH for five years, has been in progress for two years. Leppik and his colleagues are just beginning to analyze the pharmacokinetics of individual pa-



tients. He plans to check blood levels of drugs after dosages have been adjusted to identify abnormal metabolizers.

"If the blood level differs from what we expect, we'll know that patient is genetically different and he or she will take part in a study which will identify the specific mechanism," Leppik says.

The genetics of epilepsy

The patient database is also being used as a resource for several related NIH-funded research projects. Human Genetics Institute members Dr. Stephen Rich, associate professor of laboratory medicine and pathology, and Dr.

Harry Orr, professor of laboratory medicine and pathology, are using the database to try to identify genes that make people susceptible to certain types of epilepsy.

Rich, a genetic epidemiologist, is studying patterns of inheritance in families of people with epilepsy. His research group is collecting blood samples from these families for Orr, who is comparing DNA of epileptics and family members to identify similarities and enable him to determine

on which chromosomes genes involved in epilepsy are located. Both researchers are particularly interested in febrile convulsions, which are triggered by high fevers in susceptible children.

"If we knew the gene that causes febrile convulsions, we could identify children who carry it. Parents could then take extra precautions to control fevers in these children and thus avoid seizures," says Rich. Identifying genes for other forms of epilepsy could be used as a basis for gene therapy to correct these conditions.

A deadly phenomenon

Leppik is also using the database to attempt to understand why a small percentage of persons with epilepsy die suddenly with no apparent cause. The phenomenon has only recently been recognized — some physicians doubt it even exists.

"From the perspective of an individual doctor seeing patients, it isn't apparent," Leppik says. "I have had only one or two patients die suddenly for no apparent reason. But a few years ago when we computerized patient records for our clinic, we saw there had been more unexplained deaths than we had realized. Retrospec-

tively, we identified about six deaths per thousand per year, which is about three times the normal death rate. So we decided to study it more closely. The patient population of the database is large enough to really begin to examine this phenomenon and make some sense of it."

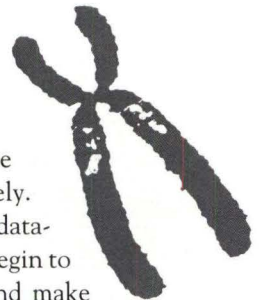
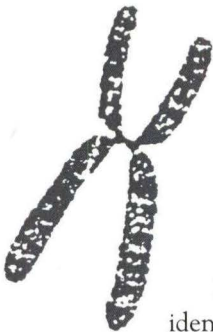
Leppik had one patient who died while talking to a family member who turned away for a few moments to watch television. When the family member turned back to the patient, he was dead. Autopsies of persons with epilepsy who have died suddenly and inexplicably have thus far failed to reveal any clues.

"My theory is that the brain sends a signal to the heart to shut it down," Leppik says. "That's hard to study. We need to identify who it happens to and get an idea of what's important. What could be happening is that people who have a certain type of epilepsy, perhaps temporal lobe epilepsy, may have disturbed electrical circuits that control heart rates."

If Leppik can make that connection, he will begin to examine temporal lobe connections to the heart very closely. All of the sites that contribute patient information to the database have been requested to report all sudden deaths and request an autopsy. A committee will review each case, classify the type of seizures the patient had, and look for other clues that might enable them to put a profile together.

As Leppik looks ahead to new ways to address the enigma of epilepsy, his primary concern is socioeconomic rather than medical.

"Surgery and new medications can really have a significant impact in improving the lives of people who suffer from epilepsy, but getting reimbursement from insurance companies and the government for these is difficult." Surgery to remove foci of epileptic seizures is expensive, ranging from \$30,000 to \$90,000, and in the judgment of some third-party payers an unnecessary expense, according to Leppik. "The new medications are better, but cost more. One of the big controversies right now is whether insurance companies are going to put them on their formularies and whether pharmacies and hospitals are going to stock them." ■



Helping unhealthy hearts

It has been believed that a failing heart enlarges to make up for reduced pumping ability. But, according to



Dr. Jay Cohn

Dr. Jay Cohn, professor of medicine and head of cardiology, it may be the other way around. A heart may stretch and then begin to pump inefficiently. In other words, the enlargement itself may be the disease.

Many things can be done to prevent heart damage and to treat a failing heart, including quitting smoking, lowering cholesterol levels,

regulating blood pressure, and exercising regularly. Most existing therapies for heart failure are directed at the end-stage disease, and are used to support a seriously damaged heart. For people at high risk of developing heart failure — those who have some damage to the heart — researchers are looking for ways to intervene and prevent the deterioration from advancing.

Cohn received a five-year, \$500,000 grant from Bristol-Myers Squibb Company to help establish the Midwest's first heart failure center, the Minnesota Heart Failure Center. At the center, Cohn and his colleagues combine heart failure research with efforts to diagnose heart failure early and curb its development. ■

Women doctors more likely to screen women for cancers

According to a recent study, female doctors are nearly twice as likely as male doctors to screen women for cervical cancer and are about 40 percent more apt to order mammograms. But, among obstetricians and gynecologists, both female and male doctors are likely to order cancer tests as recommended by the American Cancer Society. Among internists and family practitioners, the youngest physicians had lowest rates for ordering Pap smears and mammograms. Overall, young male doctors were least likely to order the tests.

Dr. Paul McGovern, assistant professor in epidemiology, was one of six Minnesota researchers who participated in the study, published in the August *New England Journal of Medicine*. ■

New Alzheimer's drug approved

An experimental medication, tacrine hydrochloride, was approved by the Food and Drug Administration for general use in treating Alzheimer's disease. With the drug, Alzheimer's patients may experience a decline of symptoms such as confusion and forgetfulness. However, researcher **Dr. David Knopman**, director of the Alzheimer's Clinic at the University of Minnesota Hospital, noted that the drug probably only slows the progress of the disease. Even then, it may only be effective for about 12 to 14 percent of potential users. Another drawback of the drug is the side effects — including nausea, diarrhea, and an increase in liver enzymes — that affect some patients.

According to Knopman, within the next five years many more drugs could be available for treating Alzheimer's disease, with fewer side effects. Although it isn't likely the disease itself can be reversed, Knopman believes the symptoms could be reversed or slowed down. He is currently beginning tests of three new drugs to treat Alzheimer's disease. ■

Mapping the brain

The left side of the brain controls the right hand, but both sides of the brain share control of the left hand, according to a recent study published in *Science*. **Dr. Apostolos Georgopolous**, professor of physiology and holder of the American Legion Chair in Brain Sciences, believes that this discovery could help explain some of the puzzling phenomena that occur in people with brain damage. The new information will affect how doctors, surgeons, and therapists treat stroke, accident, and tumor victims, according to Georgopolous, a member of the research team.

The researchers used the University of Minnesota's new magnetic resonance imaging machine for this study. The extra-powerful MRI is one of only three in the world and is the only one dedicated to brain research. **Dr. James Ashe**, assistant professor of neurology, and **Drs. Seong-gi Kim** and **Kamil Ugurbil** of the University's Center for Magnetic Resonance Research, were also researchers on this project. ■

Class of 1997 begins studies

The Medical School Class of 1997, consisting of 184 women and men, has begun its four-year course of study on the Twin Cities campus. The class consists of 169 Minnesota residents and 15 non-residents. There were 3,015 initial applicants for the available positions in the class.

The group is made up of 85 women and 99 men. Premedical education includes 59 students from the University of Minnesota (four of those from UMD), 9 from Minnesota state universities, 51 from Minnesota private colleges, 25 from colleges in surrounding states, 14 from colleges east of the Mississippi, and 26 from other colleges.

Ninety-three students had a grade point average in college of 3.6 or higher, and 67 had an average between 3.1 and 3.5. ■

Minnesotans help shape health plan

Two Minnesotans, **Dr. Art Caplan**, director of the Center for Biomedical Ethics at the University of Minnesota, and **Dr. Steven Miles**, associate professor of geriatrics at the University of Minnesota Medical School and medical physician at Hennepin County Medical Center, were called to the White House to help redefine the national health care system. Caplan and Miles worked on a task force for seven weeks to shape an ethical framework for health care policy. ■



Dr. Art Caplan

New science building to be built

The University will receive \$10 million dollars in federal funding to help finance a new Basic Sciences/Biomedical Engineering building on the University of Minnesota campus. The eight-story building will house the departments of biochemistry, cell biology, laboratory medicine and pathology, pharmacology, physiology, and biomedical engineering. Construction is scheduled to begin in late January. ■



Demolition of the former Zoology and Botany buildings was completed in November, making room for the new building.

Researchers test artificial liver

Dr. Frank Cerra, professor emeritus of surgery, and **Dr. Wei-Shou Hu**, associate professor of chemical engineering and mathematical science, head a team working on a bio-artificial liver that could help acute liver failure patients. Once perfected, the artificial liver could be a major medical breakthrough.

The artificial liver is an external device that will work much like a kidney dialysis machine, keeping patients alive as they wait for a donor. Cerra and Hu began developing the technology three years ago, using hollow fiber tubes filled with cultured liver cells. Testing on humans will begin in about a year to meet safety standards and to gain Federal Drug Administration approval. ■



Dr. Frank Cerra

DEPARTMENTAL UPDATES

Anesthesiology

Drs. R.H. Cochrane and **H.K. Swica** joined the faculty in July. **Drs. P.A. Iaizzo, K.G. Belani,** and **C.B. Carmen** are coordinating one of a limited number of laboratories in the world capable of diagnosing malignant hyperthermia.

Biochemistry

Dr. Michael P. Hendrich, research associate and assistant professor, received an NIH grant for "EPR and ENDOR Studies of Diron-oxo Clusters in Proteins."

Dr. James E. Mahaney, research associate, received an American Heart Association grant for "Molecular Biophysics of Calcium Transport." **Dr. Joseph Mersol**, post-doctoral associate, received an American Heart Association grant for "Spectroscopic Studies of Calcium Transport in Skeletal and Cardiac Muscle."

Cell Biology & Neuroanatomy

Drs. H. Joseph Yost and **Harry Orr** were the faculty organizers for the second annual symposium in developmental biology, "Homeotic Genes from Yeast to Mammals," held November 1-2.

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

The Community-University Health Care Center/Variety Club Children's Clinic (CUHCC/VCCC) has opened a culturally-based outpatient chemical dependency treatment program to meet needs of persons from Hmong, Lao, Vietnamese, and Cambodian cultures.

Microbiology

Dr. Ashley Haase, professor and head of the department, presided as chair of the AIDS Research Advisory Committee (ARAC) at the Joint Meeting of the AIDS Subcommittee of the National Advisory Allergy and Infectious Diseases Council and the ARAC September 26-30. He also presented information about new technical advances in the diagnosis of AIDS at the ASM Conference on Molecular Diagnostics and Therapeutics, the Technical Advances in AIDS Research in the Human Nervous System workshop, and at the Conference on Advances in AIDS Vaccine Development. Haase will be presenting a paper on HIV gene expression and pathogenesis

at the Keystone Symposium on Prevention and Treatment of AIDS, January 23-30.

Dr. P. Patrick Cleary, professor, attended the International Meeting of the Lancefield Society in St. Petersburg, Russia. Cleary is president of the Lancefield Society. Two of his students, **Debbie Retnonigren** and **Diqui LaPenta**, gave scientific presentations at the meeting. Cleary was on leave fall quarter at the Rocky Mountain Laboratory, National Institute of Allergy and Infectious Disease in Hamilton, Montana.

In September, **Dr. Russell C. Johnson**, professor, was a consultant on Lyme disease at the Chinese Academy of Preventive Medicine, in Beijing, China. He was chair of the scientific session at the International Conference on Zoonosis in Piestany, Slovakia, in October and received the Slavic Medical Association Gold Medal for his work on leptospirosis and Lyme disease.

Dr. Marc Jenkins, associate professor, is the 1993-94 secretary of the Midwest Autumn Immunology Conference. He also presented a paper at the Third Basic Science Symposium of the Transplantation Society.

Neurology

The Dr. Sidney and Ruth Shapiro Neurology Library, dedicated October 28, was made possible by a generous endowment gift from Dr. and Mrs. Shapiro. The Shapiros also support the Benjamin Shapiro Award, given annually to a neurology resident. The 1993 award went to **Dr. Edward Hui**, based on his research project "Retrospective Study of a VA Epileptic Population after Anti-Epileptic Drug Withdrawal."

Dr. Richard W. Price, professor and head of the department, was recently listed in *Current Contents* as one of the scientists most frequently cited among AIDS researchers. **Dr. John R. Corboy**, assistant professor, was awarded a Clinical Investigator Award from the National Institute of Neurological Disorders and Stroke.

Neurosurgery

Dr. Walter A. Hall, assistant professor, obtained a Clinical Investigator Development Award from NIH to continue his work on immunotoxin treatment of CNS neoplasia. **Dr. Walter C. Low**, professor, received a grant from the American Parkinson's Disease Association to pursue his work on neural transplantation. **Drs. Stephen J. Haines**, professor,

and **Paul J. Camarata**, assistant professor, received a Small Business Innovation Research Grant to develop endoscopic microsurgical instrumentation for neurosurgery.

Haines was elected vice president of the Congress of Neurological Surgeons and **Camarata** was elected chairman of the Young Neurosurgeons Committee of the American Association of Neurological Surgeons. **Dr. Gaylan L. Rockswold**, professor, received the Annual Recognition Award of the Minnesota Head Injury Association.

Several people joined the faculty, including **Dr. Setti S. Rengachary** as director of the Neurosurgical Spine Service; **Dr. Paul J. Camarata**, assistant professor; **Dr. William F. Ganz**, as chief of neurosurgery at St. Paul Ramsey Medical Center; and **Dr. Deepak Awasthi**, assistant professor. Both Drs. Ganz and Awasthi are developing a head injury research center at St. Paul Ramsey Medical Center and will conduct clinical activities at the University.

Obstetrics & Gynecology

Dr. Jeffrey Fowler, assistant professor in gynecology, is participating in a multi-center research study, sponsored by Merck, to compare the efficacy of Imipenem to a set of three antibiotics in the treatment of serious gynecologic infections.

Dr. Ellen Hartenbach, a fellow in gyn-oncology, received a prize for her paper on pelvic adhesion formation after a pelvic laparoscopy, submitted at the most recent American College of Obstetricians and Gynecologists District Six Junior Fellow meeting in Milwaukee.

Dr. Jonathan Carter, assistant professor in gynecology, presented a paper at the International Society of Vulvar Disease in Quebec in September. He is also presenting two papers and posters at the World Ultrasound Meeting of Obstetrician/Gynecologists and a presentation and poster at the Society of Gynecologic Oncology in February.

Dr. Linda Carson, associate professor in gynecology, had an abstract on quality of life issues for women with ovarian cancer accepted by the Society of Gynecologic Oncology. Carson, **Dr. Linda Hammer Burns**, and **Sue Petzel** have had two other abstracts on that topic accepted by the Psycho-Oncology Society. Dr. Carson also received one of the Excellence in Teaching Awards given by the Association of Professors in Gynecology and Obstetrics.

Visiting Scholar **Dr. Sachie Kaneda**, of Japan, is working with the department's Division of Pathology

on research related to the human papilloma virus (HPV).

CORRECTION: The last issue of the Bulletin mentioned a research project being conducted by Drs. June LaValleur and Casey Ruhr, surveying ob/gyn residency programs regarding courses in mature women's health. **Dr. Benjamin Bornsztajn** also participated in this project as a co-investigator. We are sorry for the omission.

Ophthalmology

Dr. James Egbert is studying the effectiveness of a new operation to improve the visual acuity and reading abilities of patients with congenital hystagmus. **Dr. Arthur Walsh** joined the department in September as assistant professor in vitreoretinal surgery and disease. His special interests are in ocular retinal neovascularization, posterior vitreous detachment, and instrument development.

Pediatrics

Dr. Gary Remafedi received a Letter of Recognition from the U. S. Department of Health and Human Services. The award, presented on August 31 by Dr. Jeffrey Koplan, Assistant Surgeon General for the U.S. Public Health Service, recognizes Remafedi, staff, and youth involved in the University of Minnesota Adolescent Health Program's Youth and AIDS Project.

Pharmacology

Dr. Horace Loh, holder of the Frederick and Alice Stark Chair in Neurosciences, received a program project award from NIDA to study the role of abused drugs in neuronal functions. **Dr. Li-Na Wei** began two new research projects: "In Search of New Genes Involved in Early Embryogenesis in the Mouse" and "Cellular Retinoic Acid-Binding Protein I." **Dr. David K. Ann** began another project called "Molecular Programming of Salivary Gland Gene Expression."

Physiology

Drs. Andrew Gordon and **Paul Dasonville**, post-doctoral associates, received National Research Service Awards this fall. **Dr. Apostolos Georgopoulos** was awarded an Office of Naval Research Grant for his work "Neural Modeling of Motor Cortex and Spinal Cord."

Dr. Steve Katz received the Distinguished

Teaching Award from MMF and **Lori Semenchuk** was awarded the Class of 1980 Fellowship Award.

There were several new faculty appointments, including **Dr. Vincent Barnett**, assistant professor; **Dr. Paula Orkland**, associate professor; **Dr. Richard Graeff**, research associate; **Dr. Stanislaw Glazewski**, post-doctoral associate; **Dr. John Pelligrini**, post-doctoral associate; **Dr. Wolfgang Kruse**, post-doctoral associate; **Dr. Hans Richter**, post-doctoral associate; and **Ron Nitzan**, pre-doctoral assistant. **Dr. Eric Newman** was promoted to professor.

Psychiatry

Dr. Paula Clayton, head of the department, will spend the next year on sabbatical in Washington, D.C. working with Dr. Frederick Goodwin, director of the National Institute of Mental Health. Dr. Clayton will focus her efforts on stimulating new research projects in depression and other mood disorders.

Radiology

Dr. Simon M.N. Efang was appointed associate professor of radiology and medicinal chemistry and **Dr. Gwen Nazarian** joined the department as assistant professor of radiology in cardiovascular and interventional radiology. **Dr. Richard Geise** was appointed councilor-at-large for the American College of Radiology and **Dr. Lenore Everson** was appointed media spokesperson for the American Cancer Society representing Minnesota. **Dr. James W. Walsh** participated in the Oncodiagnosis Panel at the Radiological Society of North America in Chicago, November 30.

Dr. Harry Griffiths presented a paper, "The Association of Malignant Tumors and Orthopedic Metallic Implants," and a talk on "Soft Tissue Ossification and Calcification" at the 18th Annual International Skeletal Society Meeting in Toronto. Over 350 people attended the 56th Annual University of Minnesota Radiology Course which focused on basic musculoskeletal radiology and mammography.

Surgery

Dr. Nancy Reinsmoen, assistant professor and director of the Transplant Immunology Laboratory, was elected to the board of the United Network for Organ Sharing.

Dr. Edward W. Humphrey was honored August 14 on his retirement after 30 years as chief of surgery at the VA Medical Center in Minneapolis. He remains as acting chair of the Surgery Department at the University of Minnesota.

Dr. Michael A. Maddaus, head, general thoracic surgery, and assistant professor of cardiovascular and thoracic surgery, reports that NIH is sponsoring four ongoing clinical protocol studies.

The Surgery Department's Division of Cardiovascular and Thoracic Surgery has performed its 100th lung transplant. The department and the Transplant Center held a special tribute to "The Golden Age — Transplantation After 60" on August 26.

The C. Walton and Richard C. Lillehei Surgical Society, in cooperation with MMF, reached their fundraising goal of one million dollars to endow the Land Grant Chair in Thoracic and Cardiovascular Surgery. The first chair holder is **Dr. R. Morton Bolman**, professor of surgery.

Dr. Vibhu Kshetry was appointed assistant professor of surgery.

Medical School

William Jacott, assistant vice president for health sciences, was named chair of the Minnesota Association for Public Teaching Hospitals board of directors.

School of Public Health

President Clinton nominated **Dr. Stephen G. Joseph**, dean of the School of Public Health, to be assistant secretary of defense for health affairs.

Human Rights & Medicine

Dr. Hymie Gordon, co-chair of the Program in Human Rights and Medicine and Fellow of the Royal College of Physicians of Edinburgh, the Royal College of Physicians of London, is conducting a lecture series on "The Task of Medicine: A Rich Past and an Open Future," presented by Medica Foundation. ■

MMF Grant Recipient: Christopher B. Zachary, M.D.

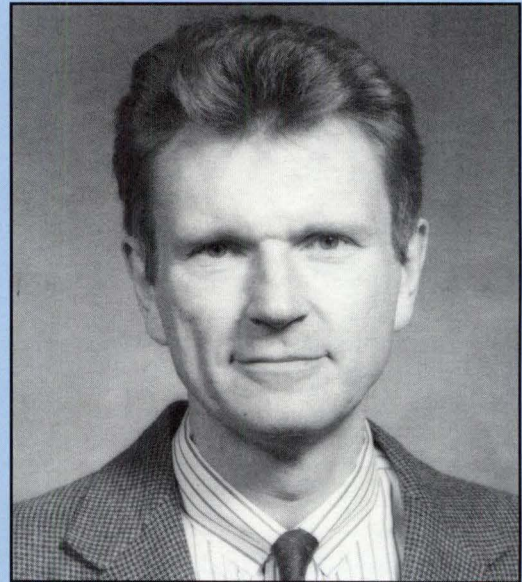
Basal cell skin cancer is the most common type of cancer. In fact, a large percentage of people will develop a skin cancer sometime during their life.

Christopher B. Zachary, M.D., assistant professor of dermatology, has helped develop a new way to grow a purified basal cell skin cancer, which will allow him to study how cancer grows and develops. Last summer, the Minnesota Medical Foundation awarded Zachary a \$6,500 grant to pursue his research, "Reproduction of Basal Cell Carcinoma (BCC) in Nude Mice." Zachary was one of 16 University of Minnesota faculty members to receive a research grant from MMF. In all, the MMF board approved \$96,385 at its summer board of trustees meeting (see accompanying list).

Basal cell skin cancer has been difficult to study. It is hard to examine or even grow the BCC cells in a culture because many other cell lines kill the cancer. Working closely with colleagues Dr. Sergei Grando, associate professor of dermatology, and David Kist, histotechnologist in cutaneous surgery, Zachary has developed a simple system to produce the BCC lines in cultures. "Since we've been able to grow an almost immortal BCC line, we've been able to purify it," explains Zachary. "With this purified basal cell skin cancer we can now examine its growth in mice."

"The MMF grant will allow us to buy nude, or immunodeficient, mice, so we can transfer the BCC to the mice. Allowing the cancer to develop will provide a tumor model so we can examine the tumor growth in a live situation. We want to be able to understand the biology and behavior of the cancer at a cellular level so we can devise better treatment and diagnosis.

"There is a great deal of international interest in our work," says Zachary. "These may be the only immortalized BCC cell lines in the world." Since discussion of Zachary's research at the Annual Meeting of the Society for Investigative Dermatology in Washington D.C. last spring, other experts in the field have



Dr. Christopher Zachary

admitted that this method could be easily reproduced in other labs. So far, Zachary and his colleagues have been leaders in their field. But, disclosure of their new techniques and others' interest in their methods may increase competition for future grants.

"Without MMF's support, we couldn't do this pilot study," says Zachary. "This can be considered seed money for a much bigger study. It gives us a leg up to get results needed for future NIH grants. MMF is helping establish the University Cutaneous Surgery Center as an active, productive, academic surgery center."

Zachary received his medical training in internal medicine and dermatology at the University of London. Following his residencies, Zachary completed a research fellowship in cutaneous surgery at the University of Michigan and then was senior registrar and tutor in cutaneous surgery at the University of London. Immediately prior to coming to the University of Minnesota in 1988, Zachary was a resident fellow in dermatology at Washington University. ■

MMF approves \$96,385 in research grants

At its summer quarterly meeting, the Minnesota Medical Foundation board of trustees approved \$96,385 in research and special grants. The amount includes \$59,000 in faculty research grants, \$5,400 in student research grants, and \$31,985 in special grants for research equipment and salary support.

FACULTY GRANTS include: **David S. Beebe, M.D.**, Anesthesiology, \$3,000, Does the proximity of laparoscopic surgery to the diaphragm affect postoperative pulmonary function?; **Colin Campbell, Ph.D.**, Pharmacology, \$8,000, The effect of target site transcription on gene targeting in human cells; **Donna R. Fontana, Ph.D.**, Microbiology, \$4,000, Purification of a morphogen-responsive phospholipase A2; **Frederick C. Goetz, M.D.**, Medicine, \$4,000, Insulin/C-Peptide, youth, age, and diabetes: community study, the Wadena City Health Study; **Larry W. Hancock, Ph.D.**, Cell Biology & Neuroanatomy, \$3,500, Synthesis and trafficking of lysosomal membrane glycoproteins in mouse permatogenic cells; **Jeffrey Miller, M.D.**, Medicine, \$8,000, Ontogeny of natural killer and T-cells; **Joseph R. Prohaska, Ph.D.**, Biochemistry & Molecular Biology, \$3,000, Etiology of cardiac hypertrophy in the copper-deficient rat; **Winfried A. Raabe, M.D.**, Medicine, \$5,000, Calcium channels and synaptic transmission; **Miriam Segall, Ph.D.**, Laboratory Medicine & Pathology, \$5,000, Diabetes susceptibility genes in families with IDD and NIDD; **David E. R. Sutherland, M.D., Ph.D.**, Surgery, \$5,000, Nitric oxide: A mediator of pancreatic islet injury after transplantation; **Kirkham B. Wood, M.D.**, Orthopaedic Surgery, \$4,000, Development of a hybrid intervertebral disc prosthesis; and **Christopher B. Zachary, M.D.**, Dermatology, \$6,500, Reproduction of basal cell carcinoma (BCC) in nude mice.

STUDENT GRANTS at \$1,800 each include: **Kent W. Svee**, Year 4, Localization of Alpha V-Beta 3 integrin in wound capillary cells during adhesion and migration on fibrinogen and invasion into a fibrin matrix; **John W. Cromwell**, Year 4, Is Interleukin-5 the mediator of xenoreactive nature antibody production?; and **Terrance C. Tuominen**, Year 4, Anatomic, histologic and functional maturational changes of the pig laryngeal posterior cricoarytenoid muscle.

SPECIAL GRANTS include: **Helen Enright, M.D.**, Medicine, \$6,514, Purchase of a controller system for use with the high pressure liquid chromatography apparatus; **Thomas P. Green, M.D.**, Pediatrics, \$10,000, Shared equipment for pediatric pulmonary biology; **Dale Snover, M.D.**, Laboratory Medicine & Pathology, \$7,000, Request for new 6-headed teaching microscope; and **Judith Zier, M.D.**, Pediatrics, \$8,471, Perfluorocarbon ventilation attenuates acute lung injury. ■

MMF Golf Classic draws supporters

More than 200 golfers — Medical School alumni, faculty, donors, and friends — attended the 3rd Annual Minnesota Medical Foundation Golf Classic, held at Hazeltine National Golf Club in Chaska on August 30. Supporters enjoyed the challenging golf course and the dinner and awards program that followed. This year's event raised nearly \$30,000 to support medical research at the University of Minnesota Medical Schools.

Honorary co-chairs of the event were Dr. McKinley Boston and Doug Woog and co-chairs were Drs. Gregory Vercellotti and Tim Walseth. Committee members included Lane Arey, M.D. '31, Christin Croll, Chuck Daniels, Ph.D., John Davenport, M.D., Bill Flanagan, Glenn Giesler, Ph.D., Chuck Gooder, Steve Haines, M.D., Sharon Hasslen, David Kendall, M.D. '88, June LaValleur, M.D. '87, Tucker LeBien, Ph.D., Mark Marshall, Don Mathias, Scott Nyberg, M.D., Ph.D., Antoni Potami, Pam Reimer, Ralph Shapiro, M.D. '81, Lee Sabath, M.D., Barb Streets, David R. Teslow, Dan Weisdorf, M.D., Jim White, M.D. '55.

Major sponsors of the event were Medtronic, Inc., Caremark, Alliance Capital, Radisson Hotel-Metrodome, and Quality Lincoln Mercury.

Hole and special event sponsors included Pharmacia Deltec, Abbott Laboratories, Amgen, Baxter-Hyland Division, Glaxo, Pfizer, Inc., Pratt Pharmaceutical, Ramsey Clinic and St. Paul-Ramsey Medical Center, Piper Jaffray/Piper Capital, IDS Advisory Group, Janssen Pharmaceutica, Fredrikson and Byron, Miles Pharmaceutical, James Phillips Company, Carlson Travel Network, Sparboe Farms, Immunex, Rainbow Signs, and Critical Care America.

Other sponsors included Beckman Instruments, Group Health, Inc., Hodapp Surgical Supply, Minneapolis Floral, Wallace Carter Laboratories, and Wally McCarthy's Oldsmobile. (continued)



UNDER OUR UMBRELLA

Golf, continued

Additional prizes and gifts were provided by Azur—Richard and Larry D'Amico; Baxter-Hyland; Bartimus; Kavanuagh & Frickleton; Best Buy Company; Cafe Latte; Cafe Solo; Cafe Un Deux Trois; Clintec; Critical Care America; D'Amico Cucina—Richard and Larry D'Amico; Decathlon Athletic Club; Goodfellow's Restaurant; Gulf Beach Resort-Hotel; J.D. Hoyt's; Harvard Barbers; Immunex; Lund's Food Stores and Patricia Lund; Marquette Banks-Stadium Village; Miles Pharmaceutical; New French Cafe; Novo Nordus; Octagon Financial Group; Olive Garden Restaurant; Pharmacia Deltec; Sandoz; Taylor-Made Golf Company; University of Minnesota—Bolstad Golf Course; University of Minnesota Men's Athletics; University of Minnesota—Trademark Licensing Office; and Wally McCarthy's Oldsmobile. Special thanks are extended to Minneapolis Floral, Rainbow Signs, University of Minnesota Dental School Development Office—Jack Stack, Wally McCarthy's Oldsmobile, and the many volunteers. ■

Parents of medical students celebrate Parents' Day

Nearly 200 parents of first-year medical students learned what medical school is all about at the eighteenth annual Parents' Day, held October 16 on the Twin Cities campus.

The day-long program included welcoming remarks by Anthony Severt, president of the Medical Student Council, and David Teslow, president, Minnesota Medical Foundation. Speakers included Dr. Shelley Chou, dean of the Medical School; Dr. John McConnell, associate professor, Family Practice and Community Health; Dr. Robert McCollister, associate dean, curriculum affairs; Dr. Valerie Ulstad, assistant professor, Department of Medicine; and Lori A. Bubash, representing the freshman class.

Parents toured the Medical School campus, visiting laboratories, student offices, and the Biomedical Library Learning Resources Center. Faculty hosts in the laboratories were Drs. Donald Robertson, Robert Sorenson, and Brian Van Ness. Parents' Day is sponsored by the Minnesota Medical Foundation and the Medical Student Council. ■

Bob Allison Ataxia Research Center

The first annual Bob Allison Celebrity Golf Tournament, held September 4 and 5 at Breezy Point Resort in Minnesota, raised \$16,000 for the Bob Allison Ataxia Research Center (BAARC).

An additional \$17,000 was raised from nearly 300 people who attended a benefit roast for Jim Kaat, Twins broadcaster and former pitcher, on September 30. In addition to the roast and toast, several baseball items were auctioned: a Sandy Koufax autographed baseball, Jim Kaat and Bob Allison Minnesota Twins jerseys and autographed bats, and a week at a major league baseball fantasy camp.

At the September 30 BAARC board meeting, the directors agreed to begin distributing grants from some of the \$200,000 raised since 1990. The grants will be awarded to University of Minnesota researchers to support new or collaborative research dealing with fundamental and clinical aspects of the cerebellar ataxias.

For more information about ataxia, upcoming events, or to inquire about supporting ataxia research, contact the Minnesota Medical Foundation, (612) 625-1440 or 1-800-922-1MMF. ■



Mark Allison greets Jim Kaat at the Jim Kaat Roast in September.



Bob Allison Ataxia Research Center

Children's Cancer Research Fund

The Dawn of a Dream Benefit is scheduled for January 22, 1994. The event includes the classic love story, Miss Saigon, at the Orpheum Theatre, a post-theatre gala for those purchasing priority seating, and



complimentary hotel accommodations for \$500 ticket holders.

For more information, call the Children's Cancer Research Fund, (612) 929-5535 or 1-800-922-1MMF. ■

SUPER

SUPER has sponsored Parkinson's disease awareness events this fall to raise awareness of the need for more Parkinson's disease research. To date, events have been sponsored by Warren and Marie Goss in

SUPER

Minneapolis on August 31, by Ted and Marjorie Lund in Golden Valley on September 21, and by Sandy and Dick Naughton in Little Canada on September 27. Each event featured presentations by University of Minnesota Parkinson's disease researchers and attracted between 40 and 50 people interested in Parkinson's disease.



Robert Burgett and Dr. Walter Low, Department of Neurosurgery, greet guests at the Parkinson's awareness event in Little Canada.

The SUPER board of directors met August 9 and treasurer Mary Steele reported that SUPER raised nearly \$13,000 in fiscal year 1993. The non-campaign goal for fiscal year 1994 is \$45,000.

Plans are underway for another SUPER event to be held in late winter or early spring. The goal will be to continue raising community awareness of the need for Parkinson's disease research as well as raising money to sponsor the research. Outreach presentations are continuing throughout Minnesota — volunteers have visited Austin, Apple Valley, and Hopkins and plan to visit Mankato, Duluth, St. Cloud, and Rochester.

The SUPER Campaign to raise funds for a Parkinson's Disease Research Center at the University of Minnesota continues and lead gifts are being sought. Individuals concerned about Parkinson's disease are encouraged to contact Robert Burgett, Department of Neurosurgery, at (612) 625-0972 or 1-800-922-1MMF. ■



More than 350 people attended the Catch a Rising Star benefit at the Carlson Center.

University Children's Foundation

The 1993-94 Catch a Rising Star benefit, held August 29, raised over \$61,000. More than 350 people attended the event, held at the Carlson Center rotunda. Carol Erickson, chair of the benefit, was honored for her dedication to the University Children's Foundation.

At the Nordstrom back-to-school fashion show to benefit the University Children's Foundation, nearly one-half of the models were patients or former patients of University pediatricians.



The 1992 report to investors, titled "Imagine," won the Council for Advancement and Support of Education (CASE) Gold-Medal Award for Individual Photography for its cover photo. Limited editions of the print will be available to the public in 1994. For more information, contact Cynthia Livingston, (612) 626-1904 or 1-800-922-1MMF. ■

University of Minnesota Cancer Center

The Fund for the University of Minnesota Cancer Center is nearing the \$30 million goal and the campaign should be completed by December 31. The National Institutes of Health approved a grant in October for the new center, which was one of 12 chosen for new or renovated research grants.



The cornerstone-laying ceremony for the Masonic

Cancer Research Building is scheduled for 1:00 p.m., March 26 and a ground-breaking/roof-raising event is planned for May 1994. For more information about the University of Minnesota Cancer Center, call David Madson, (612) 625-4441 or 1-800-922-1MMF. ■

Variety Club Association

Variety Club Association held its 29th annual Toyland Auction on Saturday, November 20, at Variety Club Children's Hospital. The event, held in the hospital banquet facilities overlooking the Mississippi River and Minneapolis skyline, featured silent and live auctions and a reception and dinner. Minnesota Twins Player Shane Mack and his wife, Darleena, hosted the event. Karen Sorbo, Mrs. Minnesota USA 1991 and former Variety Club Children's Hospital patient, was the featured auctioneer. Proceeds from the event will support patient and family care programs at the hospital.



**Variety
Club
Association**

Continuing its tradition of supporting heart research, Variety Club is raising funds for heart research at Variety Club Heart and Research Center. Individual donations and proceeds from direct mail and telemarketing appeals will be dedicated to research to improve heart surgery.

Organizers of the Steve Payne/Snyder Golf Tournament decided to support production of a hospital closed-circuit television program, Kids Club TV, a weekly interactive television show for children in the hospital.

Variety Club Association committed funds to double the size of the Unit 4E Critical Care family lounge. The expansion will better accommodate families' needs by providing more private conversation areas, secure storage places for personal belongings, and additional resting space.

For more information about Variety Club Association events, call (612) 624-6900 or 1-800-922-1MMF. ■

Vision Foundation

At the Thanksgiving for Vision event, held October 9, researchers, volunteers, contributors, patients, faculty, and staff celebrated the



miracle of restored vision. Over 400 people received an eye research update and enjoyed a program featuring the Minnesota Lions Childrens Eye Clinic. The Minnesota Lions leadership were the honored guests and sponsored the event.

Alumni and friends of the Department of Ophthalmology gathered at a reception at the American Academy of Ophthalmology in Chicago, November 16. The reception was jointly hosted by the University of Minnesota Eye Association and the Minnesota Medical Foundation. For more information about the Vision Foundation, call Susan Dunlop at (612) 625-6169 or 1-800-922-1MMF. ■

Women's Health Fund

Over 50 board members, Obstetrics/Gynecology faculty, and guests attended the first annual meeting of the Women's Health Fund on October 16. New officers were elected for the coming year: Nancy Cosgriff, president; Alice Ellis, president-elect; Renee Ward, vice president/secretary; and John Skogmo, treasurer. The board also welcomed three new members: Dr. Susan Crutchfield, who works for Health Risk Management, Inc.; Joann Paden, who has held national leadership positions with the American Association of University Women; and Dr. Marianne Westerheim, an assistant professor in the Department of Obstetrics and Gynecology.



The Women's Health Fund and the Department's Women's Cancer Research Fund benefitted from a sale of Carolee Jewelry at Bloomingdale's in August. This fundraising event kicked off a special commemorative display of Carolee Jewelry and was part of the Mall of America's first anniversary celebration.

The Obstetrics/Gynecology Alumni and Friends Society co-sponsored a reception for new department faculty members Dr. William Saul and Dr. Jonathan Carter on October 21 as part of the Ob/Gyn annual fall course.

For more information about the Women's Health Fund, call Lynn Slifer at (612) 626-2612 or 1-800-922-1MMF. ■

MAS NEWS

President's Report

The Medical Alumni Society Board recently had the privilege of hearing about the changes that will be occurring at our Medical School from Associate Dean Robert Howe. The most important item to report is that, first and foremost, the University of Minnesota Medical School is achieving its most important mission, and that is to train new physicians. This is not only being done but it is being done very well!

While there are many rumblings about the University, there are many related good things to report. New initiatives, endorsed by the Board of Regents, will address many critical issues such as lines of authority, accountability, and the private practice plan. The results of these changes will help keep alive the traditions that made Minnesota one of the finest medical schools in the country.

A new hierarchy will allow for more effective and cooperative management of the Medical School and the health sciences. This will be accomplished by establishing a team of four individuals to help administrate and lead the Medical School and the other health sciences. These four people include: a provost, who will have direct access to the president; a chief financial officer, who will work directly with department administrators to ensure fiscal responsibility; a president for University Health Systems, who will oversee the service functions of the Medical School and hospital; and the dean, who will have more defined and strengthened responsibilities that will allow strong leadership into the next century.

According to Dean Howe, "This is a powerful tool to put a great Medical School back on track." The plan is devised to develop a more effective administrative structure, as well as provide accountability. The private practice plan will provide additional accountability. The current private practice plan, which emerged in the '60s as a result of changes in national health care policy, will be altered to provide a uniform and structured system. A strong private practice plan is important to the Medical School because of the additional funds that are provided for salaries, research, and administration of the departments. The key ingredient to the success of this will be full disclosure, allowing greater control by the dean.

Many of the recent issues that have been brought forth at the Medical School can successfully be addressed by these changes. We as members of the Medical Alumni board will keep you informed about the progress of these changes. Our Medical School is still a fine institution and will continue to be so in the future. It will emerge from these problems stronger and better, even more prepared to fulfill its mission. Some facts about our Medical School:

- 52 percent of graduates are entering primary care residences. (That is the national target for the future).

The University of Minnesota is the only research-oriented medical school approaching those numbers.

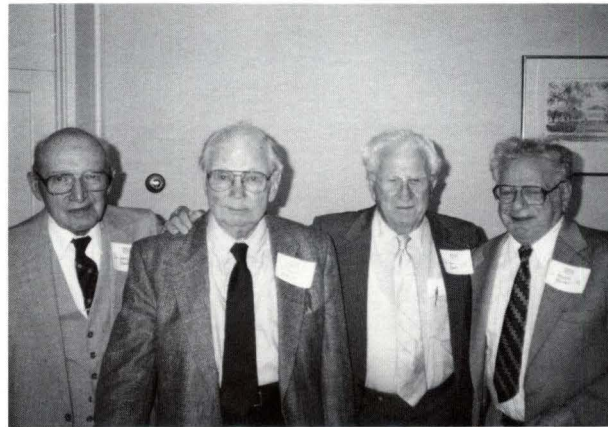
- Half of all Native Americans currently attending medical school are at the University of Minnesota Medical Schools in Duluth and Minneapolis.
- Physicians salaries at the Medical School are below the Big 10 median.
- There were 3,500 applications for 185 spots in the first-year class at Minneapolis and over 1,000 applications for 50 spots at Duluth.

Stay proud of your Medical School. It is completing its mission and will continue to strive toward being an even greater institution. Your feedback or concerns are certainly welcome by writing or calling the Medical Alumni Office, Box 193 UMHC, Minneapolis, MN 55455, (612) 625-8676.

Sincerely,



Wayne Liebhard, M.D., '83
President



Enjoying the Half-Century Club luncheon are, left to right, Drs. James Shandorf, '36, Russell Lindgren, '31, Karl Sandt, '34, and Reuben Berman, '32.

Half-Century Club members reminisce

"Yesterday's Campus" was the topic of the Half-Century Club's October gathering. Karen Lofness, assistant professor in the Department of Laboratory Medicine and Pathology, presented a program focusing on the early days of the University of Minnesota and the reminders of those days remaining on campus today.

Twenty Half-Century Club members enjoyed hearing about the trials and tribulations the founders

endured to establish this great University. Many reminders of the early days at the University are the notable landmarks on campus, such as Pillsbury Hall, Shevlin Hall (the oldest building on campus), and Wulling Hall, which was originally named the Medical Building.

Following the presentation, alumni enjoyed lunch and conversation at the Campus Club in Coffman Memorial Union. The Half-Century Club is a program of the Medical Alumni Society and is open to alumni who have celebrated their 50th Medical School graduation anniversary. If you are interested in the Half-Century Club, please contact the Medical Alumni office at (612) 625-8676. The next Half-Century Club event will be in the spring. ■



Dr. Richard Stennes, '69, and Dr. N.L. Gault, Jr., '50, serve up some walleye to Dr. Dan DeKrey, '85, Beth DeKrey, and Dr. Arthur Ide.

Alumni and friends gather at Moose Lake

A sunny summer afternoon was the setting for the Northern Minnesota Alumni and Friends reception in August. Hosted by alumnus Richard Stennes, M.D., '69, and his wife, Nilla, nearly 30 alumni gathered to enjoy a relaxing afternoon. The alumni and friends enjoyed a delicious walleye dinner on the banks of Moose Lake near Black Duck, Minnesota. The reception was held at the Stennes' and Buhn's Moose Lake Lodge.

Alumni and friends events are now in the planning stages for California and Arizona. If you are interested in attending or hosting an alumni activity in your area, please contact the Medical Alumni office at (612) 625-8676 or 1-800-922-1MMF.

These events provide a great opportunity for alumni to enjoy one another's company, as well as to find out what's new at your Medical School. Plan to attend the event in your area. ■

New alumni directory underway

The Alumni Society is pleased to announce the upcoming publication of an all-new 1994 Alumni Directory. The new 1994 University of Minnesota Medical School Alumni Directory will make it easy for you to find long-lost friends and make career connections.

This volume will be the first comprehensive reference to more than 9,000 alumni worldwide. The directory will include name, primary specialty, class year(s), and degree(s) at the University of Minnesota Medical School, position with primary hospital and primary hospital name, office address and phone number, plus residential address and phone number. The new directory will enable you to cross-reference alumni by name, class year, residency, and geographic region.

The Minnesota Medical Foundation has contracted the Bernard C. Harris Publishing Company, Inc. to produce the 1994 directory. Harris Publishing Company will soon begin researching and compiling alumni information by mailing a questionnaire to each alumnus. For your convenience, a reservation form will be included with your questionnaire to make it easy for you to order your own copy. The publisher will only print as many directories as ordered and this will be your only opportunity to reserve your copy.

If we don't have your current address, let the alumni office know immediately so your questionnaire will reach you on time. If you prefer not to be listed, please contact the alumni office at (612) 625-8676. ■

Diehl Award nominations invited

Dorothy J. Horns, M.D., '76, invites nominations for the Harold S. Diehl Award. The award will be presented at the Medical Alumni Society's Annual Reunion Weekend, June 2-4, 1994.

Given in honor of the University of Minnesota Medical School's fifth dean, Harold Sheely Diehl, M.D., the award is presented to an individual who has made outstanding professional contributions throughout his or her career. The Diehl Award has been presented to 66 people since its inception in 1962.

Qualifications for nomination are: 1) Preferably a

graduate of the University of Minnesota Medical School; 2) Not currently engaged in an academic capacity; 3) Outstanding contributions to the Medical School, the University, the alumni, and the community; and 4) Relatively long experience in the field of medical service or a related field.

Nominations should be received by April 15, 1994, and should be sent to: Dorothy J. Horns, M.D., Chairperson, Harold S. Diehl Award Committee, Box 193 UMHC, Minneapolis, MN 55455.

Nominations should include supporting documents and references to assist the committee in its deliberations. Questions may be referred to the Medical Alumni Society at the Minnesota Medical Foundation, (612) 625-8676. ■

CLASS NOTES

1930

Dr. Harold R.

Hennessy, Lake Bluff, Illinois, and his late wife, Helen Lounsberry, have compiled nine volumes of family history on file at the Minnesota State Historical Society. Dr. Hennessy was a member of the full-time staff of the American College of Surgeons, Chicago, for 17 years and retired in 1966. He is also a retired Army Medical Colonel (World War II) and a member of the 50th Anniversary Council, Battle of Normandy.

1950

Dr. N.L. (Neal) Gault, Jr., Roseville, Minnesota, received the Minneapolis International Citizen's Award for his lifetime commitment to medical education in many parts of the world. He has contrib-

uted extensive time and service to medical education programs at the Seoul National University, in the Ryukyu Islands, and at the Okinawa General Hospital, and has been recognized several times by the Japanese Medical Association for his contributions to that country and decorated with one of Japan's highest honors, The Order of the Rising Sun. He has consulted for the Agency for International Development and the China Medical Board, and has provided support to numerous international students in this country. He also established the Medical Student International Study Fund at the Minnesota Medical Foundation.

1959

Dr. Duane Orn, Brooklyn Center, Minnesota, has received the Volunteer Lifetime Achievement Award, given in recognition of his 30 years of service to the health care of Brooklyn Center citizens. Dr. Orn has been the community health officer for the past 15 years. He also served for 25 years as the medical doctor and consultant volunteering for the Brooklyn Center School District.

1975

Dr. Craig Watson, Boulder, Colorado, has been named president of Colorado Preferred Physicians Organization.

Dr. Richard F. Borch, Pittsford, New York, was appointed director of the University of Rochester Cancer Center. Dr. Borch, whose research focuses on development of more effective cancer-fighting drugs, is Dean's Professor of Oncology in Pharmacology, Professor of Chemistry, and head of the Cancer Pharmacology Program. He joined the University of Rochester in 1982 from the University of Minnesota, where he was professor and vice chair of the Department of Chemistry.

1978

Dr. Steven G. Berry, Des Moines, Iowa, was appointed as trustee of the Luther College board of regents. Dr. Berry is a physician with CIC Associates, Des Moines. During 1992, he served as president of the Des Moines Mercy Hospital medical staff. Dr. Berry served his residency in internal medicine at Kalamazoo, Michigan, and a pulmonary medicine fellowship at the University of Iowa Hospitals, Iowa City.

1981

Dr. Bruce A. Orkin, Washington, D.C., was elected to the Society for Surgery of the Alimentary Tract. He presented the paper "The Microbiology of HIV Perianal Disease" at the 1993 annual American Society of Colon and Rectal Surgeons meeting.

1985

Dr. George S. Csathy, Santa Monica, California, finished five years of residency in anatomic and clinical pathology at Cedars-Sinai Medical Center in Los Angeles in June. He served as chief resident for the department in 1992-93 and recently accepted a position as associate pathologist with the Pathology Consultants Medical Group in Torrance, California.

1987

Dr. Allen V. Bergh, St. Paul, Minnesota, has been named a fellow of the American College of Radiology. Dr. Bergh was selected for his outstanding contributions to radiology.

Dr. Mary H. Roessel, Albuquerque, New Mexico, has completed a psychiatry residency at the University of New Mexico and established the Office of Native American Psychiatry.

She is now completing an Indian Health Service Scholarship obligation at the Albuquerque Indian Hospital.

1989

Dr. Elizabeth Salewski Schertz, Bethel, Alaska, and her husband have lived and worked in Bethel for over a year. Bethel serves an area the size of the state of Oregon for medical and legal services. ■

College and taught at Buffalo Lake High School for two years before entering medical school. He served his internship at St. Mary's Medical Center in Duluth. Dr. Eckman practiced family medicine until 1978 and served on the staffs of all three Duluth hospitals. He was president of the Northern Minnesota Medical Society, a 60-year member of the St. Louis County Medical Society and the Minnesota Medical Association, and a member of the University of Minnesota Alumni Association. Dr. Eckman is survived by two sons, a daughter, and 11 grandchildren.

WAYNE S. HAGEN, M.D.,

Class of 1935, died September 6 at age 86. Dr. Hagen, a St. Louis Park, Minnesota resident, practiced internal medicine for 30 years. He served in the military from 1935 to 1946 and then worked in private practice until 1976. Dr. Hagen served as medical director for three local nursing homes until last year. He also commanded the 5501st Fort Snelling Reserve Army Hospital from 1946-1967. He is survived by his daughter, son, and five grandchildren. Memorials to the Minnesota Medical Foundation are suggested.

LEONARD F. JOHNSTON, M.D.,

Class of 1931, died July 17 at age 85. Dr. Johnston was an obstetrician in Winona from 1944 until 1971. He was a member of the Winona County and Minnesota State Medical Society, the Minnesota OB-GYN Societies, a founding fellow of the American College of Obstetricians and Gynecologists, and a member of the Minnesota Maternal Mortality Committee.

OSCAR KOZBERG, M.D.,

Class of 1934, died in August. Dr. Kozberg practiced psychiatry and served as clinical director at Moose Lake State Hospital and the Arkansas State Hospital in Little Rock, and spent one year as resident physician at the National Jewish Hospital in Denver, Colorado. He served with the Army Medical Corps from 1941-1945, retiring as a captain. He is survived by two sons.

DONALD R. LANNIN, M.D.,

Class of 1940, of St. Paul, Minnesota, and Highland Park, Florida, died July 15 at age 79. Dr. Lannin was the Minnesota Vikings team doctor from 1961 until he retired in 1981. Before working with the Vikings, he was the University of Minnesota Golden Gophers team physician for 11 years. Dr. Lannin was also chief surgeon at the Shriners Hospital for Crippled Children in Minneapolis for 27 years. He also had a private

IN MEMORIAM

EDITH POTTER DEATS, M.D., PH.D.,

Class of 1924, died March 22, at age 91. Dr. Potter interned at Minneapolis General Hospital after graduating from medical school and then studied in Vienna. In 1927, she started a medical practice and began working toward her Ph.D in pathology. After earning her Ph.D., Dr. Potter moved to Chicago where she studied perinatal pathology. During her 33 years at the University of Chicago Medical School, Dr. Potter served as professor and director of the laboratories. She was the first woman member of the American Gynecological Society and was inducted into the Hall of Fame of the American College of Obstetricians and Gynecologists in Washington, D.C.. She received honorary degrees from the University of Brazil, the University of Pennsylvania, and the University of South Florida. Dr. Potter was also among the first to research the Rh factor and the first to discover a distinctive facial appearance in infants with urinary system deficiencies (the Potter syndrome). She traveled and lectured extensively throughout the world. Dr. Potter is survived by seven stepchildren.

RALPH ECKMAN, M.D.,

Class of 1932, of Duluth, Minnesota, died July 5 at age 86. Dr. Eckman graduated from Gustavus Adolphus

orthopaedic practice in St. Paul for 34 years. Dr. Lannin is survived by his wife, Shirley, three sons, a daughter, and three grandchildren.

F. JOHN LEWIS, M.D.,

Class of 1941, died September 20 in Santa Barbara, California. Dr. Lewis was a former University of Minnesota Surgery Department professor who performed the world's first successful open-heart operation on September 2, 1952. After receiving his M.D. degree, Dr. Lewis spent three and a half years as infantry battalion surgeon, ward surgeon, and post surgeon during World War II. He became associate professor of surgery at the University of Minnesota in 1952 and then accepted a faculty position at Northwestern University in 1956, where he stayed until retirement in 1976. In 1987, he was the Surgery Alumnus of the Year.

CHARLES B. LUNDQUIST, M.D.,

Class of 1959, of Eagan, Minnesota, died July 13 at age 62. A Washburn High School graduate, Dr. Lundquist completed his residency in radiology at the VA Hospital and was practicing medicine with the Suburban Radiologic Consultants. He is survived by his wife, Stella, five sons, three daughters, and 12 grandchildren.

ROBERT F. MOSELEY, JR., M.D.,

Class of 1930, of Kingston, New York, died August 16.

JOHN E. MULVAHILL, M.D.,

Class of 1957, of Golden Valley, died August 5. Dr. Mulvahill is survived by his wife, Jean, and two daughters.

O.L. NORMAN NELSON, M.D.,

Class of 1931, died August 9 at age 84. Dr. Nelson was an internist in private practice in Minneapolis until he retired five years ago. He was also president of the Hennepin County Medical Society in 1958, cofounder and past president of the Minnesota Society of Internal Medicine, past president of the Minnesota State Medical Society, and president of the North Central Medical Association, the Minneapolis Academy of Medicine, and the Association of Senior Physicians. Dr. Nelson was the *Star Tribune* physician for many years. He received the Minnesota Medical Association Distinguished Service Award, and the Metropolitan Medical Center Shotwell Award and Special Service Award, and the Charles Bolles-Bolles Rogers Award from the Hennepin County Medical

Society. Dr. Nelson is survived by his wife, Helen, a son, and five grandchildren.

LYLE J. ROBERTS, M.D.,

Class of 1917, of McLean, Virginia, died April 2 at age 103. Dr. Roberts served his internship at the St. Paul City and County Hospital until he enrolled in the Navy as a medical officer. He remained in the Navy for 34 years with six years of duty afloat and 28 years ashore. He pursued a specialty in internal medicine and was a Fellow of the American College of Physicians. After retiring from the Navy in 1951, Dr. Roberts served for five years as health officer for three counties in West Virginia.

NORVEL D. SISSON, M.D.,

Class of 1951, a Rochester, Minnesota, resident, died June 25. Dr. Sisson specialized in pathology.

RAGNVALD S. YLVISAKER, M.D.,

Class of 1926, died in August at age 95. A Bloomington, Minnesota, resident, Dr. Ylvisaker was chief of staff at Northwestern Hospital, 1948-1949, and president of the Hennepin County Medical Society, 1958-59. He is survived by three sons and seven grandchildren.

Also noted:

THOMAS M. ALTEMEIER, M.D., died July 15 at age 48. A St. Louis Park, Minnesota, resident originally from Newton, Iowa, Dr. Altemeier taught at the University of Minnesota Medical School from 1979 to 1985. He helped direct nursing home service and a clinic for the elderly at Bethesda Lutheran Hospital and Rehabilitation Center from 1986 until he retired in April. Before moving to Minneapolis, he had practiced family medicine in Des Moines and Iowa Falls, Iowa. He is survived by his wife, Marjean, and a son.

DAVID A. DUNSHEE, from Minneapolis, Minnesota, died in September. David Dunshee graduated from the University of Wisconsin, Madison, and was a second-year medical student at the University of Minnesota Medical School. He is survived by his parents, Don and Diane, and his brother and sister. ■

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THANKS FOR GIVING

Dr. Reuben Berman

by Jean Murray

I'm a firm believer that one person can do a lot," says Dr. Reuben Berman.

Dr. Berman — cardiologist, researcher, fundraiser, musician, baker — practices what he preaches, and his contributions to medicine and to the community have been many.

A 1932 graduate of the University of Minnesota Medical School, Dr. Berman became involved in heart research in the 1950s. He views a trip to Italy with Dr. Ancel Keys of the University of Minnesota and Dr. Paul Dudley White of Harvard as a pivotal point in his career.

The trip — to study the incidence of coronary disease in a number of Italian communities — confirmed for Dr. Berman the importance of clinical research studies, and influenced the direction of his medical career for years to come. Controlling coronary disease, and identifying the factors that cause it, became a life-long concern.

Dr. Berman was associated with Mount Sinai Hospital in Minneapolis throughout his career, and his numerous research activities there cover a span of 25 years. In 1966, Mount Sinai received a grant from the National Institutes of Health (NIH) for a long-term study of coronary disease, with Dr. Berman named as principal investigator. He was also principal investigator for an NIH Hypertension Study in 1972, and was co-investigator in a number of other coronary research studies.

During his medical career, Dr. Berman convinced many people that clinical research studies advance the field of medicine. He is proud of the fact that in the 1966 study, all 200 coronary patients — who were tracked for five years — could be accounted for at the end of the study and the various types of treatment evaluated.

The now nationally known Mount Sinai Clinical Research Center was established in the 1960s through Dr. Berman's efforts — with encouragement from the University of Minnesota — to be a center for the coronary research studies that he championed. In honor of his achievements in coronary research, in 1988 it was renamed the Berman Center for Clinical Research.

The center has always had an excellent record for recruiting volunteer participants, for retaining individuals throughout the study, and for compliance by participants with each assigned program.

In addition to his work at Mount Sinai, Dr. Berman has served the University of Minnesota and the Minnesota Medical Foundation in a number of capacities. He is Clinical Professor Emeritus of Medicine and Adjunct



Dr. Reuben Berman

Professor Emeritus of Public Health. An energetic fundraiser for the Medical School, he has served the Minnesota Medical Foundation as president (1978-80) and chair of the MMF Planned Giving Committee. He also served as editor of *Minnesota Medicine* for several years.

Honors given to Dr. Berman include the President's Award from the Minnesota State Medical Association, the Charles Bolles-Bolles Rogers Award from the Hennepin County Medical Society, and the Harold S. Diehl Award from the Medical Alumni Society, to name a few.

Music has always been part of Dr. Berman's life, and has been important to his medical career as well. "Being a musician definitely led me into auscultatory medicine," he says, "and helped me decipher cardiac rate and rhythm problems." Dr. Berman played the clarinet for many years, and then switched to the bassoon. He is a member of the International Double Reed Society and helped bring their convention to Minneapolis this past summer.

Another claim to fame is "Dr. Berman's tried, true, and easy to do" bread recipe, which has been published in the *Star Tribune*. He is also well-known in his neighborhood for mushroom hunting and is an expert at identifying local varieties.

Despite his busy career and numerous outside interests, Dr. Berman has always recognized the importance of family and has taught all of his children the value of education and the joy of music. His three sons, David, Sam, and Theodore, are all University of Minnesota Medical School graduates, and his three daughters, Elizabeth, Ruth, and Jean, hold advanced degrees in Math, English, and Town Planning. Dr. Berman's wife Isabel, who died in 1989, held a Ph.D. in psychology and worked in clinical psychology throughout her adult life. The Bermans were married for 58 years.

Dr. Berman's belief in the value of education extends beyond his family. Twenty years ago he established an Irish medical student exchange program, and each summer two Berman Fellows come to this country to study.

Dr. Berman has enriched the lives of many through his skills as a physician, his gifts of time and talent, and his enthusiasm for learning. The Minnesota Medical Foundation is deeply grateful for his friendship and support. ■



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