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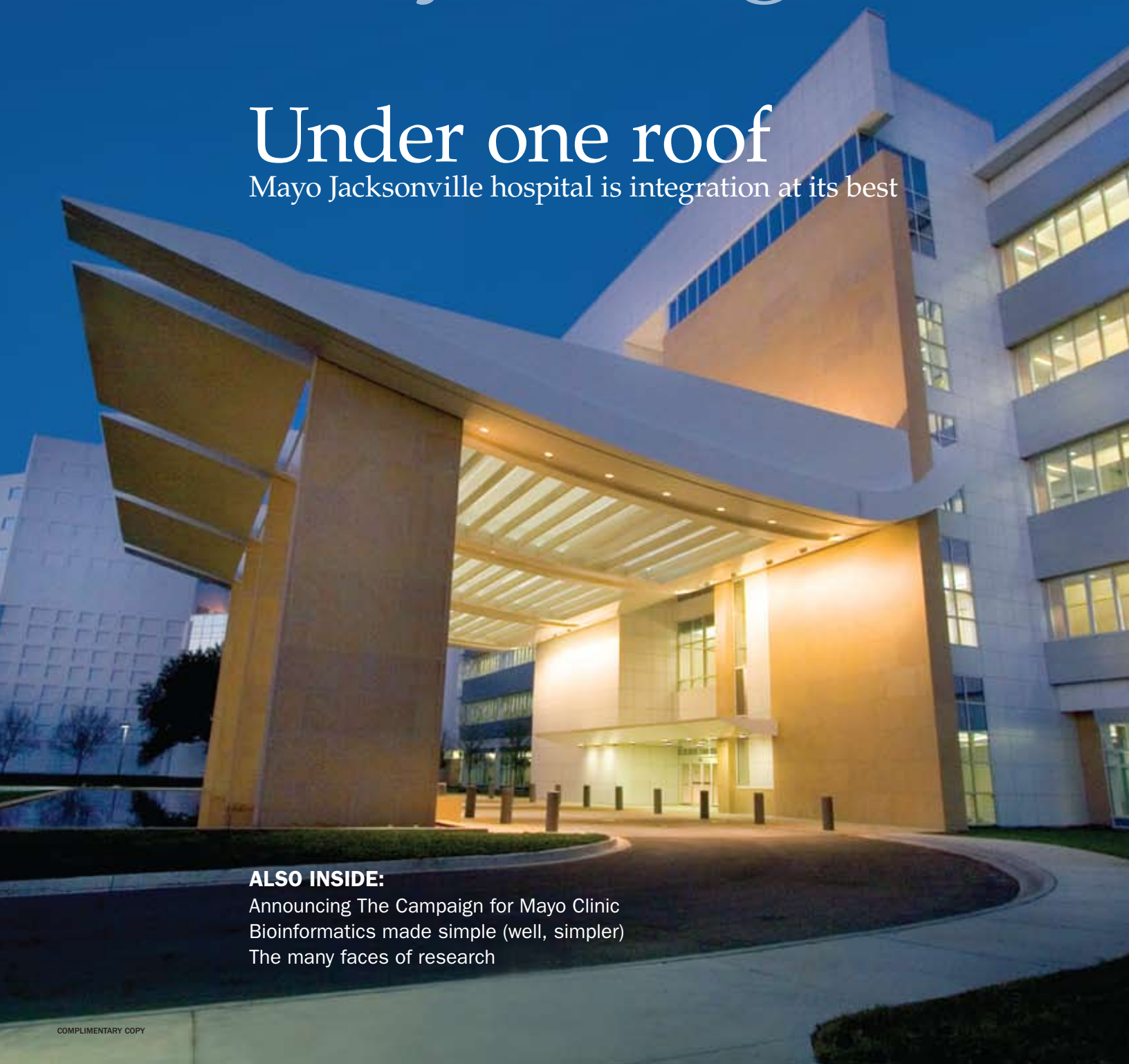

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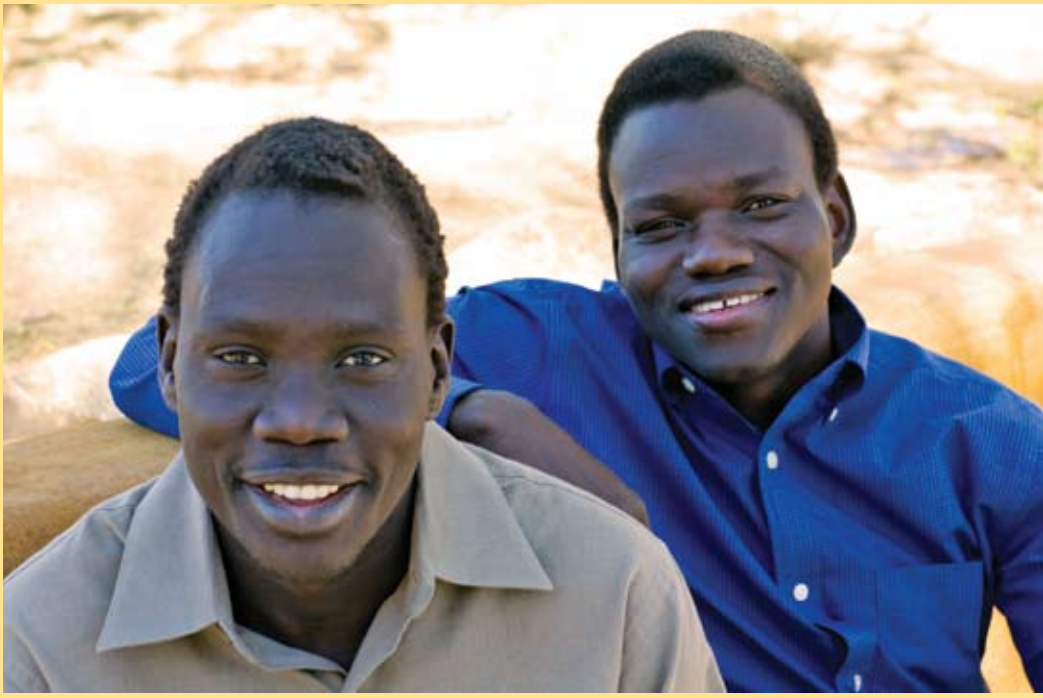
DEPARTMENTS

Lost Boys find 'home' at Mayo Clinic

Moses Matet and James Chol

By Suzanne Winckler



Moses Matet and James Chol

Moses Matet and James Chol spent the first 20 years of their lives fleeing strife or idling in refugee camps. They know the extremes of abject fear and utter boredom. But that's all changed. They now work at Mayo Clinic Hospital in Phoenix. Mr. Matet is a pharmacy technician and Mr. Chol works in the hospital cafeteria. They've embraced their new life, and their new family at Mayo Clinic has embraced them.

Mr. Matet and Mr. Chol were born in southern Sudan in the late '70s or early '80s; neither knows his exact birth date because they were swept up in the civil war in their country. When they were about 7 or 8 years old, they escaped on foot to Ethiopia along with an estimated 27,000 other young men of similar age, who came to be called the Lost Boys of Sudan. Mr. Matet and Mr. Chol met in Ethiopia and for years survived on their wits and little else. For nine years they lived at Kakuma Refugee Camp in Kenya, where in 1998 their fortunes took a propitious turn. "It was like a dream. One day a woman came to the camp and asked, 'You guys want to go to the U.S.?'" says Mr. Chol. "Yes, we want to go there."

Their next hurdle (bureaucratic red tape) took three years to vault. They were, for example, assigned birth dates in order to create ID cards, passports and ultimately Social Security numbers. Many of the Lost Boys share an arbitrary birthday of 01-01, which caused a number of computational nightmares since many also share the same surnames. (Imagine thousands of Smiths all born on Jan. 1.)

In 2001, Mr. Matet and Mr. Chol arrived at Sky Harbor International Airport in Phoenix. There was a certain irony to their final destination. Mr. Matet's tribal name is Nhial, which means rain. "I was born in the rain and now I live in the desert," he says. Mr. Chol's tribal name, Mator, is more ecologically appropriate. It means dust storm.

For the young men it was a new beginning. They were greeted by two members of Shepherd of the Hills Lutheran Church, whose parishioners have taken Mr. Matet and Mr. Chol under their wing. "They didn't even know how to turn on a light switch," says Nancy Spahr, a church member and clinical nurse specialist at Mayo Clinic, who plays the role of de facto Mom.

"Mayo has embraced these young men," she says. "And they give back. James helps other Sudanese people financially, and Moses works at the Lost Boys Center in Phoenix."

It's impossible to measure, in miles or spirit, how far Mr. Matet and Mr. Chol have come, but now their days unfold on the nine-to-five schedule that defines normalcy in America and they entertain the dreams that are part and parcel of being U.S. citizens, which both became last year. ■

The CAMPAIGN for MAYO CLINIC

Help transform the future of medicine by making a gift to Mayo Clinic as we launch an historic $1.25 billion philanthropic initiative — The Campaign for Mayo Clinic.

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Making a gift is just a click away.

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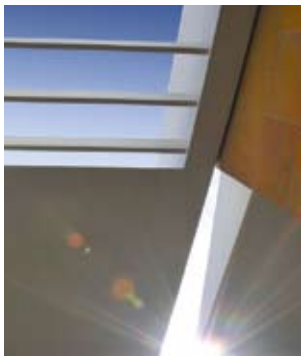
By Matt Derechin

UNDER ONE ROOF
and

All within walking distance

New Jacksonville hospital reduces miles, integrates care

"Throughout our organization, we're bringing everyone together, into a single, unified learning organization, where everyone, including our patients, has access to our knowledge."

— Denis Cortese, M.D., *President and Chief Executive Officer, Mayo Clinic*

April 12, 2008, was an historic day for Mayo Clinic. The hospital on the Jacksonville campus opened, fulfilling a dream born shortly after the campus opened in 1986. A Mayo Clinic design from its inception, the 214-bed hospital is part of an expanded Mayo building, and its completion means the Jacksonville staff now serve patients in a hospital that ideally supports Mayo Clinic's mission and integrated approach to patient care.

But something even more fundamental has taken place with the hospital's opening. The distance between inpatient and outpatient care has nearly vanished. Less than 200 footsteps separate the hospital lobby from the patient elevators in the Davis and Cannaday buildings, homes to all of the medical specialties.

Before the hospital opened, these distances covered miles. Inpatient care for the first 22 years was provided at St. Luke's Hospital, 12 miles from the clinic campus. The change from miles to footsteps is significant, says Charles Burger, M.D., a pulmonary medicine specialist and chair of the hospital's operations group.

"It changes everything, from planning patient itineraries, to providing services," Dr. Burger says. "Patients come to our campus and have access to everything we offer."

Distance is an especially useful perspective to examine the hospital's benefits. All types of dimensions are changing for the better. Most often, the changes have brought things conveniently closer, yet other dimensions have added spaciousness.

The nurse is in

Nursing is more than a profession for Kelly Wise, who works in the hospital's cardiovascular unit. She loves the relationships she forms with patients and their families and working with a team of caregivers who share a common goal.

She also loves the hospital's design, which brings caregivers and patients closer together. A computer workstation in each patient room enables her to update records, review results and treatments, and print education materials, all while at her patient's side. If she has to leave the room, nursing stations — located between every two patient rooms — have windows for monitoring patients.

Brainy surgery

In brain tumor surgery, where precision is measured in sub-millimeters, it's hard to imagine that collapsing physical distance in a hospital setting would contribute in any meaningful way to the delicacy of patient care. But the hospital's arrival does contribute to this precision, with an innovative surgery system.

This summer, a new magnetic resonance imaging (MRI) system will be added for neurosurgery. The Jacksonville campus is the first medical center in the Southeast to purchase the system, which gives brain surgeons real-time images during an operation. It accomplishes this feat using a ceiling-mounted MRI, which moves to the patient, rather than having the patient move to the MRI. Sliding doors separate the MRI and operating area, but at the press of a button, the doors open and the MRI moves to the operating area.

"Real-time images will help us see if the brain has shifted during treatment and if we've removed the entire tumor," says neurosurgeon Robert Wharen, M.D. "It improves the outcomes for the patient, because it helps ensure complete tumor removal, and we don't have to move the patient during surgery."

Bigger and better

Not every distance is shrinking with the addition of the hospital. One exception is the patient room. Each room is identical in size and shape, and, at 350 square feet, nearly double the size of the average hospital room. The extra footage allowed planners to create a design with three zones — caregiver's, patient's and family's — that flow together seamlessly.

This design provides the workspace Ms. Wise mentioned, as well as space for mobile monitoring equipment. The patient zone features fingertip access to the room's amenities, which include Internet access. The family zone has comfortable furnishings, including a sleeper sofa for overnight stays.

The room's size fosters a human connection necessary for patient care, says Clayton Brown, a 17-year member of the nursing staff. Patients with complex conditions typically see many nurses throughout their stay, especially as patients move to different units. But the hospital's room design supports many levels of care.

"Our goal is to have most patients admitted and discharged from the same room," Mr. Brown says. "The patients and their families see the same nurses every day, and, as a result, communicate better."

The width of Mayo Clinic's mission

What difference can 2 feet make? For Mayo Clinic's education mission, the difference is substantial, especially in hallway width. Each patient floor hallway in the hospital

Each patient room is 350 square feet, nearly double the size of the average hospital room.

Advanced technologies in the hospital's 22 operating suites further enhance safety and quality of procedures.

Each patient floor hallway in the hospital is 10 feet wide, about 2 feet wider than traditional hospital hallways.

is 10 feet wide, about 2 feet wider than traditional hospital hallways. The extra room is a boon to teaching rounds, easing the flow of physician-led teams of residents and medical students.

The corridor width is also significant for multidisciplinary rounds, important to Mayo Clinic's patient care mission. Multidisciplinary rounds bring together physicians, nurses and other allied health staff, who round together and develop treatment plans.

"Multidisciplinary rounds improve the safety and quality of care," Dr. Burger says. "The corridor width and other hospital features will make our current teams more effective."

A connected campus

Hundreds of other hospital features contribute to patient care and the pursuit of Mayo Clinic's mission. But each discussion of its benefits returns to the same idea of convenience — the change from miles to footsteps and the advantage of having most of the Jacksonville staff on the same campus.

It creates new possibilities for research, says Edith Perez, M.D., director of the Multidisciplinary Breast Clinic in Jacksonville. "Having the hospital close by makes it easier for us to manage our clinical trials, collect and store samples and, eventually, increase the number of trials we can offer patients," she says.

It also is an asset to those in finance, human resources, planning and other areas that provide administrative support for patient care. Most of these staff members are just a stone's throw from the hospital, in the Stabile Building. "The people in these departments now are even more closely connected to our mission because of the hospital," says Mary Hoffman, chief financial officer at the Jacksonville campus.

The hospital follows other recent additions to the Jacksonville campus, including a large testing laboratory in the Stabile Building that serves medical centers across the Southeast and a 16-bed hospice center, built by Community Hospice of Northeast Florida.

As these pieces come together, unification is taking place, says Denis Cortese, M.D., president and chief executive officer of Mayo Clinic.

"Throughout our organization, we're bringing everyone together into a single, unified learning organization, where everyone, including our patients, has access to our knowledge," Dr. Cortese says. "From there, we can distribute what we know regionally, nationally and even globally."

(continued on page 6)

For more information about the new Mayo Jacksonville Hospital, please visit *www.mayoclinic.org/mayo-clinic-hospital-jax*

"These results are a testament to the generosity and vision of benefactors. The hospital is a phenomenal example of our patients seeing a vision, sometimes even before we see it. That helped catalyze the process and made the hospital a reality."

— George B. Bartley, M.D.
Chief Executive Officer, Mayo Clinic Jacksonville

A philanthropic first

Long before it was completed, the hospital at the Jacksonville campus had secured a place in Mayo Clinic annals, becoming the first project of its size to receive approval contingent upon fundraising success. Prior to that historic decision, made by the Board of Trustees shortly before the hospital campaign began, philanthropy was always an important part of building projects at Mayo, but never a prerequisite for approval.

But before long, philanthropy for the hospital eclipsed its original goal of $70 million. Construction began, and later, when the goal was increased, new and longtime benefactors came forward to pledge their support. To date, $95 million has been raised to support the hospital project.

These results are a testament to the generosity and vision of benefactors, says George B. Bartley, M.D., chief executive officer at Mayo Clinic's Jacksonville campus. "The hospital is a phenomenal example of our patients seeing a vision, sometimes even before we see it," Dr. Bartley says. "They figured out that we had the opportunity to build an integrated campus. That helped catalyze the process and made the hospital a reality."

A. Dano Davis, a Mayo Clinic trustee, is one of those benefactors. Visionary partnering with Mayo Clinic is something of a family tradition. His parents, J.E. and Florence Davis, and his aunts and uncles helped found the Jacksonville campus, donating the land for the campus and leading a communitywide fundraising effort. "With the hospital moving to the campus, we have research, education and patient care all in the same place," Mr. Davis says. "It's very gratifying from my family's standpoint."

In addition to unifying Mayo Clinic's mission in Florida, the hospital also features the healing environment that has become a trademark of Mayo buildings. It begins immediately. The hospital lobby has comfortable furnishings, crisp lighting, stone and other natural materials, art displays and Mayo Clinic Heritage Hall. The effect continues on patient floors. Each room has a residential décor and large window to bring in natural light.

All in all, it makes for an exciting transformation from vision to reality, says Mary Virginia Terry, longtime benefactor and patient. "Jacksonville needs all the good hospitals it can get, and this one's going to be a star." ■

By Jenee M. Marchant

Mayo Graduate School

Two stories, one message of hope

"I turned down an offer to medical school in Arizona to come to Mayo Clinic," says Román Barraza. Turns out, he made the right choice.

Mr. Barraza is now finishing his 4th year in the Mayo Graduate School Medical Scientist Training Program and is looking forward to a bright future in research. This highly competitive seven-year program is offered jointly with Mayo Medical School to students interested in earning both the M.D. and Ph.D. degrees. His research focuses on virology and gene therapy, specifically the delivery and expression of genes to treat glaucoma.

Mr. Barraza graduated from Arizona State University (ASU) with an undergraduate degree in biology. His desire to pursue a career in medicine and research began in high school and was validated as he entered college. One week into his coursework at ASU, he visited a research lab and ended up working there for four years. His passion for research almost steered him to a Ph.D. program following his undergraduate work, but volunteering at a local hospital drew him back to medicine. The experience of working with patients was too rewarding to ignore.

"I chose Mayo Clinic because the research facilities were superior, and the ability to collaborate with scientists in other laboratories and other disciplines is made easy at Mayo."

— Román Barraza

Calculated risks

Seven years ago he made a decision that would change his life. He was accepted to medical school at the University of Arizona. The school knew he was interested in research and offered him an opportunity to enter its M.D./Ph.D. program. He turned them down. His passion to do translational research could not be fulfilled in Arizona at that time. He walked away from a guaranteed spot in medical school to come to Mayo Clinic to gain more experience and hopefully to become competitive enough to enter the Medical Scientist Training Program in one to two years.

(continued on page 8)

Román Barraza

Mr. Barraza was accepted into the Postbaccalaureate Program in Basic and Translational Research through Mayo Clinic's Initiative for Minority Student Diversity (IMSD) program. The program's goal is to increase the number of underrepresented diverse faculty, investigators and students engaged in biomedical research. For Mr. Barraza, it was the proverbial one door opening while another door closed. One year after completing the program, he applied for and was accepted to Mayo's Medical Scientist Training Program.

"I chose Mayo Clinic because the research facilities were superior, and the ability to collaborate with scientists in other laboratories and other disciplines is made easy at Mayo," he says. "The idea of coming to Mayo Clinic for a medical degree was a no-brainer. It's Mayo Clinic. Its reputation precedes itself."

When Mr. Barraza completed his initial research, he did so in the lab of Eric M. Poeschla, M.D. He decided to continue his work in Dr. Poeschla's lab as he entered the M.D./Ph.D. program. "The most important factor for choosing a laboratory, aside from the type of research being conducted, is the mentor and mentee relationship," he says. "It's a long-term relationship and you will be working side by side for at least four years. It is critical to be able to communicate and work well together. Dr. Poeschla and I have a wonderful working relationship, and the kind of advice and guidance he has given me over the years, and will continue to give me, is absolutely invaluable."

In many cases, the mentor relationship continues throughout a career. Mr. Barraza acknowledges the cyclic effect in this type of union as he begins his mentoring of new graduate students. He's excited about the opportunity to foster another student's passion in research and medicine.

This mentor relationship is equally important to Cherisse Kellen, a 2nd-year student in the Ph.D. program at Mayo Graduate School. She completed four lab rotations before finding her place under the guidance and mentorship of

"I always knew I wanted science in my life ... If you truly love research, you are motivated to come back the very next day and start all over."

— Cherisse Kellen

Cherisse Kellen and Larry Karnitz, Ph.D.

Larry Karnitz, Ph.D. She says, "Everyone's personalities in Dr. Karnitz's lab 'mesh' well together. His lab is highly productive, as are all labs, and his personality, flexibility and support for my career goals fit perfectly." Ms. Kellen is working in a lab focused on molecular pharmacology and experimental therapeutics. She is investigating how individual genetic variation can affect the way patients respond to anti-cancer therapies.

Evolving as an independent scientist

"I always knew I wanted science in my life," says Ms. Kellen, a native of the Bahamas, where basic research is not just uncommon, it's not done. The only way to fulfill a future in science is to become a doctor, so that became her career path. She moved to Minnesota in 2000 where she completed her undergraduate degree at the College of St. Catherine.

After college, she worked at 3M doing basic research and asking fundamental questions which sometimes resulted in answers. It was during this time she discovered her heart was tied to research rather than clinical practice. But, she knew that any research she did would have a positive impact on patients. She chose Mayo Graduate School because it offered what few other schools offered, a research opportunity with a strong integrated focus on patient outcomes.

It was Mayo Graduate School's stipend program that was a significant factor in her decision to enter in the Ph.D. program. Mayo's stipend program, unmatched in size or structure by any other in the country, allows students to become free agents, if you will. They enter Mayo Clinic with the financial support to work in any lab that fits their passion for research and best aligns with their interests. "There is no inner conflict. You don't have to do a certain kind of research because of the funding status. You can follow your heart to the type of research that truly excites you," she says.

Conducting research day after day requires self-motivated people. Even in graduate programs, students decide their own destiny. They can spend years on a research project with no results, get the wrong results or make an error, which requires them to start all over again. "It is during these moments, when you get bucked off, that really defines whether or not you can pursue a career in research," says Ms. Kellen. "If you truly love research, you are motivated to come back the very next day and start all over. And Mayo Clinic fuels that motivation." ■

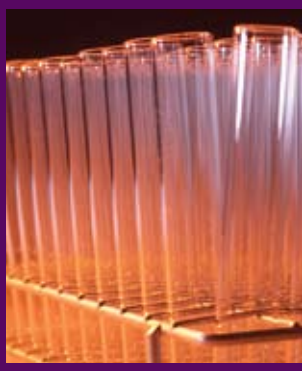
For more information about the Mayo Graduate School M.D./Ph.D. Program or Mayo Clinic's diversity program, please visit *www.mayo.edu/mgs/* and *www.mayo.edu/msgme/diversity.html*

The give and take of grad students

Graduate students are critical to the future of medicine. They help answer today's research questions, and they bring a passion to research through their motivation to make novel contributions to research and literature. Their engagement and level of innovation often launches new research that results in data to compete for extramural funding.

Diane Jelinek, Ph.D.

"Much of the research results I produce are dependent on the experiments being done by students in my lab," says Diane Jelinek, Ph.D., dean of Mayo Graduate School. "A student's basic research often gives rise to a completely new line of investigation," she says.



Mayo has more than 200 faculty interested in training students in their laboratories not only because of the contributions they make to science, but because of the energy and excitement they bring to the setting. It would be wonderful to be able to expand the number of students accepted in the program, however, it currently can't be done without additional funding support.

The current stipend allows students to choose a lab environment they are comfortable with, which offers the type of research they are passionate about. It also keeps a burden away from the investigator's budget, which is critical when National Institutes of Health funding is a shrinking pot. Endowment dollars will become ever more important as baby boomers enter Medicare age in 2011. Today's budget is largely supported by the success of Mayo's clinical practice, a small amount of extramural funding and by a handful of benefactors who support the program. "We will do everything we can to avoid downsizing or changing the funding model that has allowed us to not only recruit exceptional students, but also retain excellent staff," says Dr. Jelinek. Benefactor support will be critical to the future of the program. ■

By Suzanne Winckler

Quality....

NOTHING IS MORE IMPORTANT

Mayo Clinic's mission, to provide the best care to every patient every day, is synonymous with the delivery of quality health care. By most objective measures — mortality rate, adverse patient events, and equity and efficiency as measured by The Dartmouth Atlas of Health Care — Mayo Clinic is consistently at the top of national safety and quality rankings. To underscore its indelible connection to the mission, quality has become Mayo Clinic's No. 1 strategic initiative.

"We've been analytically monitoring and evaluating performance across the enterprise for quite some time," says Denis Cortese, M.D., president and chief executive officer of Mayo Clinic. "The scorecards indicate we are doing very well. Our responsibility now is to empower everyone at Mayo to be the best they can be."

"Our responsibility now is to empower everyone at Mayo to be the best they can be."

— Denis Cortese, M.D.
President and Chief Executive Officer, Mayo Clinic

The pursuit of quality is part of Mayo Clinic's history and heritage. George Bartley, M.D., vice president for the quality initiative, provides this example: "When Dr. Will and Dr. Charlie returned to Rochester after medical school, about the time when antiseptic technique was being developed, their father, William Worrall Mayo, was resistant to such practices. But the brothers were dedicated to scientific inquiry over personal experience, so they learned and implemented what was best for patients. The principles are the same today. Decisions regarding the care of patients must be based on solid evidence. Mayo Clinic has a great opportunity — and an obligation — to examine what we do, how we do it, what results we achieve and how much it costs. That's the science of health care delivery in a nutshell."

A team effort

"We define quality as doing the right thing the right way the first time and every time," says Dr. Cortese. "Mayo Clinic's commitment to the quality initiative is broad and deep. I'm working closely with our Board of Trustees, the Board of Governors and leadership across the enterprise. Our role is to set the direction and the priorities and to inspire the staff to take our culture of excellence to the next level."

Mayo Clinic is challenging everyone to test and implement new systems and procedures that reduce error and compensate for human fallibility with one goal in mind: enhancing our ability to care for patients. Those procedures that clearly demonstrate higher levels of quality can then be shared among our three campuses in Rochester, Florida and Arizona and across Mayo Health System, the network of clinics and hospitals serving more than 60 communities in Minnesota, Wisconsin and Iowa.

Shirley Weis, chief administrative officer of Mayo Clinic, emphasizes that the quality initiative extends into every corner of Mayo Clinic, even areas where staff do not have direct contact with patients. "Of course, clinical safety is No. 1 for our patients, visitors and employees, but quality of service is the other important piece of the initiative," she explains. "Regardless of job description, by improving processes and the way we work together as a team, we add to the overall safety and performance of the entire organization. Everyone has a part in the quality initiative."

Mayo Clinic has the key components in place to create this new future of quality and service: a long tradition of applying systems engineering to achieve safety and efficiency, a culture of excellence and, most important, dedicated, well-trained people. Ironically, it is these dedicated personnel who face the biggest challenge of the quality initiative — acknowledging that even the best people make mistakes.

"Our people come to work every day and do a great job," says Richard Zimmerman, M.D., chair of the Quality Council at Mayo Clinic's Arizona campus. "But people are fallible, people have distractions, they have lives outside of work that can preoccupy their thoughts. On top of that, we ask them to multitask. We interrupt what they're currently doing to change directions — to take over in case of an emergency

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— Shirley Weis
Chief Administrative Officer, Mayo Clinic

or to deal with more than one emergency at the same time. That is the reality of medical care," Dr. Zimmerman explains. "So what gets us to the highest level of quality is putting the systems and procedures in place that allow our staff to do their jobs in this real world of medicine, which includes stresses, sleep deprivation and multiple emergencies, so that on those rare occasions when a person is not at his A game, the outcome is still at the A level."

People + systems + procedures = high reliability

In recent years, there has been a movement in health care to examine and replicate the systems, structures and culture of what are called high reliability organizations (HROs). An HRO is an organization that typically functions in a realm of high risk — aviation and nuclear power production, for instance — but sustains a record of fewer-than-normal accidents or failures.

"The non-health care sectors learned decades ago that if you drive out waste, variation and defect in your processes, you are safer and more successful," says Stephen Swensen, M.D., medical director for Mayo Clinic's quality initiative. "In health care, if we apply those same principles to drive out waste, variation and defect in the care of patients, we have fewer adverse events, fewer preventable deaths and you deliver the best care more reliably."

Mayo Clinic is building teams who are working together across all five states to identify ways to eliminate waste, variation and defect and to eliminate barriers to enhancing

quality. And these teams are being challenged to come up with solutions in 100 days. Across Mayo Clinic, people are taking up the quality challenge. There's a palpable sense of exhilaration.

"We're creating a sense of urgency," says Dr. Swensen. "Everything we're putting in place is geared to having the culture of quality so permeate Mayo Clinic that it is just part of our fabric." ■

Turn the page for three examples of Mayo's quality-in-action

Here are some examples of Mayo's quality-in-action efforts.

QUALITY-IN-ACTION

TRANSPARENCY: To learn and to educate

Last year, Mayo Clinic embarked on a transparency campaign that soon will be implemented throughout the organization. In the weekly employee newsletter, reviews of adverse events are posted, along with the process implemented to rectify the problem. In addition, staff is invited to attend a series of ongoing forums to review adverse events to identify gaps in Mayo Clinic's systems and to learn what interventions are under way to minimize the potential for these events to recur. Mayo Clinic has always had internal processes for reviewing and analyzing adverse and sentinel events. This is the first program to inform and engage the entire staff in the collective effort to improve Mayo Clinic's systems and procedures.

"We are asking the entire organization to be up front about what we know we do well and about what we know we don't do well, so we can drive improvement in those areas," says William Maples, M.D., chair of the Transparency Work Group. "To take Mayo Clinic to the next level, every employee must be part of the whole team to enhance outcomes, safety and service. It takes enormous courage for our physicians, residents and allied health staff to stand up and talk about these things. The whole spirit of transparency is to learn and to educate."

Mayo Clinic is making another significant advance in the realm of transparency. It is including patients and the public in the dialogue. Mayo Clinic has launched a Quality Web site *www.mayoclinic.org/quality/* that includes data by which Mayo Clinic measures its outcomes, safety and service. To underscore Mayo Clinic's commitment to transparency, the information on the publicly accessible Quality Web site is identical to the Quality Web site Mayo Clinic shares internally with staff.

"It's absolutely essential that we engage our patients and the public in this process," says Dr. Maples. "The only way to do this is to share the same information we use internally to assess ourselves. This Web site allows everyone to see how Mayo Clinic stacks up regionally and nationally, so they can see where we are taking aggressive steps to implement new systems and procedures to ensure outcomes, safety and service." ■

"To take Mayo Clinic to the next level, every employee must be part of the whole team to enhance outcomes, safety and service ... The whole spirit of transparency is to learn and to educate."

— William Maples, M.D.
Chair of Mayo's Transparency Work Group

AT MAYO CLINIC

DOOR TO BALLOON: Shaving minutes to save lives, improve outcomes

When a person suffers an acute heart attack, every second counts. Door to balloon time (D2B) measures the time from the patient's arrival at the hospital, most often an Emergency Department (ED), until the time he or she receives angioplasty, a procedure that uses a small balloon to open blocked arteries. The faster blood is restored to the heart, the less chance there is for permanent damage to the muscles of the heart, which translates to fewer deaths and reduced long-term disability.

Current D2B guidelines call for achieving the process within 90 minutes or less. Few hospitals currently meet this objective (less than 40 percent for non-transferred patients and less than 5 percent for patients transferred from another medical facility). Several years ago, Mayo Clinic in Rochester initiated a multidisciplinary effort to decrease D2B to less than 90 minutes. By 2004, the median D2B had been reduced to 70 minutes. There was continued improvement: in the first half of 2007; the median D2B was 64 minutes, and 93 percent of all patients had a D2B time under 90 minutes. Across Mayo Clinic, emergency medical staff and cardiac catheterization teams are also working to reduce D2B time, and Mayo Clinic in Jacksonville made impressive strides in 2007.

"A multidisciplinary team was created to review every case and look for opportunities for improvement," says Kristine Thompson, M.D., Emergency Department physician and member of the D2B team. "There have been multiple refinements to the process of getting the patient's blocked artery open as quickly as possible. With each change, the average door to balloon time fell, and the rate of success improved in ensuring patients received angioplasty in 90 minutes or less."

When the project began in 2006, the success rate was 70 percent and now has improved to 91 percent. By the third quarter of 2007, the median D2B time had dropped from 86 to 76 minutes. "The most exciting part of this project is seeing the pride in both the ED and cardiology team members as the door to balloon time falls, our success rates improve and our patients get even better care," says Dr. Thompson. "Teamwork has been the key to these improvements and will continue to be the cornerstone of our efforts to provide high-quality medical care to patients who are having an acute heart attack." ■

PLUS ONE: Clear, quick communication ensures patient safety

The health care teams at Mayo Clinic Hospital in Phoenix have initiated a program called Plus One, a powerful communications program that empowers every allied health staff member to seek and administer help the moment a patient needs it. Rapid-response systems in hospital settings, such as code blue, focus on helping patients already in critical emergencies. The advantage of Plus One is that it triggers a response process before a patient's situation becomes acute. The program has three main elements: it reinforces that it's good and right to call for help; it outlines the best way to clearly convey information to get needed assistance; and it empowers nurses and other allied health staff to pursue the matter up the chain of command if they feel they are not getting the immediate help they need. Institutional leadership reviews all instances of Plus One to continually improve performance.

"Plus One gives caregivers the permission to get the right thing to the patient at the right time," says Michelle Anderson, manager of the intensive care unit (ICU) who helped develop Plus One. In part because of its large solid organ transplantation programs, the severity of illness at Mayo Clinic Hospital is quite high, according to Ms. Anderson. "We treat really sick people, but the hospital's rate of code blue emergency calls is low," she says. "In my opinion, it means we are preventing code blues from happening. I can't tell you how many times our nurses have facilitated early intervention to help a patient before he or she required a code blue." ■

For more information on how Mayo Clinic strives to be in the top tier of performance for all quality measures visit *www.mayoclinic.org/quality/* and *www.mayoclinic.org/quality/quality-measures.html*

A sampling of the many clinical trials currently being conducted at Mayo Clinic

By Ron Amodeo

The many faces of research

Those who participate in clinical research help Mayo Clinic advance medicine

Around the world, thousands of volunteers willingly participate in experiments to advance medicine, yet we never hear about them. They take new drugs, endure difficult side effects, submit blood and tissue samples, and offer their bodies up as laboratories with such little fuss that most of us remain oblivious to their critical role in validating new treatments and cures. Young and old, from diverse backgrounds, sick or well, they are human subjects in clinical research.

Clinical research is crucial to the advancement of medicine. Research can answer specific questions about what causes a disease, translate new basic science discoveries to better understand a disease, and devise new approaches to prevent diseases and improve patient care. Clinical trials help determine whether new drugs, devices and therapies are effective and safe. Trials often work by comparison, such as testing a new drug against a placebo (inactive agent). Clinical research speeds the process of translating discoveries into safe and practical outcomes for patients. Perhaps most importantly, research systematically moves medicine forward, guaranteeing that not only will the next generation be better off than ours, but that our generation will be better off with each passing hour.

The Center for Translational Science Activities

At Mayo Clinic, clinical research is just one activity among many managed by a specialized program — the Center for Translational Science Activities (CTSA). The CTSA is dedicated to understanding, simplifying and speeding discoveries from the laboratory bench to the patient's bedside and back again. Ultimately, the CTSA strives to be a solution for investigators who, in previous decades, would have been bogged down by paperwork, unfamiliar rules, data collection, and the search for expert help and qualified study participants. Today, the center manages these activities for Mayo investigators and provides the efficiencies, safeguards and collective wisdom necessary to maximize speed and validate results.

The CTSA offers four complementary services to investigators looking to undertake clinical and translational research. The first three services help educate health care professionals, streamline processes such as paperwork through the development of information technology, and test the feasibility of implementing medical discoveries in community settings. The fourth service (Research Resource) provides assistance that ranges from a set of 14 core laboratories from every imaginable clinical research discipline, to three state-of-the-art clinical research units (CRUs) dedicated to executing a wide diversity of clinical investigations.

Our clinical research roots

Mayo Clinic's roots in clinical research date back to 1920, when a lab for patients with diabetes was created. From that lab came the discovery of insulin's link to diabetes and the selection of the lab's founder, Russell Wilder, M.D., to be among the first to conduct clinical trials of insulin. A predecessor of the CRU, the Nutrition Laboratory, opened at Mayo Clinic in 1940. It was one of the first units in the country designed solely for the detailed study of metabolic disorders in humans. Among the many accomplishments in that lab were studies of the anti-inflammatory effects of compound E (cortisone) on rheumatoid arthritis, for which Philip Hench, M.D., and Edward Kendall, Ph.D., were awarded the Nobel Prize in 1950.

Today, Mayo Clinic's three CRUs are staffed by more than 100 specially trained nurses, pharmacists, clinical psychologists, dietitians and laboratory technologists. Two CRUs have fixed space and fully equipped laboratories in

Rochester, Minn. They are the inpatient CRU at Saint Marys Hospital (established in 1971), and the outpatient CRU at Rochester Methodist Hospital. The third CRU is a mobile unit, the latest addition to Mayo's clinical research enterprise. The Mobile CRU consists of people and technologies that travel almost anywhere to help researchers, from accessing a younger or more diverse population on college campuses to running clinical investigations in Antarctica. Already its potential is being realized in Mayo hospitals, where, for the first time, clinical research is being brought directly to the bedside of acutely ill patients. Each CRU is available to any investigator, from those funded by Mayo to those supported by federal, state and local agencies, including the private sector. Currently, more than 70 percent of research is funded by federal agencies, most especially the National Institutes of Health.

At any given time, at least 300 active studies are in progress across all three CRUs. Over the course of a year, more than 20,000 volunteers may participate. Some studies are mechanistic in nature, helping a scientist better understand a medical condition. Other studies are therapeutic where the patient might benefit from the investigational treatment or therapy. Finally, some studies are epidemiological — conducted in larger populations to link human health outcomes (like epidemics) to a specified cause.

20,000 Approximate number of volunteers who participate in studies hosted by Mayo's three CRUs each year

Clinical trials explained

Clinical trials are a special version of clinical research undertaken at Mayo Clinic, comprising about 15 percent of the overall studies and usually involving an external partner. While clinical trials often have multiple phases (up to four), the CRUs at Mayo are primarily involved in phase I trials, where unknowns are highest and expertise is most needed.

Patients typically become aware of phase I clinical trials from their physicians, usually after they have failed to respond to approved treatment regimens. The study is explained and the possible outcomes are reviewed. Although little is known about the risks and benefits of such a trial, physicians try to be realists and keep expectations in line during the process of acquiring an "informed consent." Traditionally, patients refuse to be deterred from participating in the study.

FACT In clinical research, a placebo is never administered to a patient in place of a standard treatment if the standard is potentially therapeutic

"Even the smallest of hopes can be powerful," says Jenny Weis, nurse administrator of the CRUs. "But most often the patient's hope is for the rest of us. I've met with patients when the nurses are concerned that the patient's expectations related to a study drug might be unrealistic, only to be reassured by the patient that they fully understand the seriousness of their situation and the limited chance for personal benefit. The majority say, 'I know it might not help me, but maybe it will help somebody else.' This selfless approach serves as an additional motivation for research teams as they work to better understand and develop new treatment options for a whole host of diseases."

7,875 Current human studies approved at Mayo Clinic in 2007 (both private and federally funded)

Running the research

Clinical research can be planned a year or more in advance to acquire the necessary funding, collaboration and participants. One key document is the protocol or study design. It acts as the "operating manual" of the study to ensure that everyone performs the same procedures in the same way for every participant. The protocol states what questions the investigator intends to answer, what types of people can participate, how the research will be conducted, and what safeguards should be in place to protect the volunteers. Various committees review the protocol as well, including an Institutional Review Board, which verifies that each study is ethical and that the rights of participants are protected, and a Data Safety and Monitoring Board, which follows each study as it unfolds to ensure that participants are not exposed to undue risk. Once an investigator gets a protocol funded and approved, a project manager and staff members from the CTSA work to help execute the plan, including scheduling the CRU.

CRUs are "human labs." The experts there follow the protocol put together by the investigators, including tasks like precisely administering a drug or therapy, monitoring for immediate side effects, drawing blood or tissue samples and sending them to a specialized lab to measure pharmacokinetics (the fate of the drug over time), pharmacody-

namics (the action of the drug), and pharmacogenetics (the relationship between genetic factors and the response of the drug). Everything is recorded for later analysis. At each step, patient safety is taken into account before anything else. In addition, training is continuous to keep pace with the uniquely evolving demands of research. And the skills required are diverse: competencies in assessment, treatment, medication administration, an understanding of research, an understanding of informed consent, and the ability to look for, record and respond to adverse events.

1,511 Current U.S.-funded clinical trials connected with Mayo Clinic

Getting better all the time

Over time, the CRUs at Mayo Clinic have steadily enhanced how investigators design their protocols and run their clinical studies. The sheer numbers of investigations that are in the planning stage or are currently under way encourage a level of collaboration almost unachievable anywhere else. "The cross-pollination of ideas and methods between investigators is impossible to track," says Joan Muhs, Mayo Clinic nurse manager. "There is a high level of teamwork, with researchers from diverse labs joining together to create studies that answer multiple questions at once. Everyone is advancing together. Because initial investigations can last six months to a year, great care is given to maximizing the outcomes for everyone." For a list of clinical research studies currently open for enrollment at Mayo Clinic, please see *http://clinicaltrials.mayo.edu*.

What's next?

The CTSA at Mayo Clinic is one of 12 national sites funded by the National Institutes of Health (NIH) to increase the pace of translating science into clinical practice. Mayo's CRUs are among the most advanced and busiest clinical research units in the country. The mobile unit is the first of its kind at any CTSA. So what's next? And what will it take to get there?

Conducting clinical research in the past has required that volunteers travel to Mayo Clinic. The development of a mobile CRU has shattered that barrier. Now the prospect of real-time studies in surgical bays, intensive care units, and other unique environments, both inside and outside Mayo, are open for exploration. An increased emphasis on expanding the mobile CRU's capabilities, including training of new teams, 24/7 coverage of studies, and more engagement with the communities we serve, is a major opportunity to take translational science to the next level.

Increasing speed is critical. An investigator can often plan a study one to two years in advance before being funded, then take three to five years to work through each phase of the process. Preceding this effort may be years of basic research and experiments with nonhuman models. When a volunteer asks, "How fast will things hit the street and be available?" the answer goes beyond simply improving efficiencies and collaborating with other national translational centers. A continual influx of resources to expand the services of the CTSA is a key driver.

K. Sreekumaran Nair, M.D., directs the research resources area of the CTSA, including the CRUs. "We've recently received funding from the NIH to complement our mobile unit with a bus. By making our research capabilities mobile, we will increase the diversity of individuals interested in participating in our clinical research," he says. "Next we need to acquire specialized staff and dedicated technology, like MRI spectroscopy, to accelerate our results. Having qualified staff and the right information technology will help eliminate paperwork and collapse processes. What will this mean for Mayo? I wouldn't be surprised that, with the effort we are giving now and will be giving over the next 10 years, we find ourselves receiving another Nobel Prize."

$45,000,000 The amount that Mayo Clinic promised to raise when awarded $72.5 million from the National Institutes of Health in 2007 to expand the CTSA

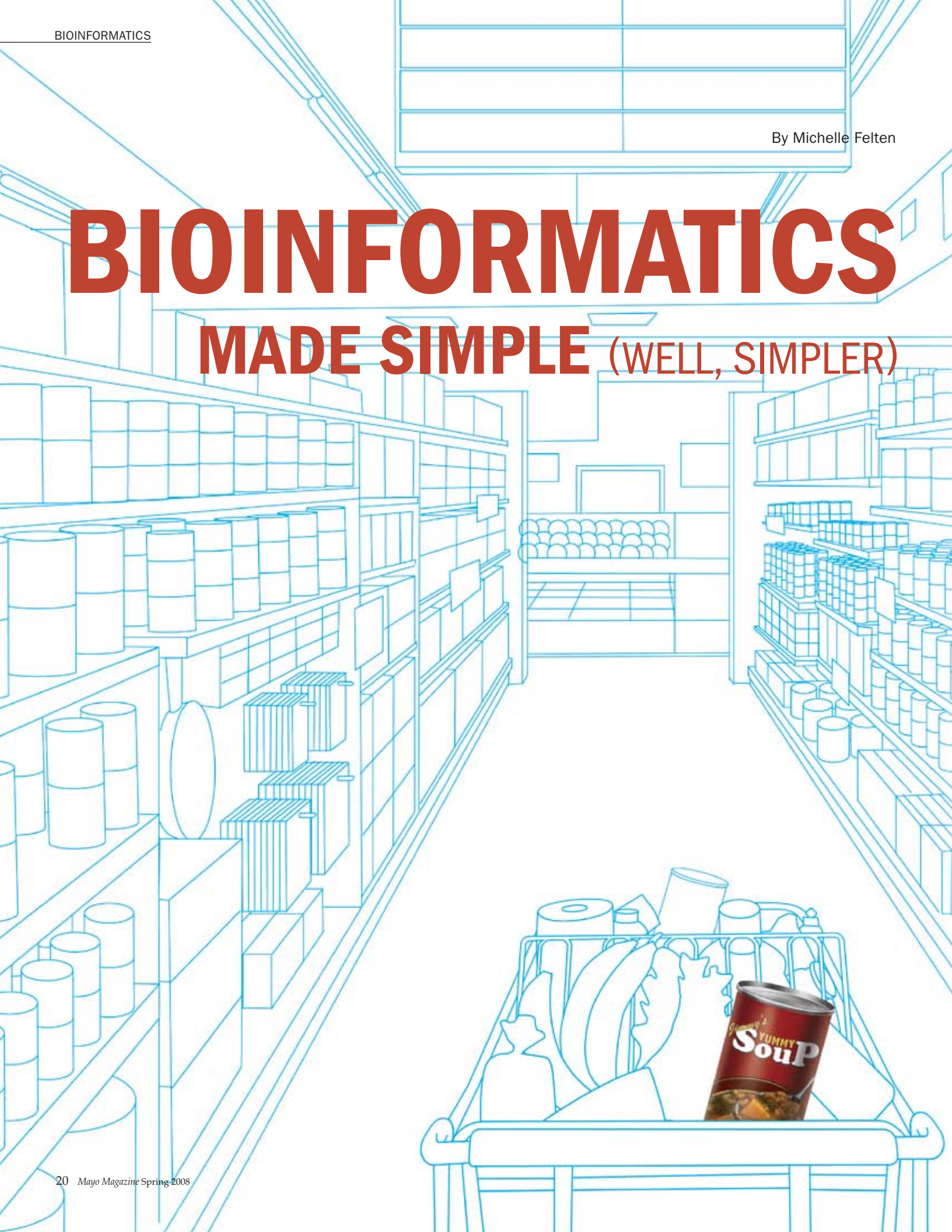
One more thing

Mayo Clinic has received 35 years of continuous funding from the NIH for translational science activities. A grant from the Grainger Foundation of nearly $5 million was instrumental in establishing the second Mayo CRU in 1997. The most recent NIH grant of $72.5 million in 2007 was accompanied by a commitment from Mayo to raise an additional $45 million over the next five years. ■

For a list of clinical research studies currently open for enrollment at Mayo Clinic, please see *http://clinicaltrials.mayo.edu*

By Michelle Felten

BIOINFORMATICS MADE SIMPLE (WELL, SIMPLER)



Bioinformatics. It's a term you may have heard tossed around. And although it's somewhat familiar, you aren't sure you could define it if push came to shove. The "bio" part of it leads you to believe it has something to do with biology. And the "informatics" part must have something to do with information, but maybe that's as far as you've gotten in your efforts at deciphering. > The fact is, defining bioinformatics is probably much more difficult than implementing it, at least in everyday events. > On a basic level, bioinformatics is the process of gathering and analyzing biological data and then interpreting and reaching a decision based on that data. What's learned from the first decision affects how the next set of data is gathered and, consequently, how the second decision is reached and so on and so forth. It's basic problem solving and deductive reasoning with a scientific spin. >

> A real-life example of the growing field of bioinformatics might be found in the soup aisle. Here, you're faced with a plethora of choices, everything from the tried-and-true chicken noodle to the hearty steak and potatoes variety. Your job is to decide which ones will make their way into your cart.

This is simplified bioinformatics. It's the process of going through options, narrowing choices and making selections based on a number of criteria. In the supermarket scenario, it might be personal taste, family preferences or what's on sale that leads you to select one soup over another.

From soup to science

Taking the soup example into the scientific realm, Peter Li, Ph.D., vice chair of the Division of Biomedical Informatics, says that bioinformatics collects massive quantities of information in large, organized databases and then processes that information with advanced computer technology to analyze and interpret the data in just about any way imaginable. This is where Dr. Li and his team lend their expertise as they help Mayo Clinic researchers find answers to important questions in biological and medical sciences.

"There are endless ways for researchers to compile data. It's kind of like pouring a bunch of information into a giant funnel," says Dr. Li. "At some point, you need to be able to retrieve what comes out the other end in a way that makes sense and points to an answer. You need to be able to figure out what the data mean and what to do with it. Our team helps with that process." The bioinformatics methodology team at Mayo includes mathematicians, statisticians, biologists, chemists and computer scientists to name a few. The members of this sleuth-like team work at the molecular level to solve mysteries and identify common denominators in disease. By understanding basic biological processes and by applying sound informatics practices, researchers use bioinformatics to advance the diagnosis, treatment and prevention of many diseases.

Bioinformatics boom

As a field, bioinformatics has exploded in the last decade as a result of the decoding of the human genome. Dr. Li, who served as fourth author on the Celera human genome project, came to Mayo Clinic in 2006 because he felt Mayo had the best of both worlds. It has the century-long history of an integrated practice, and decades of epidemiologic studies tracking large patient populations.

"If there is a place in this world that can use what's known about the human genome and pair that information with robust population studies to create individualized medicine, Mayo Clinic is the place to do it," he says.

For him, the concept of bioinformatics is analogous to being the middle layer of a three-layer cake. The top layer is the science and practice, the bottom layer is the technology.

Knowledge obtained through bioinformatics tools supports Mayo's top priority, its patients. It brings what's learned in the lab to the bedside of the patient. Ultimately, bioinformatics is the information conduit to improved patient care in the clinical setting and to providing a definitive approach to treating people based on their genetic makeup in this concept of individualized medicine.

Making it personal

A perfect example of this information-conduit analogy lies in the area of pharmacogenomics, the study of how a person responds to (or metabolizes) a drug. At a molecular level, each of us is different. Acknowledging and understanding these molecular differences reminds physicians that one-size-fits-all medications don't work. Physicians take this knowledge into their clinical practices. And in the lab, it helps researchers to narrow and identify specific treatments that might have the most impact in certain subsets of the population as we strive toward making medicine personal.

One success story in the field of pharmacogenomics is the difference that a simple DNA test has made for children with acute lymphoblastic leukemia, the most common childhood cancer.

For years, physicians didn't understand why the class of drugs used to treat this disease cured some children and killed others. Key discoveries made by Mayo Clinic researchers revealed the answer, which lies in the genes. Today, those being treated for this childhood cancer are given a routine blood test prior to treatment to determine the appropriate level of medication needed to destroy their cancer.

The tools to use

The field of bioinformatics is becoming almost unwieldy, even for those who thrive on detail. That's why Dr. Li and his colleagues work toward streamlining the process. They work to build tools that will advance bioinformatics at Mayo Clinic and around the world.

In reality, the sheer amount of information about any one gene or disease is becoming too much to learn and recall at a moment's notice, even for the most brilliant researcher. On top of that, there are innumerable interactions between any given gene and other genes (25,000 at last count) and the environment. This exponential growth of data taxes even the most powerful computing systems. That's why it's imperative to develop tools and systems that improve the search for relevant patterns of genes and environmental factors. Much of Dr. Li's work centers on developing new methods to improve upon the processes needed by researchers.

Organize it, store it

The team also strives to find better ways to organize results in addition to organizing data. That way, when research requests are made, they can better integrate what they already know from their databases of existing information. This process speeds the pace of discovery and its application to other sciences as well as to Mayo's clinical practice.

And Dr. Li and his team work on tools to advance the idea of a world-class central repository of patient and genetic information. At Mayo Clinic, the Enterprise Data Trust, which is a giant storehouse of data, can serve as that model for clinicians and researchers to draw upon when they have questions that reside at the molecular level. Of course, in order to have a worldwide central repository, Dr. Li says that everyone must speak the same bioinformatics language to eliminate confusion.

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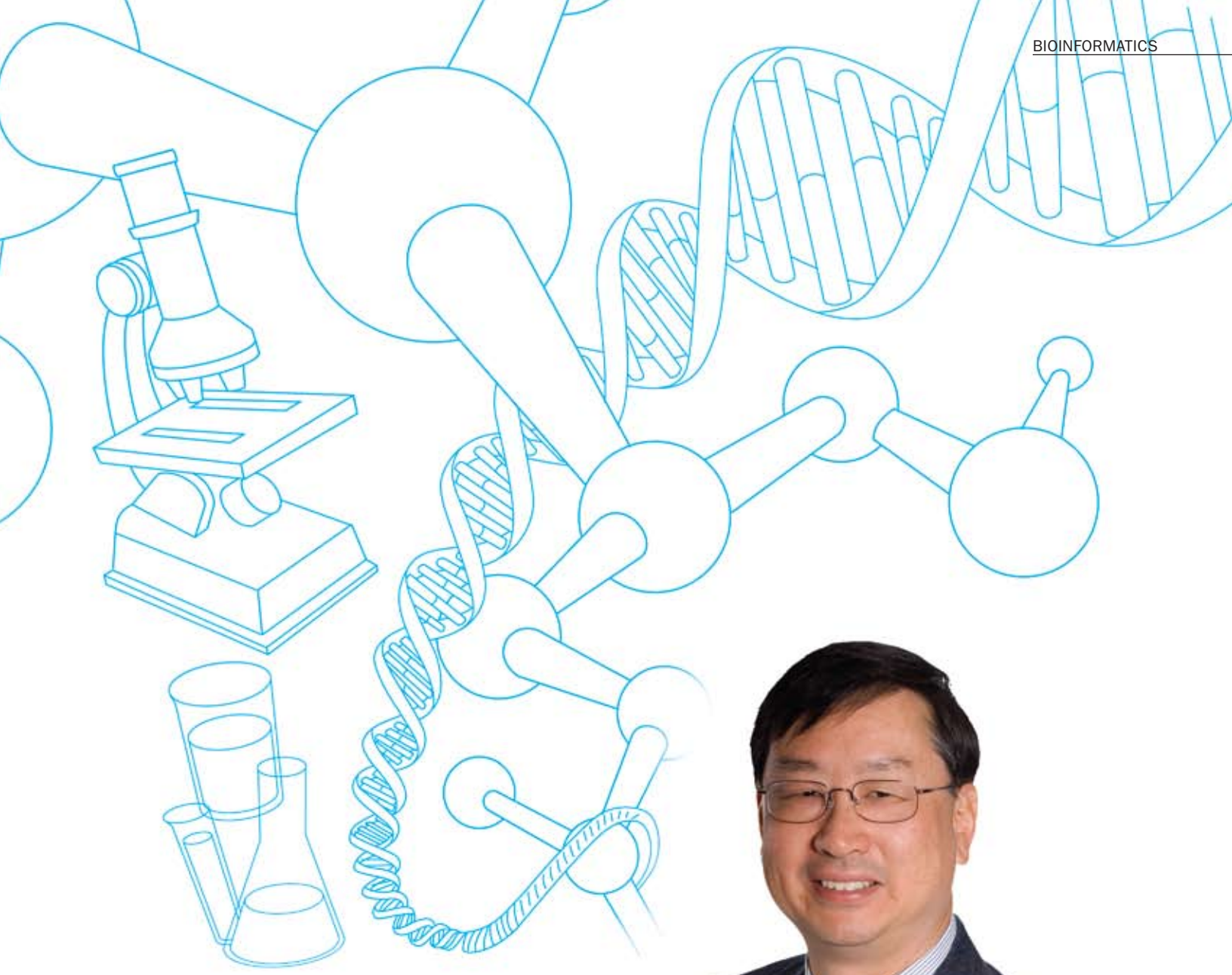

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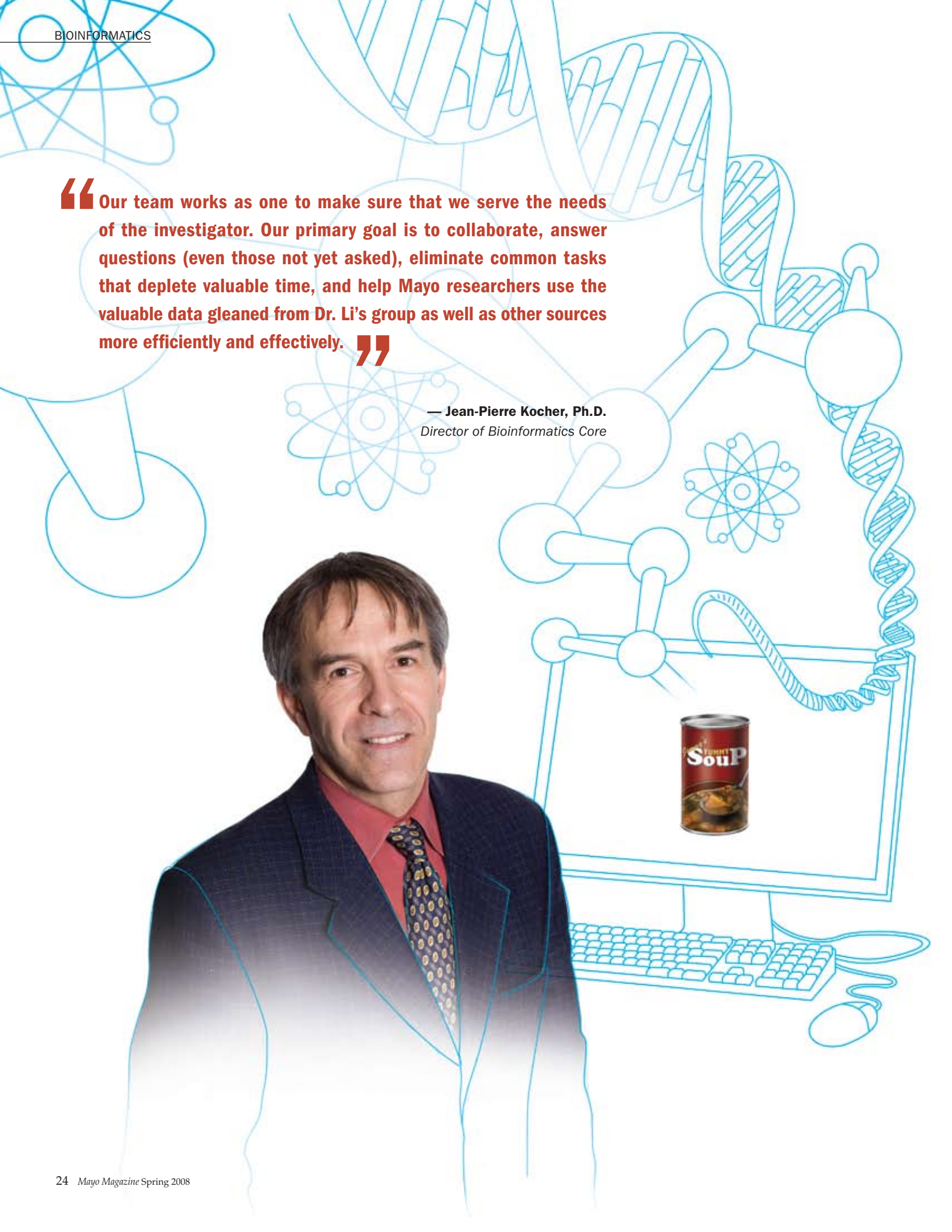
— Peter Li, Ph.D.
Vice Chair of the Division of Biomedical Informatics

“Our team works as one to make sure that we serve the needs of the investigator. Our primary goal is to collaborate, answer questions (even those not yet asked), eliminate common tasks that deplete valuable time, and help Mayo researchers use the valuable data gleaned from Dr. Li’s group as well as other sources more efficiently and effectively.”

— Jean-Pierre Kocher, Ph.D.
Director of Bioinformatics Core



It's a problem Dr. Li works tirelessly to erase. The challenge is one of too many words being used interchangeably but meaning different things, he says. It's the equivalent of "speaking Greek" in the bioinformatics world. Dr. Li believes it would be ideal if bioinformatics scientists worldwide could agree upon terminology that everyone understood to mean the same thing. A universal syllabus would cut down on the confusion and the number of misinterpretations in requesting research information, and it would encourage collaboration among scientists everywhere.

At your service

In addition to the efforts put forth by Dr. Li's group, a complementary process takes place in the Bioinformatics Core (BIC) run by Jean-Pierre Kocher, Ph.D., director of BIC. Dr. Kocher's team includes bioinformatics experts with multidisciplinary expertise. The primary goal of BIC is to support researchers so that Mayo can continue to leverage genomics data to extract the kind of information that will improve patient care.

In their supportive role, the members of BIC partner with biostatisticians and experimental core facilities. "As often as possible, these teams work as one to serve the needs of our investigators. Our goal is to collaborate to support our investigators in the most effective manner possible," says Dr. Kocher.

As part of this collaborative effort, Dr. Kocher's team helps researchers plan the bioinformatics requirements for their studies. This planning helps researchers get the answers they need in a way that makes sense and will not be left open to misinterpretation. Planning ahead and anticipating challenges means researchers will have fewer hurdles to jump when they take their work to the next level in applying for federal funding. This attention to detail assures that all data being submitted already has met the stringent criteria needed for funding approval.

Step-by-step process

BIC also develops new bioinformatics methods that provide additional ways to extract information from the genomics and proteomics data gathered by investigators. This process is critical in providing Mayo researchers the edge they need when seeking that external funding to support their many programs.

Helping investigators with their bioinformatics analysis needs is just one of BIC's main functions; teaching them to use the bioinformatics tools created is another. To this end, BIC offers training programs for these bioinformatics applications. Last year alone, they had more than 20 classes available to help researchers better understand the science of bioinformatics and the various ways to take advantage of available bioinformatics techniques.

Building it big

And last but not least, BIC is engaged in various Information Technology (IT) infrastructure developments that require in-depth biological and computer science knowledge. The team's expertise lies in implementing sophisticated data-management systems that organize and mine genomics and proteomics data. This service is critically important as the need for genomics-based research increases at a rapid pace.

"We have to look at new solutions to better handle and mine this huge amount of information," says Dr. Kocher. In this case, necessity truly is the mother of invention as he and his team seek new methods for keeping what's learned in a manageable system.

However, the management of all this data is only one issue. The time needed to analyze this information is also expending. "The scalability of our services is concerning as we work to develop a system to analyze this data and help us streamline the process of interpreting genomics data," says Dr. Kocher. "We are specifically looking at computational ways to automate routine bioinformatics tasks so that we can facilitate the design of analytical workflows. This will free our bioinformatics experts to focus on the design of solutions rather than concentrate on the implementation of these solutions." ■

To learn more about how bioinformatics is working to improve human health and the understanding of human disease, please visit *http://mayoresearch.mayo.edu/mayo/research/bmi/*

By Matt Derechin

Dimensional anesthesia

Physicians combine pain management and 3-D imaging

With her medical history — two knee replacements and two shoulder replacements — one wouldn't blame Diane Brown for not wanting to be within 10 miles of a medical facility. She didn't have a bad experience, but theoretically, she'd spent enough time in the hospital, a place people never really want to be. But the truth is, she moved from Orlando to Jacksonville earlier this year to be closer to Mayo Clinic.

Her affinity for Mayo stems in part from her experiences after all those operations. Following each procedure, she resumed most of her normal activities within a month, and she was back to work in six weeks.

Managing a good recovery

Mrs. Brown credits her orthopedic surgeon, Mark Brodersen, M.D., for making these results possible, as well as for the pain-management technique used in all four operations. Prior to her surgeries, anesthesiologist Steven Clendenen, M.D., used a needle to place a catheter filled with anesthesia to numb along the individual nerves in the operation area. The numbness lasted for two days following surgery, when postoperative pain is typically at its worst.

"I couldn't feel anything in the joint those first two days," Mrs. Brown says. "Instead of focusing on the pain, I was able to start focusing on my recovery and the things I would need to do to get back to my normal activities. Before I knew it, I was back to my real life. "

An important physiological effect also occurs, Dr. Clendenen says. When the nerve is inactivated, the brain doesn't know surgery is under way and it doesn't mount the same kind of pain response, which often keeps patients medicated and in their beds. "Tricking the brain like that allows us to prescribe fewer narcotics to patients after surgery and helps them recover faster," Dr. Clendenen says.

Revolutionizing an old technique

Traditional nerve blocks have been used for decades, but they're not the easiest procedures to perform. Even with guidance from two-dimensional ultrasound, a relatively new tool for the anesthesia world, seasoned practitioners can still have difficulty locating the right nerves to numb. This difficulty also limits the areas where anesthesiologists feel comfortable performing nerve blocks.

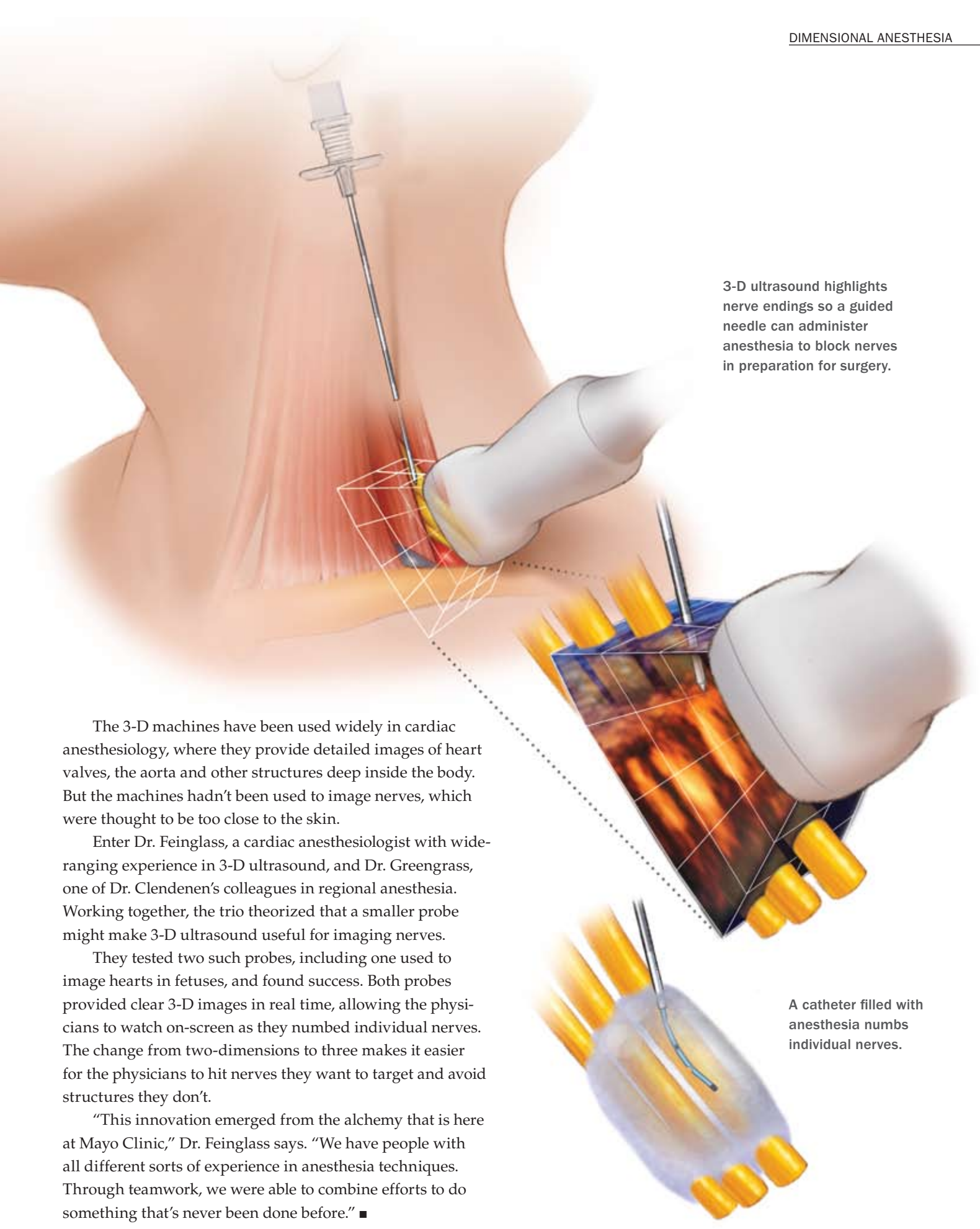
But Dr. Clendenen and two anesthesia colleagues, Neil Feinglass, M.D., and Roy Greengrass, M.D., found a way to overcome both shortcomings and created new possibilities for nerve blocks. Their solution pairs 3-D ultrasound, a tool often used in cardiac anesthesia, and modified probes that allow the device to image nerves with stunning clarity while the procedure is occurring.

"Even lay people can spot the nerves in these images," says Dr. Clendenen. "We think we can use this advanced technology to make nerve blocks safer, more effective and more widely used."

The Mayo Clinic team is the first to publish on the use of 3-D ultrasound and may be the first team to use it. They have performed nearly 150 procedures using the technique, in areas that have included the neck, back of the leg and under the collarbone. Now, they are working with medical device companies to create new equipment to help broaden the use of 3-D ultrasound.

A Mayo story

The discovery of the use of 3-D ultrasound is an example of Mayo Clinic teamwork in action. When Dr. Clendenen arrived at Mayo Clinic two years ago, two-dimensional ultrasound was emerging as a useful tool for nerve blocks. Dr. Clendenen had difficulty finding a two-dimensional machine to practice with, but he did find a 3-D machine.



3-D ultrasound highlights nerve endings so a guided needle can administer anesthesia to block nerves in preparation for surgery.

A catheter filled with anesthesia numbs individual nerves.

The 3-D machines have been used widely in cardiac anesthesiology, where they provide detailed images of heart valves, the aorta and other structures deep inside the body. But the machines hadn't been used to image nerves, which were thought to be too close to the skin.

Enter Dr. Feinglass, a cardiac anesthesiologist with wide-ranging experience in 3-D ultrasound, and Dr. Greengrass, one of Dr. Clendenen's colleagues in regional anesthesia. Working together, the trio theorized that a smaller probe might make 3-D ultrasound useful for imaging nerves.

They tested two such probes, including one used to image hearts in fetuses, and found success. Both probes provided clear 3-D images in real time, allowing the physicians to watch on-screen as they numbed individual nerves. The change from two-dimensions to three makes it easier for the physicians to hit nerves they want to target and avoid structures they don't.

"This innovation emerged from the alchemy that is here at Mayo Clinic," Dr. Feinglass says. "We have people with all different sorts of experience in anesthesia techniques. Through teamwork, we were able to combine efforts to do something that's never been done before." ■

By Dianne M. Axen

Michael D. Jensen, M.D.

Director, Obesity Treatment Clinic at Mayo Clinic's campus in Rochester

It's a good idea to bring along a pair of walking shoes when you have a conversation with Michael D. Jensen, M.D. As one of the world's leading experts on fat and fat metabolism, he knows the value of physical activity. And he walks the talk — all day. It's a comfortable walk-and-talk pace that makes an inspiring statement about the strides he and his colleagues are making on what sometimes seems to be insurmountable problems of obesity and diabetes.

Dr. Jensen is a consultant in the Division of Endocrinology, Diabetes, Metabolism and Nutrition and director of the Obesity Treatment Clinic at Mayo Clinic's campus in Rochester. He holds the academic rank of professor of medicine. His clinical work is primarily with patients who have problems with obesity and diabetes. Dr. Jensen's research focus is on the effects of obesity and the determinants of body-fat distribution. He has received continuous funding from the National Institutes of Health for more than 20 years. He is a national presence on this topic and has contributed to many professional organizations both by committee and elected office.

The Centers for Disease Control and Prevention estimates that the financial costs of obesity in the United States run at least $117 billion annually. For Dr. Jensen, concern about the health risks of obesity to individuals and communities is the major driver for his work. He discusses his thoughts and research work with Mayo Magazine.

What is causing the epidemic of obesity and diabetes in the United States?

It's environment, environment, environment. Human genes haven't changed in the last 50 years, so we can't blame the epidemic on genetics. In contrast, our environment has changed a great deal. In the past, people performed physical work for a living, food was harder to come by and it was delivered in smaller portions. Today in America, most of us can buy whatever kinds of food we want, we receive it in oversized portions, we have limitless food variety and we are bombarded by advertising prompting us to make unhealthy food choices.

I believe the exploding obesity problem relates to the changes in our environment, and the growing problem of diabetes is linked to the increase in obesity.

What are the health risks of obesity?

One of the risks of obesity is diabetes. It's hard enough for someone to struggle with a weight problem, but things get more complicated when a patient also receives the diagnosis of diabetes. They might have to start careful monitoring of blood sugar and begin taking insulin injections. In addition, a person with diabetes is at increased risk for eye, kidney and nerve damage.

Another health risk related to obesity is sleep apnea. After a certain amount of weight gain, some people will develop sleep apnea. Sleep apnea becomes a vicious cycle because people who have it are always tired. It is difficult for those with untreated sleep apnea to do things that can

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Michael D. Jensen, M.D.

improve their health, like get out and go for a walk, because they are just too tired. Some of my patients with sleep apnea eat just to stay awake. These eating patterns predispose them to more weight gain, which in turn, makes their sleep apnea worse. Once a person gets to the point of sleep apnea, it's almost like circling a black hole until something even more serious happens unless the diagnosis is made and treatment begun.

Could you briefly explain diabetes?

With diabetes, the pancreas doesn't produce enough insulin to regulate blood sugar normally. However, some people with diabetes make a lot of insulin, and some people make much less insulin even early in the disease. This is because a portion of the diabetic population is very resistant to the insulin that they are taking, and those people seem to have the most trouble with their diabetes. Other people respond well to insulin or other treatments and their diabetes is much easier to control.

What is the main focus of your diabetes research?

One of our main focuses right now is on muscle. Most people would agree that maintaining muscle is an important way to help a person regulate blood sugar.

An important job of the insulin produced by the pancreas is to stimulate muscle to remove excess sugar from the bloodstream, thereby keeping the blood sugar normal. But in people with obesity and diabetes, there is an interaction between fat and muscle that makes the insulin not work as well for the muscle. When this happens, a person is unable to lower his or her blood sugar, which puts an extra load on the pancreas to produce more insulin. Of course, it's not just the muscle that is involved, but right now, this is the focus of our research. Specifically, our team is studying what the fat tissue-muscle tissue link is in order to explain why the muscle is not responding normally to insulin.

(continued on page 30)

Is there a link between aging, diabetes and obesity?

Yes. With aging, physical changes occur that make a person more prone to diabetes. Simply put, our pancreas may wear out just as other parts of our body do.

At Mayo, there is great interest in studying why the elderly find it harder to keep up their strength and endurance. Is there something about this gradual loss of muscle function with aging that exaggerates the effect of fat and exaggerates the loss of pancreas function?

We are beginning to recognize that diabetes issues are much different in a young adult than in an older adult. For example, a person who is 21, overweight and diabetic, has a different set of processes occurring than a person who is 72, not overweight but is progressing toward diabetes. It turns out the 72-year-old is probably lacking a healthy amount of lean tissue to offset what is happening in their fat tissue. That's different from the 21-year-old who has ample lean tissue, but also has way too much fat tissue.

So, if I am 72 and the doctor tells me I'm progressing toward diabetes, what can I do to decrease my risk of developing it?

Staying active is key to staying healthy. People who walk preserve their strength, maintain their flexibility and their balance, and are much less likely to get diabetes. In addition, they are much less likely to fall and suffer fractures. We don't yet understand all of the changes that are taking place that cause the muscle of an older person to be less functional than it once was, but we do know that physical activity increases that functionality. An active older person can have almost the same fitness level as a younger person. So it is not inevitable that as people get older they have to be half as healthy or half as fit as younger people. It just requires a lot more work. The long-term goal with some of the research programs at Mayo is to understand what it is about aging that predisposes us to diabetes.

Is your research making its way to patient care?

Oh yes. We've done several studies on how many calories people burn, what changes take place when people alter their diet or lose weight, and how these changes affect metabolism and the number of calories they expend at a lower weight. The findings of these studies have made it to our Mayo Clinic practice.

One of the barriers in the study of obesity is generating public support. Often people view obesity as more of a personal failing than a legitimate health and scientific problem. There is a common attitude that if people are overweight it's because of their own doing. Although people do need to accept some personal responsibility for making healthy lifestyle choices, we understand that there are scientific reasons for the obesity epidemic. In the case of obesity, I would like to see us look at it from a public health perspective. This asks us to understand what we can use from the

study of how behavior is influenced by the environment and work to make environmental changes that have beneficial effects on behavior.

At Mayo, we are putting some popular beliefs about obesity through the rigors of scientific testing. In the studies we've done, we've dispelled some of the popular myths about weight gain. This is helping us to provide sound scientific advice in the clinical area. For example, people may come to our clinic misinformed by the popular press as to the best approaches for weight management. Because we've conducted so much research, we recognize that many popular approaches to diet and physical activity offer no advantage and sometimes disadvantages.

Could you give us an example of a popular myth about losing weight that was corrected by your research?

There are several examples to choose from, but here are three:

1: People commonly believe that going on a diet lowers your metabolism so you can't lose weight. The truth is — if you reduce your food intake by only about 500 calories per day, you can lose 20 pounds without lowering your resting metabolism.

2: Another belief is that if you exercise you'll continue to burn calories at a higher rate for a long time afterward, allowing you to burn more calories than you think. The truth is — within 5 to 10 minutes after stopping a normal bout of exercise, metabolism returns to resting levels.

3: The third belief is that you need to exercise for at least 30 minutes at a certain heart rate three to five times a week to lose weight. The truth is — for weight-control purposes, it is equally helpful and often easier to get the same amount of activity done if it is spread throughout the day.

What is the relationship between research and clinical care at Mayo?

Good research programs work in concert with good clinical programs. One of the strengths of Mayo is that we have a high-quality clinical program in obesity and diabetes. This has the advantage of not only providing patients with sound clinical advice, but also offering patients an opportunity to volunteer in some of the research projects.

Further, investigators with an active clinical practice recognize and understand the changing needs of patients. When these researchers embark on an important area of research, the needs of their patients are always uppermost in their consideration. I think this type of patient-first approach improves both the practice and the outcomes of research. ■

For more information about Endocrinology at Mayo Clinic visit *www.mayoclinic.org/endocrinology-rst/*

Stewardship report

The many ways you can support Mayo's mission

These stewardship pages highlight members of our recognition groups. Many benefactors belong to one or more of these groups to enhance their philanthropic experience.

Mayo Principal Benefactors

The designation of Principal Benefactor was established in 2003. It honors individuals and organizations who contribute $1 million and more to support the mission of Mayo Clinic. We are honored to recognize an elite group that represents the foremost supporters of Mayo Clinic. By supporting innovation and discovery, these benefactors touch the lives of people throughout the United States and around the world.

Contact: James Hodge
hodge.james@mayo.edu

Mayo Major Benefactors

The designation of Major Benefactor was established in 1970. It honors individuals and organizations who contribute $100,000 and more to support the mission of Mayo Clinic. These philanthropic gifts help Mayo Clinic provide the best care to every patient every day. They also support medical innovations that benefit people throughout the United States and around the world. The generosity of these gifts helps Mayo uphold the tradition of its founders.

Contact: Roberta Allan
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Mayo Annual Giving Program

The Mayo Annual Giving Program was established in 2000. It is Mayo Clinic's newest membership organization and is the only annual giving group of programs offered at Mayo Clinic. Annual contributions ensure that Mayo will have the necessary resources to continue providing compassionate care for our patients, advancing medical progress and educating future physicians. Members of this group can provide annual support at one of six giving levels ranging from our Mayo Friends level of $1,000 a year, to our Mayo Leadership Circle level of up to $99,999 in a calendar year.

Contact: Jim Isaak
isaak.jim@mayo.edu

The Mayo Legacy

The Mayo Legacy is an organization of Mayo patients, staff and benefactors who provide a bequest in their will or another type of planned gift to support our work. There are no membership fees or required gift amounts to join The Mayo Legacy. Currently, more that 3,400 individuals belong to The Mayo Legacy. Members live in 49 states and 13 countries.

Contact: Laird Yock
yock.laird@mayo.edu

The Doctors Mayo Society

The designation of The Doctors Mayo Society was established to honor individuals who provide alumni financial support for Mayo programs. Gifts are given to perpetuate the excellence of medical practice, education and research at Mayo Clinic. This benefactor category is open to members of the Mayo Clinic Alumni Association, Mayo Clinic Administrative Voting Staff and public members of the Mayo Clinic Board of Trustees.

Mayo Alumni Laureates

The designation of Mayo Alumni Laureates was established to honor benefactors who are alumni of Mayo Graduate School, Mayo School of Graduate Medical Education or Mayo Medical School, as well as their spouses.

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For more information on philanthropy at Mayo, please visit: *www.mayoclinic.org/development*

MAJOR BENEFACTOR: Dorothea Berggren

Intersecting worlds advance science

By Michelle Felten

In the day-to-day world, Dorothea Berggren and Kallai Hokanson would probably have never met. Ms. Berggren would have continued her life in Chicago, Arizona and Florida; and 10-year-old Kallai would have continued school in her hometown of Cumberland, Wis.

Kallai's life changed in March 2007 when her mom, Paula, noticed swollen glands and bumps on her daughter's neck. Their local doctor feared the worst; Mayo Clinic doctors confirmed it. Kallai had leukemia. Treatment was started immediately.

So once a week for eight months, Kallai and her parents traveled three hours to Rochester, Minn., for a day of tests, treatments and doctors' visits. The blood draws were one of Kallai's least favorite parts of the outing.

Thanks to Ms. Berggren, a Mayo Clinic benefactor, the process of Kallai's blood draws was made a little easier with the establishment of a pediatric phlebotomy area at Mayo Clinic's campus in Rochester. The new Dorothea L. Berggren Foundation Pediatric Phlebotomy Suite is housed within the new Mayo Clinic Pediatric Center making it easier for families to navigate this part of their visit. Ms. Berggren realized that placing a phlebotomy area within the new pediatric center would make a difference.

"Being a benefactor of Mayo Clinic is an outgrowth of my experiences here," says Ms. Berggren. She has been a patient since 1964 when she was brought to Saint Marys Hospital as an adolescent. "Everyone in my family has been a patient at the clinic, beginning with my father in 1952. The newly dedicated phlebotomy lab will support and provide research information for those advancing science in the treatment and care of children."

Kallai Hokanson and Dorothea Berggren

When it comes to research, Ms. Berggren wholeheartedly agrees with William J. Mayo, M.D., who said, "Life is largely a matter of chemistry." In the field of medical science, the focus of patient care is changing from treatment to prevention. As medical research continues to unravel the mysteries of life, Ms. Berggren believes answers lie within our blood chemistry.

She is especially interested in the areas of genomics and proteomics. "Research in these areas is so dynamic and scientists at Mayo are working intensely to change the way people think about disease," she says. "I am confident that in the lifetime of children like Kallai, we will be able to prevent diseases before they strike, rather than just treat them once they're diagnosed."

Ms. Berggren hopes that the new phlebotomy suite will contribute valuable data for those working to advance the treatment and care of children. "I am so happy to participate in this team effort to develop a special place in which the care of our children can be addressed," she says.

She takes no credit for making a difference. "The people who make the difference are the ones at Mayo," says Ms. Berggren. "We, as benefactors, can only help to support the work and dedication that already exists within this community. It is a privilege to help in this advancement." ■

PRINCIPAL BENEFACTOR: **Rosemary Willson**

The Music Man remembered

By Suzanne Winckler

Rosemary Willson is sitting in the music studio where her late husband, Meredith Willson, composed "The Music Man" and "The Unsinkable Molly Brown." She's reminiscing about growing up in Detroit, living in Hollywood and working for and later marrying a famous American composer who never lost his Midwestern affability. A line from "Iowa Stubborn," a song from "The Music Man," captures the essence of Meredith Willson: "There's nothing halfway about the Iowa way to treat you."

Theirs was a harmonious match, built on a love of music, theater and movies. "Meredith loved people," she recalls. "With the royalties he's still earning, I support the things I know would interest him," she says. In the late 1980s, she made a gift to the Juilliard School in New York City to build the Meredith Willson Residence Hall. In the 1920s, Mr. Willson was a student at the precursor of Juilliard, then called the Frank Damrosch's Institute of Musical Art.

Recently, Mrs. Willson made a generous gift to endow the Rosemary and Meredith Willson Harmony for Mayo Program, which provides musical performances at Mayo Clinic. During her visits to Mayo, she has been touched by the music she's heard and realized that keeping the music going would be the perfect tribute to her husband, who was born and raised in Mason City, Iowa, less than 100 miles south of Rochester. A previous gift from Mr. and Mrs. Tomas Furth launched Harmony for Mayo in 1998. Thanks to Rosemary and Meredith Willson, the sounds of music will echo through the halls of Mayo's buildings in perpetuity.

The Unsinkable Rosemary Sullivan

Rosemary Sullivan (her maiden name) has as much verve and determination as her husband. She grew up in Detroit in the 1930s and '40s — the golden age of Hollywood — and she says, "I was raised on movies and wanted to work in the motion picture business."

Although Mrs. Willson possesses the panache of a classic silver screen star, she was never drawn to acting. She wanted to be part of the behind-the-scenes action. She moved to Hollywood in 1944 and worked at Monogram Pictures (later Allied Artists). After several years and a few social encounters with Meredith Willson and his wife Rini — Hollywood was a small town in the 1940s and '50s — Rosemary Sullivan received a call from the composer.

"It was a Saturday and I was doing my laundry," she says. "He was looking for a person to manage the house and office, while he and Rini were away in Europe." Rosemary got the job. It was 1958, she was 37 years old and, to make a long and wonderful story short, she found her calling as secretary, librarian, archivist and, a year after Rini passed away, wife to the Music Man. Mrs. Willson pauses and twirls a bracelet given to her by her husband — a chain of pennies minted in 1968, the year they were married. "He was such a kind man," she says. ■

Rosemary Willson

For more information on the Harmony for Mayo Program, visit: *www.mayoclinic.org/humanities-in-medicine/harmony-for-mayo-rst.html*

MAJOR BENEFACTOR: Ted Nash Long Life Foundation

Upholding promises, building dreams

By Michelle Felten

They know him personally, then and now. They understand his wishes, and they follow through on their promises to him. And even though their friend and colleague, Ted Nash, has been gone since 2002, the five board members who oversee his foundation still feel his presence as they make decisions on his behalf.

Daniel Palmer, John Wilkinson, J. Bond Browder, M.D., Nick Pace, Ph.D., and Joseph Bozarth III, do their best to honor the wishes of their friend by seeking out and investing in medical research aimed at longevity. Mr. Nash was an engineer by training and a visionary by nature. He dreamed of prolonging life and lessening hardship by finding a cure for every disease that affects humankind. Today, his friends are carrying his dreams into reality.

"We began giving to research at Mayo Clinic in 2004, the year the foundation was established," says Mr. Wilkinson. "We were so impressed during our first visit and subsequent visits to Mayo Clinic. You really feel the heart of the institution when you see firsthand how this place works to make a difference in the lives of the people it serves. There is a true partnership among the physicians and a true focus on the patient. It's amazing that an institution of this size not only encourages, but achieves, that level of cohesiveness for the benefit of patients who come here for help."

Pictured from left to right front row: Nick Pace, Ph.D., Joseph Bozarth III, J. Bond Browder, M.D., John Wilkinson and Daniel Palmer. Back row: Eric Tangalos, M.D., Andre Terzic, M.D., Ph.D., David Ahlquist, M.D.

The priority of the Ted Nash Long Life Foundation is to invest in research for high-risk conditions that have the potential to make quantum leaps in medical knowledge. Mr. Nash would have wanted it that way.

"To make this kind of profound impact on medicine, you have to take risks, and to do that, you need seed money, which is what the foundation is trying to provide," says Mr. Wilkinson. "We especially like funding promising projects that might not yet qualify for funding from other sources, such as the NIH [National Institutes of Health], and we enjoy supporting young researchers with novel ideas. We are hoping to find that magic bullet in research."

To date, the members of the Ted Nash Long Life Foundation have supported Mayo research on regeneration of heart tissue, and on finding new ways to reverse the aging process, work being conducted by Drs. Eric Tangalos, Andre Terzic and David Ahlquist. At other institutions, the foundation has supported work in understanding genetic pathways that limit life span and can be linked to cancer, and on studying the effects of an anti-aging hormone, klotho, on heart function.

The foundation's plan is to award $1 million in grants every two years in an effort to uphold their promise to a man who envisioned a brighter tomorrow. ■

News at Mayo Clinic

Tom Brokaw named to Mayo Clinic Board of Trustees

The Mayo Clinic Board of Trustees welcomed Thomas (Tom) Brokaw as a new member.

Mr. Brokaw, an award-winning journalist, joins the 31-member group of public representatives and Mayo Clinic physicians and administrators that are responsible for patient care, medical education and research activities at all Mayo Clinic campuses. Mr. Brokaw was a White House correspondent for NBC News during Watergate and was anchor of "Today," from 1976 to 1981. He co-anchored "NBC Nightly News," and was named sole anchor in 1983. In addition to his optimistic and easygoing delivery of the news, he was the first American journalist to cover many crucial international issues. He covered every presidential election from 1968 through 2004.

Cornerstones of a new approach: Mayo Clinic Health Policy Center

Mayo Clinic believes America's health care system urgently needs reform to ensure the future of quality patient care. Over the last two years, Mayo Clinic Health Policy Center has convened more than 400 national leaders for a series of national events — one symposium and four forums — to help develop new, consensus-driven principles to guide the reform process. Here is a summary of recommendations to date.

- **Universal insurance coverage** to provide health insurance and access to basic health care for all Americans regardless of their ability to pay.
- **Coordinated care** for patient care services coordinated across people, functions, activities, sites and time in order to increase value.
- **Value** to increase quality and patient satisfaction; decrease medical errors, costs and waste.
- **Payment reform** to change the way providers are paid to improve health and minimize waste.

The recommendations presented in this summary — along with input gathered from patients nationwide — will be reviewed at an upcoming session. Participants will identify and prioritize actions that different sectors can take to contribute to positive health care reform and begin creating an action plan to build a mandate for change. Learn more at *www.mayoclinic.org/healthpolicycenter/*

Center for Innovation and Health Care Transformation established

Nicholas F. LaRusso, M.D., current chair of the Department of Internal Medicine and recipient of the Charles H. Weinman Endowed Professorship, has been named director of Mayo's new Center for Innovation and Health Care Transformation. Barbara Spurrier, former associate administrator of Internal Medicine, has been named senior administrator for the center and will work in partnership with Dr. LaRusso.

The Center for Innovation and Health Care Transformation was created by the Mayo Clinic Rochester Executive Board to promote and advance the institution's culture of innovation to transform the way patient care is delivered and experienced. The center's leaders will advise and report to the Rochester Executive Board.

Dr. LaRusso and Ms. Spurrier will be champions for innovative health care across the institution; will cultivate relationships among department and institutional leaders to promote innovation across patient care, education and research; and will collaborate across organizations and industries to offer new value in the care model, product and service experience. They will lead a team of design experts, system and project engineers and information technology staff, and will work closely with leaders of other strategic initiatives to implement the optimal health care delivery system for the 21st century. Early initiatives will focus around virtual medicine and shifting from disease treatment to prediction and prevention.

Mayo Clinic awarded $3.5 million to advance bioinformatic and genomic research on heart attacks and peripheral arterial disease

Physicians know that genetics plays a role in some heart and vascular diseases. Mayo Clinic researchers are using bioinformatics — high-tech computational approaches to handling immense amounts of data — to zero in on genetic markers that will help develop and drive new treatments.

A $3.5 million, four-year research award from the National Human Genome Research Institute will help that happen. Christopher Chute, M.D., Dr.P.H., chair of Mayo Clinic's Division of Biomedical Informatics, is principal investigator of the study, which involves investigators in cardiology, genetics and biomedical ethics.

"This award from the NIH is a vote of confidence in Mayo's leadership in biomedical informatics, operating at the interface of electronic record data and state-of-the-art genomic analyses," says Dr. Chute. "It is also a testament to the multidisciplinary talent that rapidly came together as a successfully funded team winning a highly competitive grant. This exemplifies Mayo Clinic's emergence as a world-class organization in the present era of translational research."

Dr. Chute and his colleagues will first develop processes to effectively search existing medical record databases for cases of myocardial infarction (heart attack) and peripheral arterial disease. With those cases and appropriate controls, they will then search for novel factors in genomic data to identify genetic variants associated with the risk of heart and artery problems. Knowledge of such variants would help in identifying those who would benefit from aggressive new treatments.

Part of the research will involve genomic information from individuals. Therefore, Mayo bioethicists on the team will develop new and refined consent procedures in cooperation with Mayo's Institutional Review Board, which oversees participant privacy and confidentiality in research. A combination of patient interviews, testing and community engagement will be part of the process developed under Mayo's Center for Translational Science Activities.

Co-investigators on the study are biostatistician Mariza de Andrade, Ph.D.; bioethicist Barbara Koenig, Ph.D.; vascular researcher Iftikhar Kullo, M.D.; cardiovascular epidemiologist Véronique Roger, M.D., M.P.H.; and genetic epidemiologist James Cerhan, M.D., Ph.D.

Mayo Clinic honored by the Minnesota Historical Society

On May 11, 2008, Minnesota will celebrate 150 years of statehood. In October 2007, the Minnesota History Center in St. Paul opened a new exhibit titled "MN150" to launch the 2008 celebration. The exhibit, which includes Mayo Clinic, features stories on how change has impacted Minnesota communities.

A view of one of the Mayo cases, showing objects loaned by the family of Harry F. Bisel, M.D.

Photo of Minnesota Historical Society display case by Daniel Sattler-Reimer

The exhibit was created from more than 2,700 nominations provided by Minnesotans. A committee of Minnesota History Society staff, community members and subject experts selected the final list of 150. Nominations included sports events, political figures and pop icons, inventors and their inventions and examples of cultural traditions.

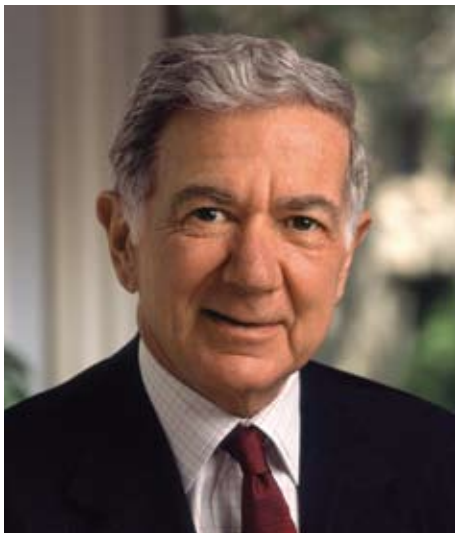
Nominations for Mayo Clinic were submitted from individuals throughout the state. A few examples of why individuals nominated Mayo include:

"This world-renowned hospital and clinic have become the destination for the finest and most cutting-edge medical treatment around. It became the model for others to emulate."

"By sharing research and resources, they [Mayo brothers] created efficiencies that ultimately allowed Mayo Clinic to diagnose and treat complex medical problems with great effectiveness."

"These brothers transformed not only Minnesota, but indeed our country and our world, with state-of-the-art medical procedures. From a small rural clinic to today's world-renowned hospital and clinic, the Mayo brothers are pioneers, heroes and Minnesota's lasting legacy. The Mayo Clinic is the one thing Minnesota is known for the world over."

To learn more about Mayo Clinic's nomination and the MN150 exhibit, visit the Minnesota Historical Society Web site at *www.mnhs.org/index.htm* or the MN150 Web site at *http://discovery.mnhs.org/MN150/*



Jerome H. Grossman, M.D.

Jerome H. Grossman, M.D., Mayo Clinic Public Trustee, died April 1, 2008, at the age of 68.

Dr. Grossman was a health care analyst at Harvard and leading hospital administrator who was influential in applying engineering solutions to make medical care more efficient.

Denis A. Cortese, M.D., president and chief executive of Mayo Clinic, said Dr. Grossman rapidly became nationally known as an advocate for market-driven solutions and was "heavily and persuasively engaged" in recommending the establishment of a federal health board to oversee health care nationwide, a medical counterpart of the Federal Aviation Administration. The idea was to have issues of safety, and even insurance, reported directly to regulators, Dr. Cortese explained, without other agencies intervening.

Dr. Grossman is survived by his wife of 40 years, the former Barbara Lieb. The couple lived in Boston and Sandwich, N.H. He is also survived by three daughters, Amelia and Elizabeth, both of Washington; and Kate Sutliff of Newton, Mass.; and a brother, Dr. Sy Grossman, a gastroenterologist, of Berkeley, Calif.

Fraternal Order of Eagles Cancer Telethon

This year's Fraternal Order of Eagles Cancer Telethon raised more than $750,000 to support cancer research. Mayo Clinic is one of the direct recipients for a portion of these dollars. The Eagles' gift of $490,000 enables Mayo to have a strong cancer research program.

The Eagles is an international, nonprofit organization that provides financial resources and mechanisms to support innovative programs in cancer research. Their motto, "people helping people," is demonstrated through their generosity in making a profound difference in the lives of cancer patients. The Eagles' generosity aids Mayo researchers in advancing science toward the diagnosis, treatment and prevention of cancer.

William E. and Sandra Davenport make gift to support organ transplant research at Mayo Clinic

A liver transplant two years ago at Mayo Clinic gave William E. "Gene" Davenport another chance at life. Now Mr. Davenport and his wife, Sandra, hope to help medicine achieve similar results for more patients by providing $1 million to support organ transplant research at Mayo Clinic.

After exhausting options in their home state, Mr. and Mrs. Davenport came to Mayo Clinic in 2005 at the advice of friends, who told them about the liver transplant program in Jacksonville. Launched in 1998, the program has performed more than 1,600 transplants. It is among the largest in the United States, and its median wait time to transplant of just over one month, is the shortest median wait time in the country.

"Having been a committed organ donor for over 40 years, I never dreamed that I would someday be the recipient of one," Mr. Davenport says. "Mayo Clinic gave me a second chance at life. My wife, Sandra, and I want to help more people have that same opportunity by supporting Mayo's commitment in this field. Who knows what contribution to our country the next transplant patient at Mayo might make?"

"Our research aims are multifaceted," says Thomas Gonwa, M.D. "We want to perfect transplant, to achieve as high a result as possible with current drug therapies and surgeries. We also want to develop new immunosuppressive drug therapies, to allow patients to be treated with minimal amounts of drug therapy or even without drug therapy."

"Philanthropy is absolutely critical to our success," Dr. Gonwa says. "So much of what we need in the clinical research arena is in the area of infrastructure or dedicated time to pursue research. It allows us to investigate promising leads, really think about what we're doing and analyze data, all of which are essential to innovating medicine."

Mayo Clinic W. Hall Wendel Jr. Musculoskeletal Center Opens

The Mayo Clinic W. Hall Wendel Jr. Musculoskeletal Center is among the world's most advanced musculoskeletal facilities, designed to optimize the care process for both patients and clinicians. The center supports diagnostic, treatment, rehabilitative and educational services for a variety of musculoskeletal and pain disorders. In addition, the center is home to an innovative outpatient surgical facility.

A dedication ceremony of the W. Hall Wendel Jr. Musculoskeletal Center is scheduled for May 15, 2008.

Trustees honor five Mayo Clinic named professors

Named professorships at Mayo Clinic represent the highest academic distinction for a faculty member. Faculty are appointed to a professorship through nomination and endorsement of their peers and then confirmed by Mayo Clinic senior leadership. Appointed individuals are recognized for distinguished achievement in their specialty areas and service to the institution.

These professorships are named in honor of benefactors. The gift funds, which may be unrestricted or focused on a specific medical area, are held in endowment. All income from the endowed professorships supports Mayo Clinic programs in medical education and research.

James Kirkland, M.D., Ph.D., is the recipient of the newly established Noaber Foundation Professorship in Aging Research. Dr. Kirkland is director of the Robert and Arlene Kogod Program on Aging. Before coming to Mayo Clinic, Dr. Kirkland was director of the Basic Research Geriatrics Section and associate professor of medicine and biochemistry, Boston University School of Medicine at Boston University. Dr. Kirkland was a co-founder of AdipoGenix Inc., and he has served on project teams, medical and scientific advisory committees, and task forces focusing on geriatrics and obesity. He is currently an associate editor for *Obesity Research.*

Daniel Schaid, Ph.D., is the recipient of the Curtis L. Carlson Professorship in Genomics Research. Dr. Schaid joined Mayo Clinic in 1986 and was appointed to the staff in 1993. He has received the Distinguished Graduate Award from the Graduate School of Public Health at the University of Pittsburgh and was recognized as the University of Pittsburgh's outstanding contributor to the field of public health. He served as president of the International Genetic Epidemiology Society in 2006, was editor-in-chief of *Genetic Epidemiology* and is a principal investigator for multiple research grants.

James Garrity, M.D., is the recipient of the Whitney and Betty MacMillan Professorship in Ophthalmology. Dr. Garrity is a scientific reviewer for multiple academic journals and is a sought-after lecturer and teacher. The American Academy of Ophthalmology awarded him the Senior Honor Award. At Mayo Clinic, he has provided departmental leadership through chairing the Clinical Practice Committee and serving on the Executive Committee and as the Department of Ophthalmology's section head for External Diseases. He received the Mayo Distinguished Clinician Award. His institutional leadership roles include serving on the Innovation Work Group, the International Relations Committee, the International Visitors Council and the Rochester International Activities Committee.

Sandra Gendler, Ph.D., was named the David F. and Margaret T. Grohne Research Professor in Therapeutics for Cancer Research. Dr. Gendler, a biochemist and molecular biologist, has served on the Mayo Clinic Arizona Research Committee for 13 years and on the Cancer Committee since 1997. She was named a Distinguished Mayo Investigator in 2004, and has organized international workshops on mucins.

Richard Vile, Ph.D., was honored with The Richard M. Schulze Family Foundation Professorship. Dr. Vile has served as associate editor for *Gene Therapy* and the *Journal of Gene Medicine*, and has been a principal investigator, co-investigator and consultant for research funded by the National Cancer Institute and the National Heart, Lung, and Blood Institute, among other organizations. The aims of his research laboratory are the development of targeted and efficient vectors for the delivery of cytotoxic and immunostimulatory genes for the gene therapy of cancer.

James Kirkland, M.D., Ph.D.

Daniel Schaid, Ph.D.

James Garrity, M.D.

Sandra Gendler, Ph.D.

Richard Vile, Ph.D.

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ON THE COVER
April 12, 2008, was an historic day for Mayo Clinic. The hospital on the Jacksonville campus opened, fulfilling a dream born shortly after the campus opened in 1986. A Mayo Clinic design from its inception, the hospital supports Mayo Clinic's mission and integrated approach to patient care.

Mayo Magazine

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