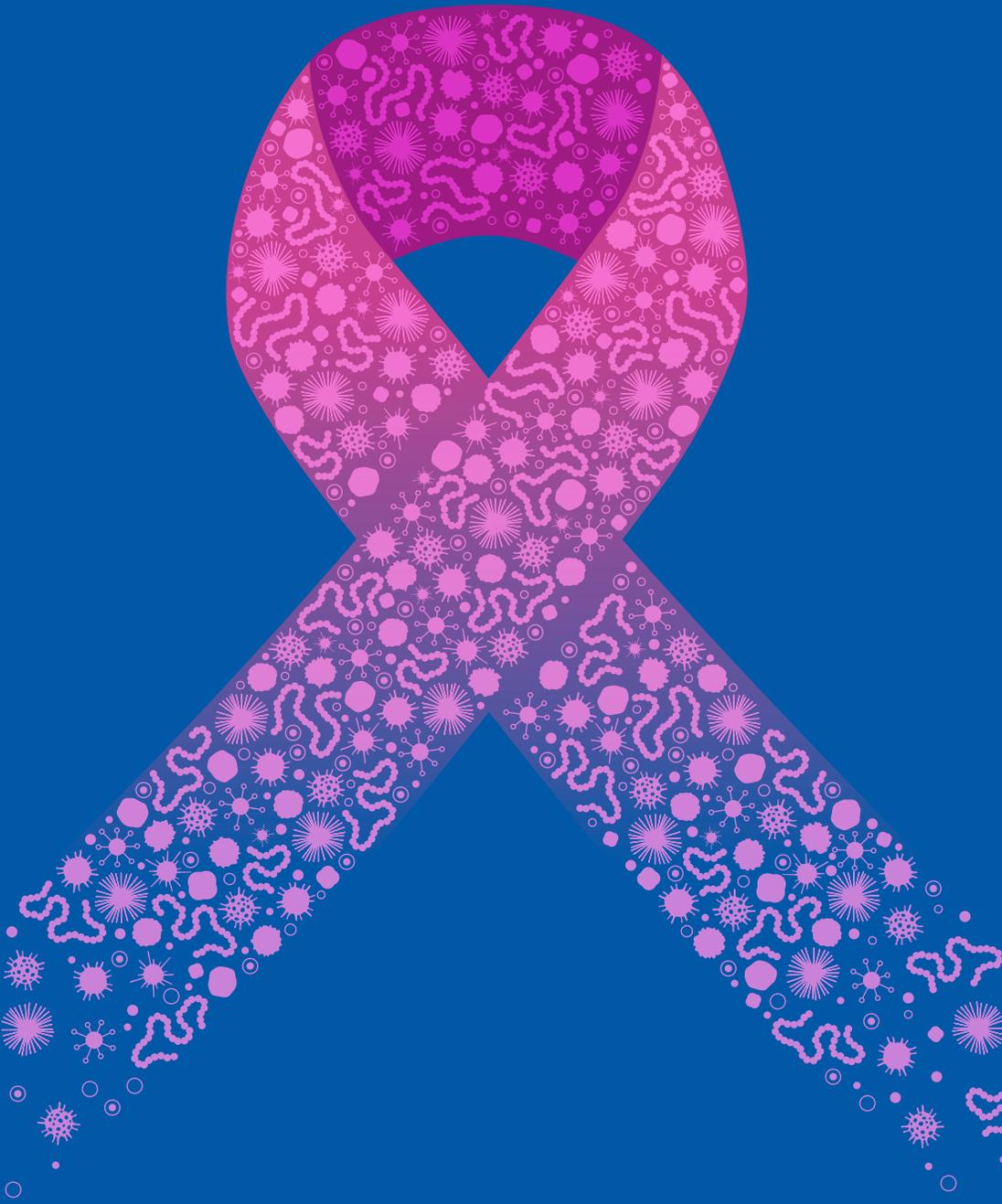


ALUMNI

MAYO CLINIC ISSUE 4 2018



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BUH-BYE,
BREAST CANCER?

WOMEN IN
CARDIOLOGY

DISTINGUISHED
ALUMNI AWARD

LETTER FROM THE SECRETARY-TREASURER

Women have always been integral to the success of Mayo Clinic, starting with the partnership of Mother Alfred Moes and the Sisters of Saint Francis with the Mayo family, as celebrated in the recent Ken Burns documentary on Mayo Clinic.

This issue of *Mayo Clinic Alumni* focuses on some outstanding women at Mayo as well as advances in women's health. Read about Dr. Eva Galanis, who's treating cancers with virotherapy, and Dr. Stephanie Faubion, who leads Mayo's Center for Women's Health. I was happy to see one of my favorite people, Shirley Hultz, featured in this issue. Shirley was my surgical transcriptionist for the first few years I was on the staff, and I can attest to her excellence. She made all of the surgeons she worked with look good. The story of Mayo's cardiology department underlines the importance of mentorship in supporting diversity and inclusion among our trainees and staff. Strong mentors come in all shapes and sizes; they need not look like their mentees, but they do have to possess one key attribute — the ability to put others first.

This issue also recognizes the newest recipients of the Mayo Clinic Distinguished Alumni Award. I had the honor of serving on the award's selection committee and had the pleasure of attending the award ceremony at the Foundation House. It was powerfully moving to listen to the award recipients share the profound effects Mayo Clinic has had on them.

I will close with a request. Mayo has many outstanding alumni who practice at Mayo Clinic sites and around the world. We depend on fellow alumni in those communities to identify the future award recipients among you. Please let



PETER AMADIO, M.D. (OR '83)

- Secretary-Treasurer, Mayo Clinic Alumni Association
- Lloyd A. and Barbara A. Amundson Professor of Orthopedics

us know who they are by completing an award nomination form on the Alumni Association website or by contacting the Alumni Center or an Alumni Association Board member. We'd be happy to help you share what you know about the outstanding work Mayo alumni are doing in your communities throughout the world. We are one incredible, diverse Mayo family. What better way to celebrate our heritage than to recognize the best among us for exemplifying the ideals and values of Mayo Clinic. Plus, you may get the chance to share in a fantastic event at the Foundation House!

TABLE OF CONTENTS



FEATURES

02 Parting words from President and CEO John Noseworthy, M.D.

08 Executive Health Program
Keeping busy executives and business owners in the pink

10 Buh-bye, breast cancer?
Keith Knutson, Ph.D.: breast cancer prevention via vaccine

16 Bitten by the virotherapy bug
Evanthia Galanis, M.D.: viral gene and cell therapies to treat cancer

20 The winds of change in cardiology
Mayo Clinic makes headway in tipping the gender balance scales

32 Center for Women's Health
What women want

34 A history of Rochester's nursing schools

Saint Marys School of Nursing and its crucial role during World War II; Methodist-Kahler celebrates 100 years

40 A front-row seat to a half-century of surgical history
Surgical transcriptionist Shirley Hultz

44 Mayo Clinic Distinguished Alumni Award
Robert Avant, M.D., C. Terrence Dolan, M.D., Judith Kaur, M.D., Vanda Lennon, M.D., Ph.D., Chung Owyang, M.D.

MAYO CLINIC UPDATE

48 Mayo Clinic news, obituaries



*Parting words from
President and CEO*

**JOHN
NOSEWORTHY, M.D.**



Q&A

JOHN NOSEWORTHY, M.D. (N '90), STEPS DOWN AS MAYO CLINIC PRESIDENT AND CEO AT THE END OF THE YEAR AFTER SERVING IN THIS ROLE FOR NINE YEARS.

Dr. Noseworthy's term as CEO was marked by the greatest recession in 70 years, health care reform, two presidential administrations, a politically polarized U.S. society, concern about paying for and access to health care, and social unrest — all intensified by social media. The health care industry also has experienced growing downward pressure on revenue streams, emerging transparency in costs and outcomes, consolidation across all sectors and competitive consumerism.

Despite this challenging atmosphere, Mayo Clinic thrived because staff united around Mayo's primary value — the needs of the patient come first, strategic investment in research and education, and practice redesign and integration, among other focus areas, according to Dr. Noseworthy.

The Mayo Clinic Alumni Association is grateful to Dr. Noseworthy for his dedicated leadership, and we wish him well in the next phase of his life.

Dr. Noseworthy responded to questions for *Mayo Clinic Alumni*.

What do you think the Mayo brothers would think if they could see Mayo Clinic today?

I think about this almost every day. I believe they would be pleased and humbled with how Mayo Clinic has followed their remarkable example of servant leadership; service; the pursuit of excellence in practice, education and research; and commitment to our founders' and Franciscan values (respect, integrity, compassion, healing, teamwork, innovation, excellence and stewardship). The Mayo brothers' courage, entrepreneurship, and adventure in education and research guide and inspire us every day. I believe they would encourage us to keep going to continue making the changes that will improve patients' lives as quickly as we can.

The 2018 Ken Burns documentary, "The Mayo Clinic: Faith – Hope – Science," captures their example, the ongoing continuation of the work with the Sisters of Saint Francis, and the spirit of the clinic, and helps cement these essential elements for the coming generation.

What surprised you about being CEO?

I had a pretty good sense on an intellectual and analytical level of what the job would entail when I began this role in late 2009. Until I experienced it, however, I did not understand the full weight of the responsibility, the very public nature of the work and the intense pressure to lead the changes that were necessary to strengthen the clinic — all while dealing with a major recession, various versions of health care reform, changing presidential administrations, and the social unrest that is sweeping the nation and world.

In today's society, leaders must engage regularly and successfully with the media to represent the organization. This is both extremely challenging and a great opportunity to advance the work of Mayo Clinic.

“ I believe they (the Mayo brothers) would be pleased and humbled with how Mayo Clinic has followed their remarkable example.”

– John Noseworthy, M.D.



John Noseworthy, M.D., with filmmaker Ken Burns at Mayo Clinic in Florida, September 2018.

I believe our senior leadership team raised awareness of the unmatched excellence of Mayo Clinic and thrived amid intense media scrutiny.

Similarly, leaders must communicate messages and engage the hearts and minds of everyone in the organization to join together for the benefit of all. Our staff have a lot on their minds, and their focus is on what is immediately ahead of them — the patients and their families, renewal of research grants, educational expectations, business development opportunities and balancing these professional commitments with their families. The CEO must have clarity of purpose and consistency of message and communicate a compelling vision, mission and values to align with staff members' personal and professional passions.

The Rochester campus alone is almost three times the size of the Pentagon in Washington, D.C., The CEO and other leaders have to work very hard to communicate a consistent message in the right way. Our committed staff have embraced our key strategic initiatives and shown heroic commitment to make the changes necessary to strengthen the organization.

What did you learn about yourself as CEO?

In this role, there's very little private time. You're "on" almost all the time. The CEO chairs virtually every meeting and most events — institutional and public. Even when you're moving from place to place, you become aware that everyone is looking at your demeanor, posture, facial expression and from those signals making judgments about the strength of the clinic.

Early in my tenure, I was less aware of the importance of my comportment. At times I would be reflecting on the challenges that we are facing when I should have been projecting confidence. At times I would be engaged in lively discussions with my team but projecting that I was debating them and less interested in their input than I truly was. I should have listened more and reflected what I was learning from others. One of our department chairs, Dr. Morrie Gertz (HEM '83), gave me good advice early on: "John, when people ask you questions, you don't have to have all the answers. You should say, 'That's an excellent question. Let's get some other opinions from around the table.'"

“ Mayo Clinic is about the work we do — serving others. It’s never been about the CEO.”

– John Noseworthy, M.D.

Thankfully, I’ve learned the importance of receiving candid, honest and, at times, tough feedback from my team to help me understand how I can become a better leader.

What were your major accomplishments?

All accomplishments are team accomplishments. The first major step in 2009 was to transition Mayo Clinic from a holding company to a single operating company characterized by a single vision, strategy and operating plan (“one Mayo Clinic”). This work is focused to differentiate Mayo Clinic as the finest medical institution in the world to manage patients with serious and complex illnesses and deliver Mayo Clinic quality care to the communities we serve.

We’ve delivered top performance in everything we do — quality; safety; health outcomes; reputation; advances in practice, research and education; patient and staff satisfaction; strength of our culture; environmental sustainability; fundraising; business development; and strength of our balance sheet, defined benefit pension and endowment.

Operating as one Mayo Clinic has allowed us to successfully implement a greater than \$1 billion systemwide electronic medical record and technology update, which will take the best practices of Mayo Clinic to benefit all patients at all sites for years to come.

We also have strengthened the Mayo Clinic culture — a union of forces confident in its commitment to a shared purpose of service to others, to each other and to Mayo values. This has allowed us to take on the toughest challenges and outperform even our high bar of defined success.

This monumental change in how we work has put Mayo Clinic on a very strong professional, cultural and financial foundation. We’re ready for the next 10 years and whatever comes our way.

What did you like best about serving as CEO?

The greatest privilege of my life has been to be a member of the Mayo Clinic staff. On a regular basis I find myself shaking my head in renewed awareness of how fortunate I have been to be part of this great organization.

The greatest satisfaction in representing Mayo Clinic externally is talking about the good work that is done here every day in practice, education and research. These stories always elicit respect from others and, indeed, amazement at the miracles that occur here every day.

What are the top challenges for Dr. Gianrico Farrugia (I ’91, GI ’94), your successor?

Number one is navigating the business of health care: the future of funding at the federal and state levels and the role of insurance companies, understanding the world of consumerism, disruption by nontraditional competitors, and the dilemma of rural health care delivery.

For each of those challenges, it will be important to demonstrate the value of Mayo Clinic care — better outcomes at lower cost — and that Mayo is a key part of the solution in the quest to create a sustainable, high-quality health care system. Our unmatched excellence in the care of patients with serious and complex illnesses will need to be proven over and over again.

Number two is the move to remote and digital care. We will need to seize this opportunity with confidence and establish and deliver a sustainable business model (essentially scaling what we do with the Mayo Clinic Care Network) to keep people safely at home when possible, and bring them to one of our three destination sites when necessary.

Number three is realizing the potential of Mayo’s intellectual assets and bringing them to scale. This involves continuously refining our “patient-here” practice and identifying and scaling our most promising

innovations through investments and partnerships to bring Mayo knowledge to the profession globally. To succeed, we will need to clarify the unique importance of our assets, particularly our vast data resources.

What's up next for you?

I've worked closely with Dr. Farrugia to smooth his transition and help him build his leadership team.

It's likely that in January, my wife and I will take a few weeks to disconnect from my professional life, enjoy time together and plan the next chapter in our lives. I have decided that I will not return to the practice of neurology. Simply too much time has gone by since I've been active in practice for me to make a positive difference in this way. I will transition to work that I find fulfilling, taking advantage of what I've learned in this role. As long as possible, I will work to improve the delivery of health care to all patients and advance the importance of the medical profession. I will be looking for the best ways to use what I have learned to advance these goals. Like many, I want to spend a bit more time



with the things I enjoy — family, travel, painting, reading, music and a bit of golf.

Anything else as you leave Mayo Clinic?

Mayo Clinic is about the work we do — serving others. It's never been about the CEO. An outstanding group of leaders across our campuses and an extremely engaged and insightful Board of Governors and Board of Trustees set our strategy and oversee its execution. We're united in our strategy and aware of the challenges we are likely to face in the near and mid-term. We're in a position of unmatched strength to meet the future.

Our staff has successfully navigated the past decade of unprecedented change. Their commitment and speed of execution have strengthened Mayo Clinic in countless ways. Whatever comes our way, we will leverage our values and culture, our commitment to patients and to each other to continue to "make the impossible possible" for our patients (Dr. Charlie Mayo).

I'll leave you with a story. I'd been at Mayo for about nine years when a physician colleague from New York visited and asked me, "How can you stand it here?" It was winter, and I assumed he was talking about the snow, ice and subzero temperatures. I responded, "Well, you make sure you have a warm coat and a hat and stay inside when you can ..." "No," he replied. "I mean how everybody gets along and works together. That would drive me crazy. In New York, we're trying to beat the guy next door — the hospital, the medical school. It's competitive. It's what I'm used to."

My immediate thought was, "We have an enemy. It's disease — it's not each other." Rather than saying anything, I simply smiled, nodded and enjoyed the moment, grateful that I worked at Mayo.

I realized something during that conversation. Not that the world is competitive — we know that. I recognized how special and powerful the Mayo culture is. That teamwork is how we are able to provide solutions and hope for patients. Remember who we are. Remember how we work. For Mayo Clinic to succeed, our culture, heritage and values must continue to be strong. Using the entire care team for the good of the patient was and is the goal, and it's how we achieve our primary value: the needs of the patient come first. ▲

KEEPING BUSY EXECUTIVES AND BUSINESS OWNERS IN THE PINK



Executive Health Program

Victoria Jones, president at Northpointe Group Consulting, LLC, of Phoenix, Arizona, says: “Mayo Clinic’s core values are demonstrated every time I visit the Executive Health Program. The caring, compassionate staff are engaged and focused on my health, my wellness and my long-term viability. It just doesn’t get any better than that.”



In the last 47 years, tens of thousands of business owners, executives and entrepreneurs have traveled to Mayo Clinic campuses for expedited comprehensive care through the Executive Health Program. It is the oldest and largest program of its kind in the country.

The program was established in 1971 in response to requests from corporations and businesspeople who realized that the health of key employees is a good business investment. The Executive Health Program aims to help businesspersons maintain good health with world-class preventive care.

Each patient in the program is assigned an internal medicine physician who guides them through the evaluation process, reviews the results of the evaluation and tests, and prepares a strategy to optimize the patient's health. The program offers customized options of evidence-based exams and tests in a short, condensed itinerary that meets the needs of busy executives. Many Executive Health Program patients return annually for

evaluations — some on their own and some through company-sponsored programs for executives.

“The Executive Health Program caters to busy executives and business owners and their hectic schedules with Mayo’s traditional diagnostic expertise and the latest in preventive medicine,” says Stephanie Faubion, M.D. (GIM '97), medical director for Executive Health and International Medicine in the Division of General Internal Medicine at Mayo Clinic in Rochester. “Focusing on prevention may identify possible serious medical problems before they become major medical conditions.

“Our program is unique in that it addresses medical concerns in addition to preventive services. Some patients come into the program with an existing chronic or acute condition, or one is detected in the process. We offer the full complement of care to our Executive Health patients, with a focus on prevention and, if medical issues are identified, returning patients to optimal health as quickly as possible.” ▲

Mayo Clinic Executive Health and International Medicine

- Enterprise and Florida medical director: Stephanie Hines, M.D. (MED '97, I '00, ADGM '01), chair, Division of General Internal Medicine, Department of Internal Medicine, assistant professor of medicine
- Rochester medical director: Stephanie Faubion, M.D., Division of General Internal Medicine, Department of Internal Medicine; professor of medicine
- Arizona medical director: Michael Covalciuc, M.D. (I '79, PREV '82), Division of General Internal Medicine, Department of Internal Medicine; assistant professor of medicine



STEPHANIE HINES, M.D.



STEPHANIE FAUBION, M.D.



MICHAEL COVALCIUC, M.D.



BUH-BYE, BREAST CANCER?



Preventing breast cancer

Can breast cancer be prevented with a vaccine? Keith Knutson, Ph.D. (IMM '05), Department of Immunology and director of the Discovery and Translation Labs Cancer Program at Mayo Clinic in Florida, thinks so. And he thinks it will happen during his lifetime.

In collaboration with the National Breast Treatment Coalition, Dr. Knutson has developed a vaccine that could prevent all three subtypes of the disease — estrogen receptor (ER)-positive, HER2-positive and triple-negative. The vaccine targets six proteins (HER2-neu, mammaglobin-A, MAGEA3, survivin, hTERT and MUC1) that have been found through multiple studies to overexpress in breast cancers.

The new vaccine is a fundamental shift from how vaccines traditionally prevent infectious disease. Rather than use a virus, bacteria or their components, Dr. Knutson's vaccine immunizes against proteins that are encoded in a patient's DNA.



“When we target an infectious disease with a vaccine, we generate immunity against the microorganism that causes the disease by attacking the foreign agent,” says Dr. Knutson. “Breast cancer isn’t caused by a microorganism. Rather, it is driven by the body’s natural proteins. Therefore, we are targeting the proteins, which hasn’t been done before in a vaccine for primary prevention. Cancer vaccines sensitize the immune system to the appearance of cancer tissue. We know from preclinical studies that

targeting these molecules in animal models is safe. This is a new trajectory for how we prevent disease.”

Dr. Knutson is embarking on a yearlong phase I clinical trial with women who have been treated for advanced metastatic breast cancer that is likely to recur. This effort is supported by the National Breast Cancer Coalition.

“We want to involve patients who are likely to benefit from the vaccine while we make sure it performs as we think it will — generating a safe immune



response,” he says. “Patients who have had advanced metastatic breast cancer have nothing to lose.”

A phase II trial, likely to begin in 2020, will focus on patients who are at high risk for breast cancer. Dr. Knutson estimates it will take five to 10 years to determine if the vaccine reduced incidence of breast cancer in the high-risk population. A phase III trial would involve 100,000 women across multiple centers.

“Look around you for a women who is about 25 today,” says Dr. Knutson. “By the time she completes

her child-bearing years — around age 40 — we could conceivably have this vaccine ready to prevent her from developing breast cancer. This isn’t pie in the sky. We believe this is doable. We’re working as fast as we can. All of us on the team know women who are or have been affected by breast cancer. The only thing that could speed along our efforts is additional funding for more lab techs, regulatory staff, clinical trial experts and others.”

Preventing breast cancer recurrence

Is it possible to prevent recurrence of breast cancer by stimulating the immune system?

Dr. Knutson thinks so. He has three vaccines in clinical trials to reduce mortality from breast cancer in the absence of a primary preventive vaccine.

“We know the immune system protects against cancer. People who have higher levels of immunity to cancer have better outcomes,” he says. “We’re working on ways to safely boost these protective responses because current drug treatments for cancer are highly toxic. Vaccines, however, are not toxic.

“If we can stimulate enough immunity to these cancers, our hope is that the immune system will take over and prevent cancer from developing or recurring.”

Triple-negative breast cancer

One of these vaccines targets triple-negative breast cancer, which accounts for 15 to 20 percent of breast cancers. Currently, patients are treated with chemotherapy for this aggressive form of cancer but suffer from high morbidity from the toxic drugs. Cancer will recur in 30 to 40 percent of patients who have triple-negative breast cancer.

Dr. Knutson and his team have identified an antigen on the surface of triple-negative cancer cells: folate receptor alpha. The team has developed a vaccine that generates an immune response against



Keith Knutson, Ph.D., with team members Emilie Perkerson, a research technologist, and Geraldine Vidhy Raja, Ph.D. (IMM '18, front), a research fellow.

that protein. The drug in the vaccine has been in clinical trials for patients with triple-negative breast and ovarian cancer since 2012.

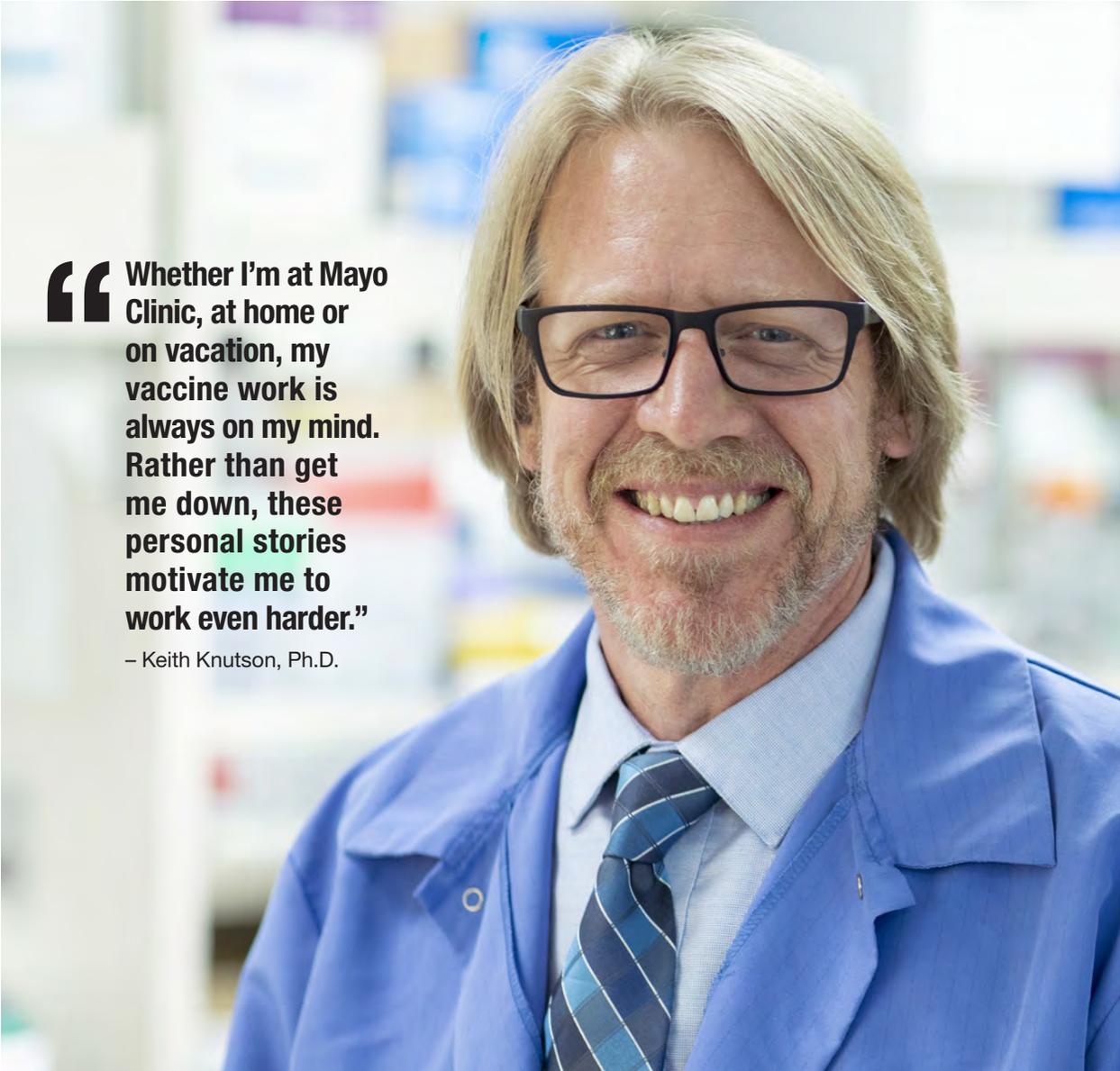
“After these patients have completed surgery and chemotherapy, we target the regions of the folate receptor alpha protein that are abnormally expressed in triple-negative cancer,” says Dr. Knutson. “We do this by immunizing patients six times over six months. Ideally, patients will develop an immune response. Then, every six to 12 months, we will give them booster shots.

“If we can maintain levels of immunity against folate receptor alpha, we could eliminate cancer

recurrence or significantly reduce it in patients who are high risk for recurrence.”

Vaccination teaches the body’s immune system T cells to recognize cancers as the enemy. Dr. Knutson says, “If tumors start to grow back, there are enough of them to outrace or beat the growth of tumor cells.”

Dr. Knutson has begun a phase II clinical trial of 280 patients across Mayo Clinic locations and seven other centers. He and his team will follow patients for two to three years, examining how quickly patients develop an immune response, what the response looks like and whether the vaccine has an effect on disease recurrence.

A portrait of Dr. Keith Knutson, a man with long, light-colored hair, a beard, and glasses, wearing a blue lab coat over a light blue shirt and a patterned tie. He is smiling and looking towards the camera. The background is a blurred laboratory or clinic setting with shelves of supplies.

“ Whether I’m at Mayo Clinic, at home or on vacation, my vaccine work is always on my mind. Rather than get me down, these personal stories motivate me to work even harder.”

– Keith Knutson, Ph.D.

“From our phase I trial, we know the vaccine works in humans to generate an immune response,” says Dr. Knutson. “In fact, the vaccine induced immunity in 90 percent of patients involved, and the response persisted for at least 12 months. We don’t yet know if the vaccine prevents disease recurrence. This is an exciting prospect to meet a significant unmet need.”

Dr. Knutson’s work in this area is supported by a \$13.3 million, five-year Breakthrough Award from the Department of Defense.

Ductal carcinoma in situ

Only about 35 percent of ductal carcinoma in situ (DCIS) lesions morph into cancer, but physicians can’t identify which lesions are potentially dangerous. So the 60,000 cases of noninvasive DCIS in the U.S. each year are treated with typical breast cancer therapies including surgery, radiation and hormone therapy.

Dr. Knutson has developed a vaccine that aims to treat DCIS patients before other therapies commence to generate a fast immune response and shrink tumors. Patients would be immunized four times per week for two weeks. If successful, the vaccine could eliminate the need for surgery, radiation therapy and long-term use of hormone therapies. Dr. Knutson’s phase I vaccine trial recently began enrolling patients. He hopes this vaccine will become part of a routine immunization schedule to prevent DCIS altogether.

Dr. Knutson’s work in this area is supported by a \$3.7 million grant from the Department of Defense.

HER2-neu breast cancer

Dr. Knutson recently received funding for a phase II clinical trial for a vaccine to treat HER2-neu breast cancer, which accounts for 15 to 20 percent of breast cancers. Patients will be immunized after completing treatment with surgery and chemotherapy. The vaccine will boost patients’ immune systems, and researchers will follow them to monitor for immune response and cancer recurrence. Dr. Knutson anticipates the trial will begin enrolling its 190 patients next fall. Dr. Knutson’s work in this area is supported by an \$11 million, four-year Breakthrough Award from the Department of Defense.

BREAST CANCER IN THE U.S.

- 300,000 women are diagnosed with some form of breast malignancy or potential malignancy each year.
- 240,000-250,000 women are diagnosed with breast cancer each year.
- 40,000 women die from breast cancer each year.
- The median age of developing breast cancer is 59.
- Treating and managing breast cancer costs \$30-40 billion per year.

OVARIAN CANCER IN THE U.S.

- 22,000-23,000 women are diagnosed with ovarian cancer each year.
- 14,000 women die from ovarian cancer each year.
- The median age of developing ovarian cancer is 69.

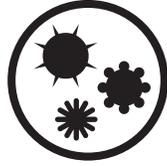
Preventing ovarian cancer recurrence

Dr. Knutson also has developed two vaccines to boost the immune system and prevent recurrence of ovarian cancer. In a recently completed phase I trial funded by the Mayo Clinic Cancer Center, 40 percent of ovarian cancer patients in the trial have not relapsed with three years of data. Typically, 85 percent of ovarian cancer patients relapse after treatment. The team is hoping to develop a phase II trial.

Dr. Knutson says it’s likely a secondary ovarian cancer vaccine will come to fruition in his lifetime. “While rare, ovarian cancer is deadly. It recurs so rapidly that we can test vaccine strategies relatively quickly.”

Always on my mind

The gravity and urgency of his vaccine work weighs heavily on Dr. Knutson. “One of the physician assistants who worked on my first clinical trial died from ovarian cancer. My aunt survived breast cancer. We all know women who develop and die from these cancers, so there’s no time to waste,” says Dr. Knutson. “Whether I’m at Mayo Clinic, at home or on vacation, my vaccine work is always on my mind. Rather than get me down, these personal stories motivate me to work even harder. But I’ll be happy when we don’t have to hear them anymore.” ▲

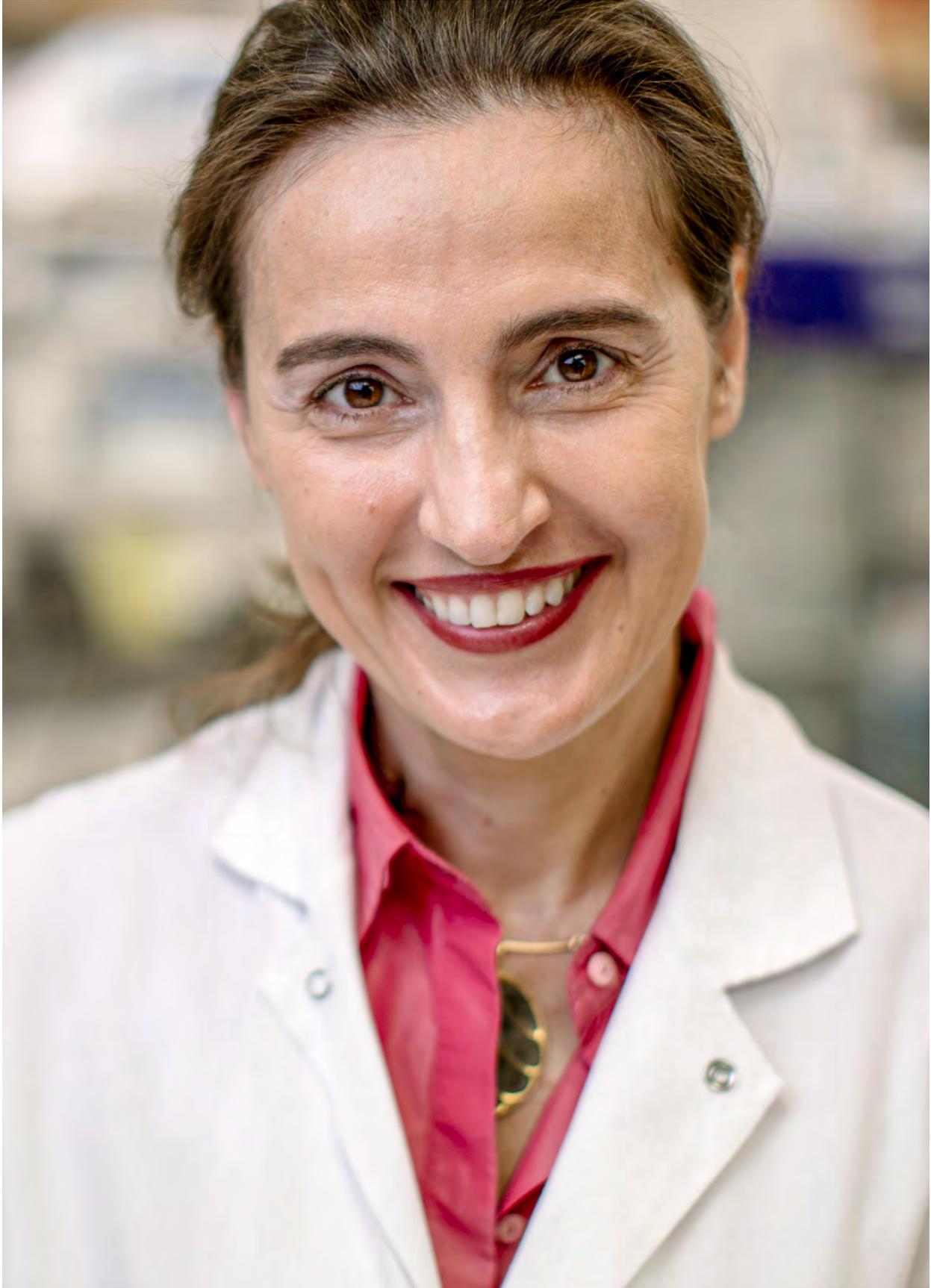


EVANTHIA GALANIS, M.D. — BITTEN BY THE VIROTHERAPY BUG



Every day more than 1,600 Americans die from cancer. Most of them have cancer that can't be cured with traditional methods — surgery, radiation and chemotherapy. The father of Evanthia Galanis, M.D. (I '94, HEMO '98), was one of them. He died in the late 1990s from melanoma when his daughter was a junior faculty member at Mayo Clinic.

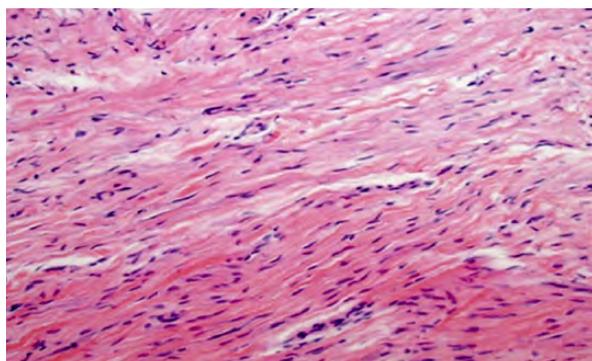
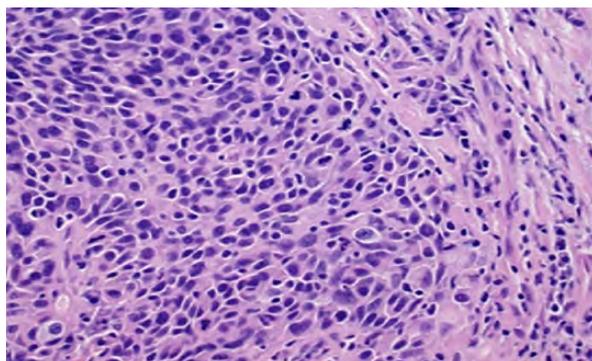
"My father would have better treatment options today," says Dr. Galanis, chair of the Department of Molecular Medicine at Mayo Clinic in Rochester and the Sandra J. Schulze Professor. "Research has led to the availability of very effective melanoma treatments, including immunotherapy. My father always encouraged me to be the best I could be. Every time I see a patient with cancer for whom we can't offer good options, I think of him, and my commitment to decreasing the burden of cancer and eliminating it altogether is re-energized. I'm more determined to find answers as a result of that very difficult personal experience. I know my father's legacy makes me a better oncologist and researcher."



From fellow to virotherapy P.I.

Dr. Galanis' research is focused on developing viral gene and cell therapies to treat cancer. She has been the principal investigator in multiple phase I and II gene therapy and virotherapy trials in solid tumors (ovarian cancer, glioblastoma, renal cell carcinoma, colorectal cancer, melanoma and pancreatic cancer). She believes that ongoing trials could result in viral therapy products being approved for cancer treatment in the next several years.

Many viruses are drawn to cancer cells, which grow and replicate more quickly than normal cells. Virotherapy harnesses viruses' cancer-cell-killing ability to attack cancer cells while sparing normal cells. Mayo Clinic has explored treating cancer with gene therapies and viruses for about 25 years, making it one of the oldest cancer gene therapy and virotherapy programs in the country. Dr. Galanis was there from the start — as a hematology/oncology fellow.



Before and after: Tumor tissue in the abdominal lining of an ovarian cancer patient before and after treatment with the measles virus. The treatment turned tumors into scar tissue. (Image: Galanis et al. *Cancer Res*; 75 (1). Permission to reprint courtesy of American Association for Cancer Research)

“When you understand what’s wrong with a cancer cell, you can design a gene-based treatment to repair the defect or convert the abnormally behaving cell to one that behaves like normal cells,” says Dr. Galanis. “That led to my interest in gene therapy — using genetic material to treat disease — and trials to introduce genes in tumors. Today we have much better ways to deliver genetic material to cells; we also can use viruses to deliver genetic material that replicates and kills cancer cells. This is a welcome alternative to chemotherapy, which isn’t selective and can be crude for and highly toxic to patients.”

The measles virus is one of the most promising viral platforms. It has shown to be safe, generates good immune response from the tumor, and can be engineered to carry genes and retargeted to be more specific against certain types of cells. In the early 2000s, Mayo Clinic researchers delivered a weakened strain of the measles virus to laboratory mice with ovarian cancer. Their tumors shrank by 80 percent.

To test that approach in humans and more quickly move ideas to the clinic, Mayo Clinic created a vector production facility — one of the only academic sites in the world capable of manufacturing clinical-grade engineered viruses for patient use.

First-in-human measles virus trials

Dr. Galanis led the first-in-human clinical trials in which 36 patients with recurrent ovarian cancer were treated with homegrown measles strains. Patients treated with higher doses of the viruses achieved a median overall survival of 27 months — more than twice as long as the expected median survival in these heavily pretreated patients who had failed multiple chemotherapy regimens. The vaccine provided remarkable results on other cancers in the lab, eliminating tumors in almost every model tested.

A five-year, three-site randomized phase II trial is now comparing measles virus treatment for ovarian cancer with the treating physician’s chemotherapy of choice. In addition to efficacy, the virotherapy is much less toxic than chemotherapy, resulting in better quality of life for patients.

More recently, Dr. Galanis led the first human trial of stem cell delivery of a cancer-killing virus. The phase I/II trial uses a small amount of a patient’s fat tissue to generate stem cells at Mayo’s Human Cellular Therapy



Researchers in the vector production facility.

Laboratory that are then infected with measles virus. The cells are subsequently infused back to the patient. The infected stem cells help lead the virus to tumor sites. With a grant from the National Cancer Institute, the trial recently expanded the number of patients to assess efficacy and treatment impact on survival. If the trial succeeds, the way physicians deliver viruses to cancer patients could change drastically.

Designer virus

When viruses destroy cancer cells, they release hundreds of infectious virus particles to kill the remaining tumor. The infected cells also secrete chemicals that trigger the antitumor immune response. This ability to kill cancer cells and recruit immune cells to join the fight makes viruses a potentially potent treatment for advanced cancers that don't respond to other therapies.

Dr. Galanis is exploring ways to strengthen this immune response to cancer by combining the measles virus with an antibody that unleashes the immune system — a combination of virotherapy and immunotherapy. In mice with malignant brain tumors, this combination therapy significantly increased survival, leading to cures in 60 percent of the animals.

In further exploration of these encouraging results, Dr. Galanis' laboratory has modified the

measles virus to express genes that significantly enhance the immune response to the tumor, which Dr. Galanis describes as a form of vaccination against cancer. The first-ever phase I clinical trial with one of these designer viruses is about to launch in patients with metastatic breast cancer in partnership with Mayo Clinic's Specialized Program of Research Excellence (SPORE) in breast cancer.

A new standard of care

With the first-in-human testing of the measles vaccine for ovarian cancer, first-in-human stem cell delivery of a virus and novel combination virotherapy-immunotherapy approaches under her belt, Dr. Galanis remains laser-focused on rapid translation of lab work to trials.

"Viruses represent an innovative way to treat cancer, and clinical activity is very promising," says Dr. Galanis. "Some of the leading efforts in the world in virotherapy are happening at Mayo Clinic. We believe our trials will lead to viruses becoming incorporated to the standard of care. I'm honored to be part of a team in the Department of Molecular Medicine and the Cancer Center that can bring clinical and lab work together and move science forward to help our patients and change lives." ▲



THE WINDS OF CHANGE IN CARDIOLOGY

Mayo Clinic makes headway in tipping the gender balance scales



Women cardiologists at Mayo Clinic in Rochester (some members not pictured).

Cardiology is a demanding specialty, involving significant emergency and night call and requiring physicians to wear lead shields in cardiac catheterization labs. Many consider the specialty “macho” and not conducive to work-home life balance. The number of women in cardiology hasn’t kept pace with the number of women in medicine. In 2015 the Association of American Medical Colleges ranked cardiology 35th of 43 specialties in terms of percentage of women; interventional cardiology was 41st.

Mayo Clinic is fighting the headwinds. Or, depending on your perspective, picking up steam from tailwinds created by institutional and departmental commitment and efforts and the elbow grease of women in the department who have labored for decades to make change and attract more like them.

Compared to the national average, Mayo Clinic has a higher percentage of women in cardiology, women cardiologists who have achieved full professorship and women cardiology trainees.

“Many women are attracted to places where people look like them,” says Kyle Klarich, M.D. (CV ’95), Division of Structural Heart Disease, vice chair of the clinical practice for the department, and director of the Cardiovascular Training Program from 2010 to 2018. “You need to have diverse program faculty to attract trainees. When women trainees come to Mayo to interview today, they see many women on staff and in training. They know it’s possible to succeed as a woman in cardiology at Mayo Clinic.”

Role models matter, according to Sharonne Hayes, M.D. (I ’86, CV ’90), Division of Preventive Cardiology, founder of the Women’s Heart Clinic and medical director of the Mayo Clinic Office of Diversity and Inclusion. Dr. Hayes began her fellowship in cardiology in 1987 and joined the

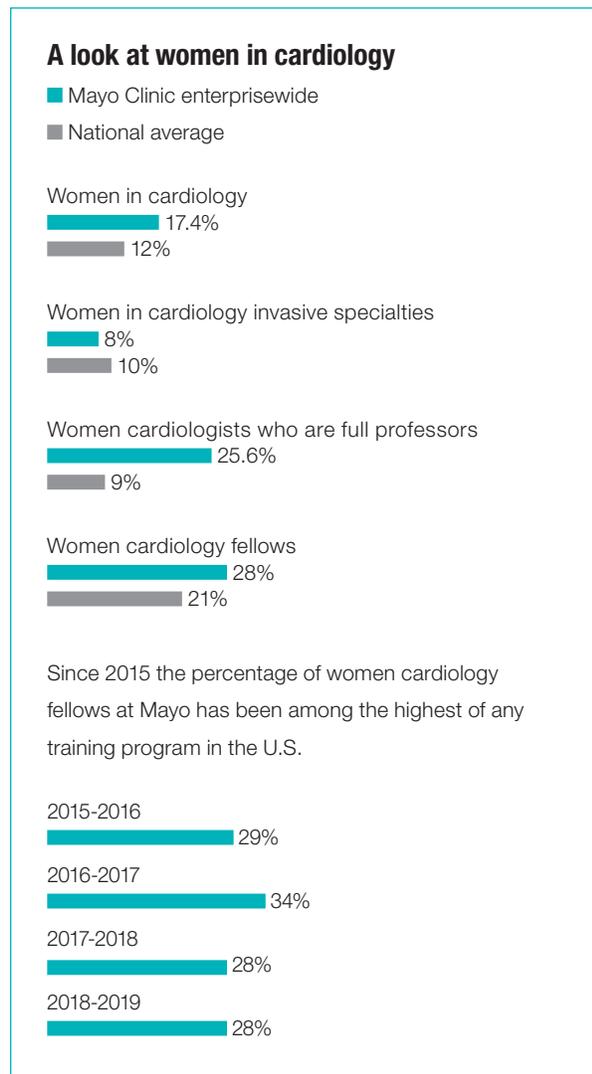
staff in 1990, becoming the third woman to join the department’s medical staff.

Patricia Pellikka, M.D. (MED ’83, I ’86, CV ’89), chair of the Division of Cardiovascular Ultrasound, vice chair for academic advancement & faculty development for the department, and the Betty Knight Scripps Professor in Cardiovascular Diseases Honoring George M. Gura, M.D., was among the first female fellows in cardiology and the second woman to join the staff at Mayo Clinic. She says as more women joined the staff, they formed a common bond around building big careers, raising children, and being married to or having a significant-other relationship with another physician.

Chair of the Department of Cardiovascular Medicine at Mayo Clinic in Rochester Paul Friedman, M.D. (CV ’96, CVEP ’97), says the department’s strength lies in its diversity. “We’re fortunate that because of trailblazing women in cardiology, we’ve attracted very talented women to the field, and we’re energetically helping to advance them in their careers. If you look at the percentage of our women cardiologists who are full professors, it’s remarkably almost three times the national average. In Rochester half of the leadership positions in cardiology — our vice chairs — are women. At the institutional and departmental levels, we have a cultural climate and mindset focused on fostering a workplace where everyone can contribute and belong.”

Attracting more women to the department has been deliberate and begins with medical school and internal medicine residency. Panithaya Chareonthaitawee, M.D. (I ’95, CV ’98), Division of Ischemic Heart Disease & Critical Care, director of Nuclear Cardiology, vice chair for education and diversity chair for the department, says, “We reach out to women to expose them to cardiology. Because the field has been male-dominated, women may have a harder time seeing themselves as cardiologists. Exposure to successful women cardiologists can have a huge impact. We have a cardiology interest group for internal medicine residents, and we provide mentoring, shadowing and research opportunities. We’re fortunate to have women cardiologists on our staff to talk with residents and more women in departmental leadership positions than most other departments across the country to show residents what’s possible — the sky’s the limit.”

Dr. Chareonthaitawee says Mayo Clinic works with trainees and staff members to accommodate their life





Mayo Clinic in Rochester's Carole Warnes, M.D., Patricia Pellikka, M.D., Sharonne Hayes, M.D., Kyle Klarich, M.D., Panithaya Chareonthaitawee, M.D., and Veronique Roger, M.D.

events. "We're flexible and supportive, which gives women, in particular, peace of mind. For physicians on staff, part-time status may be available, depending on clinical need and work area. It's helpful that female staff members have a very strong and supportive network within and outside the department that may not be available at a smaller institution."

Mayo Clinic Alumni looks at some of the women cardiologists who blazed trails for those who followed.

'They saw that women could be in the cath lab, present Grand Rounds, be involved in research and be colleagues.'

Margaret Beahrs, M.D. (I '78, CV '81), helped to pave the way for Drs. Hayes, Klarich, Pellikka and many others. Dr. Beahrs was the first female fellow in cardiology at Mayo Clinic. She arrived in 1975 for internal medicine residency and completed her fellowship in 1981.

Dr. Beahrs says she doesn't recall any serious barriers as the first female fellow. "The consultants

and other fellows were professional and supportive. Yes, the gloves at Saint Marys Hospital were all too big, and there weren't as many staff dressing rooms for women to change in for the cath lab. But I didn't sweat the small stuff.

"Dr. (Robert) Frye (CV '62, department chair from 1972 to 1982) went out of his way to welcome me and introduce me to the American College of Cardiology, where I went on to be secretary and serve on various committees and task forces. That would not have happened without his paving the way for me."

Upon completion of her program, Dr. Beahrs and her husband, John Randolph Beahrs, M.D. (S '77, U '81), faced the challenge of finding good career opportunities for two, and interviewed in several cities. "We ultimately found excellent positions in the Twin Cities," says Dr. Beahrs. "While I loved the private practice I joined in St. Paul and where I remained practicing interventional and noninvasive cardiology until my recent retirement, I left Mayo



Margaret Behrs, M.D.

Clinic somewhat reluctantly but always grateful for the exceptional training and collegial relationships.”

Despite being the first female cardiology fellow at Mayo Clinic and the first female cardiologist in the private practice she joined, Dr. Behrs doesn’t regard herself as a trailblazer. However, she says her presence as a fellow at Mayo Clinic probably helped to change the way her colleagues saw the face of cardiology. “They saw that women could be in the cath lab, present Grand Rounds, be involved in research and be colleagues.

“Cardiology is a great job for women. I encourage women in medicine to pursue what they’re passionate about. It’s unreasonable to expect women to give up other aspects of life, such as having children. Schedules can be more flexible to accommodate everyone’s needs, including later in your career as you approach retirement and want to work part time.”

‘I was interested in cardiac imaging, and Mayo Clinic was the place in the world for it.’

Several years after Dr. Behrs completed training, Veronique Roger, M.D. (CV ’92), Division of Circulatory Failure, arrived from Paris, France, for an echocardiography fellowship.

“It was an exceptionally exciting time in cardiology,” she says. “We had the first treatment for

heart attacks, followed by balloon procedures. These treatments could make a massive difference between life and death. I was interested in cardiac imaging, and Mayo Clinic was the place in the world for it.”

When Dr. Roger had been at Mayo for only a few months, a colleague insinuated that the reason she’d been accepted into the training program was because she was a woman. “I was the only woman in a group of male trainees, and there weren’t yet any women on staff. There were some insensitive comments through the years, but I moved on. I was never treated any differently in the clinical practice. My experience was exceptional.”

Dr. Roger was always academically oriented and achieved professorship early in her career. She received extra training in research while getting her Master of Public Health degree at the University of Minnesota. “I left home at 4 a.m. on those days to get to the Twin Cities,” she says. “One of my colleagues told me my children wouldn’t know who I was when I was finally done with my master’s degree. It was an exclusionary comment from someone who had a stay-at-home wife.”

As a result of her experiences, Dr. Roger fought for the Mayo Employees Backup Child Care program to be established. “The CEO at the time had daughters, so he was willing to listen to us and allocate funds for the center,” says Dr. Roger, a member of the Mayo Clinic Board of Governors and the Elizabeth C. Lane, Ph.D., and M. Nadine Zimmerman, Ph.D., Professor of Internal Medicine. “It’s a solution for when child care systems break down.”

‘I learned to be an advocate for myself, and I advise others in medicine to do the same.’

Dr. Pellikka has the distinction of being the first fellow to become pregnant and have a baby during training and the first pregnant cardiology staff member.

During fellowship interviews, Dr. Pellikka didn’t meet any women on cardiology staffs. In one interview, a physician asked her if she planned to have children during fellowship, stating it would pose an inconvenience to the other fellows if she were absent. Despite what she told him, Dr. Pellikka had her first child at the end of her fellowship.

“I couldn’t find readily available information about how much time I was allowed off, but I did

learn I could take off six weeks without having to extend my fellowship,” she says. “So that’s all I took.”

After the first few years on staff, Dr. Pellikka worked part time. Her husband, Jay Ryu, M.D. (I ’82, THD ’85), the Dr. David E. and Bette H. Dines Professor in Pulmonary and Critical Care Medicine, also worked part time. Dr. Pellikka and her husband worked hard to stagger their call schedule and travel to professional meetings so one of them was available for their children.

Dr. Pellikka learned to become a strong advocate for herself, especially when two male colleagues who joined the staff when she did were offered academic appointments. And she wasn’t. “My chair said it would be taken care of in time. I focused on my publications and when I had enough to become an assistant professor, I was appointed an

instructor,” she says. “I became very aware of how many papers I needed to get to the next level and asked for the next academic appointments when I felt I’d reached them. I learned to be an advocate for myself, and I advise others in medicine to do the same. For individuals to reach certain leadership positions, we must achieve full professorship. We need to nominate each other for awards and leadership positions in our professional societies to make sure we get the recognition we should.

“I served as president of the American Society of Echocardiography — an opportunity that would have eluded me without being an academically productive leader in my field. I mentor women to be careful about choices such as serving on committees because those roles can drain time that’s needed for academic achievement.”



Cardiology confab: Shannon Dunlay, M.D., Marysia Tweet, M.D., and Kyle Klarich, M.D.



Women cardiologists at Mayo Clinic in Arizona: Katie M. Murphy, M.B., B.Ch., B.A.O. (I '17), Julie Rosenthal, M.D. (CV '16), Rebecca Chester, M.D. (CV '19), Susan Wilansky, M.D. (CV '03), Anna Svatikova, M.D., Ph.D. (CV '05, NSCI '05, I '13, CI '15, CV '17, CVEC '18), Hemalatha Narayanasamy, M.B.B.S., M.D. (CVEC '19), Tasneem Naqvi, M.B.B.S., M.D. (CV '13), Lisa Lemond, M.D. (CV '16), Farah Al-Saffar, M.D. (CV '19).

'All I and the other women who followed me wanted were equal consideration and opportunity.'

Six years after Dr. Beahrs completed cardiology training at Mayo Clinic and midway through Dr. Pellikka's fellowship, the department hired a woman to join the medical staff. Carole Warnes, M.D. (CV '87), was the first female cardiologist at Mayo Clinic, joining a staff of 59 men in 1987. She trained in England, where she says no academic cardiology appointments were available for women. She was the only female senior registrar in cardiology in the entire country.

"Everyone recognized that we should recruit women," says Dr. Frye, Division of Comprehensive Cardiology. "Dr. Warnes had a very strong skill set, background and track record in adult congenital cardiology. That's what attracted us to her, not her gender. She was obviously a star — we felt we'd be fortunate to recruit her. Everyone was enthused about her congenital heart background because that was a huge part of our practice.

"Her point of view and intellectual prowess, as well as that of the women who followed her pretty quickly, were big advantages for the department. I continue to be in awe of how women physicians accomplish all they do given their family responsibilities. The early women in our department broke the mold for how to live as a female cardiologist with call. I don't underestimate the challenges they faced, and I can't imagine where we'd be without their talents."

Dr. Warnes says everyone in the department was welcoming, and Dr. Frye was very supportive. But her entrée to Mayo Clinic wasn't without bumps. She was introduced to a surgeon in another specialty at Mayo who said, "You're the new token woman." He later sent a letter to her home, apologizing for his words and saying he looked forward to her being at Mayo Clinic.

"All I and the other women who followed me wanted was equal consideration and opportunity," says Dr. Warnes, the Penske Foundation Professor in Clinical Medicine in Honor of Drs. J. Eileen and Ian Hay.



Women cardiologists at Mayo Clinic in Florida: Kamal Preet Cheema, M.D. (CV '21), Demilade Adedinsewo, M.B., Ch.B. (CV '20), Carolyn Landolfo, M.D. (CV '08), Amy Pollak, M.D. (CV '12), Sabrina Phillips, M.D. (CVCH '04), Krithika Krishnarao, D.O. (CV '20), and Anca Chiriac, M.D., Ph.D. (MPET '10, HMED '14, CV '20).

'In 2013 I made professor. Through the years so many men told me it wasn't a big deal, but it is a big deal.'

Dr. Hayes began her fellowship shortly before Dr. Warnes joined the staff.

When she was offered a position on the cardiology staff, Dr. Hayes told the department chair, Hugh C. Smith, M.D. (PHYS '71, CV '73), she wanted the job but wanted to work part time. "I knew it was a big ask, but Dr. Smith agreed," she says. "I knew part time might delay my academic advancement, but it was the right decision for me and my family. It was up to me to make it work."

Dr. Hayes knows now that she was something of a trailblazer in the department by asking for part time. "I wish I'd been a braver trailblazer," she says. "Working part time was my dirty little secret. I only started talking about it 10 or 15 years ago after I'd had a leadership role for a while. Today I talk openly about what to do and what

not to do, when I had kids and how long it took me to reach professorship."

As she predicted, part-time status delayed Dr. Hayes' academic achievement. "I had less time to write papers and got derailed and disconnected," she says. "No one encouraged me or asked me to contribute on papers. I wasn't in the 'in' group and didn't ask anyone for help. I probably leaned out. I loved patient care, and no one said I needed to produce so many papers per year. I rationalized that academic rank didn't matter because it didn't affect pay. My impact at Mayo and nationally grew through my involvement in National Heart, Lung, and Blood Institute task forces. I was contributing, but I was light on papers, producing only one or two a year. My academic mentor in cardiology encouraged me to apply for associate professorship, and I was promoted in 2003. But if I wanted full professorship, I needed to up my game in terms of research and manuscripts. I'd been out of it for so long that it took a while to

get up to speed. Many male fellows I trained got full professorship before I did.

"I became the head of the Mayo Clinic Office of Diversity and Inclusion in 2010 and was mentoring more women. As I talked about how we need more women in advanced academic rank, I realized I should walk the walk. I started doing research that took off and decided to make a run for professorship. My administrative role hampered my academic work a bit. But in 2013 I made professor. Through the years so many men told me it wasn't a big deal, but it is a big deal."

'More and more women are paving the way and bending cardiology to fit their lives rather than fit into a prescribed mold.'

Dr. Klarich chose to pursue a medical career in part because male physicians she knew discouraged her. "They told me it would be very difficult if I wanted to have a family," she says. "I never shied away from a challenge. They thought I couldn't do it because I'm a woman. I wanted to show them."

When Dr. Klarich interviewed for a cardiology fellowship at Mayo Clinic in 1991, she found something elusive: a woman cardiologist. "I hadn't met a single woman in cardiology anywhere I interviewed," says Dr. Klarich. "I met Dr. Warnes and thought Mayo must be super-accepting of women."

"Almost three decades later, more and more women are paving the way and bending cardiology to fit their lives rather than fit into a prescribed mold. The more women who enter cardiology and role model what a balanced life can look like, the better off we'll all be."

'We worked harder to get the same accolades as our male colleagues.'

The experiences of the early women in the department weren't always optimal. Dr. Chareonthaitawee says some people recommended she not take a leadership position in the department. "They said, 'You have young children. Your time will come later.' I would not say that to a woman. If you want it, go for it — and let me give you some advice on how to make it work."

During Dr. Klarich's first year on staff, she recommended a patient have a valve replacement. "He thought I was the nurse and asked when the

doctor was coming in," says Dr. Klarich. "He said I was his first woman physician and that he needed someone with gray hair and experience to give him that news. Rather than be offended, I felt empathy for him. I found Dr. Frye, gave him a quick history of the patient and asked him to reassure him. Dr. Frye went into the room and came out a few minutes later. When I returned to the room, the patient said, 'Dr. Klarich, I will take your advice.' He's still my patient today. I see him once a year, and he calls me to consult me about other physicians' advice."

Dr. Hayes recalls a similar patient encounter early in her career. She told a patient he needed bypass surgery and that the surgeon was coming to talk to him. The patient's wife panicked and questioned Dr. Hayes' ability to make such a decision. "I understood. She loved her husband and didn't think I looked old enough to recommend surgery," says Dr. Hayes. "Patients often treated me like their grandchild and wanted to know when the doctor would be in. They asked when I graduated from medical school and how long I'd been at Mayo Clinic. Training is longer today, so trainees aren't as young as I was. And, of course, there are more women in medicine."

Dr. Klarich says she and the other women in cardiology at Mayo Clinic had to do it better. "We worked harder to get the same accolades as our male colleagues. Women had to prove it. We felt we had to overachieve to get the same appreciation."

Overachieving and making their mark on the department and Mayo Clinic have paid off in more ways than gaining support for life issues. Dr. Chareonthaitawee points out that today women in cardiology at Mayo Clinic are compensated equitably, based on skill level and regardless of gender. That's not the case everywhere: national studies show that women in cardiology often are paid less than men for the same job.

Dr. Friedman says the institution and department have changed as society at large has changed. "We want to attract and keep the best talent — our success depends on it. We will be as creative and flexible as we can to accomplish our mission of being a great place to work, to receive care as a patient, and to advance cardiology and medicine."

THE NEWBIES WEIGH IN

Today women in cardiology at Mayo Clinic
continue to blaze trails for the next generation
rather than fit a traditional mold.



Shannon Dunlay, M.D., Marysia Tweet, M.D., LaPrincess Brewer, M.D., and Rehka Mankad, M.D.

'There is strong mentorship at Mayo, and I knew I would be trained to be among the next leaders in academic cardiology.'

LaPrincess Brewer, M.D. (CV '16), Division of Preventive Cardiology, says she's always had female role models in cardiology although representation varied. "I thought, 'Wow, she did it. Maybe I can, too.'"

She says the representation at Mayo Clinic was inspiring. "I saw many female cardiologists on staff and in leadership positions. I saw women from Mayo leading professional organization meetings. I felt I would be embraced and my skills and talents would be fostered at this institution. I wanted to take the baton and pass it on. But before you can do that, you have to receive the baton. There is strong mentorship at Mayo, and I knew I would be trained to be among the next leaders in academic cardiology."

Dr. Brewer has a master's degree in public health, and her research focuses on cardiovascular health disparities. "In the church community where I grew up in North Carolina, so many people lost their lives prematurely to cardiovascular risk factors," she says. "So much potential was lost. That drove me to focus on preventive cardiology and health disparities research. I want to make the strongest impact possible from a public health standpoint on the No. 1 killer in the world."

Dr. Brewer faces unique challenges as an underrepresented minority woman in medicine, who account for less than 5 percent of cardiologists. Dr. Brewer is the first African-American woman cardiologist on the Mayo Clinic Rochester staff.

"Don't let perceived barriers deter you from pursuing cardiology," she says. "I'm early in my career and have had so many opportunities I wouldn't have imagined as a medical student, and I've been fostered by my mentors and professional organizations. If the culture of your institution supports what you do professionally and personally, this will lead to your success. Mayo Clinic has been supportive of my career development and has been an incredible place to work and pursue my unique research interests."

'I wanted to be a cardiologist and knew I could make the rest of it work.'

Shannon Dunlay, M.D. (CTSA '10, CV '12, TXCV '13), Division of Circulatory Failure, was interested in cardiology as far back as college when she worked with a hypertension basic scientist. "I knew I'd have the opportunity to save lives and help patients feel better and live longer," she says. "I didn't let the perceptions about cardiology and work-family life balance affect my decision. I wanted to be a cardiologist and knew I could make the rest of it work."

She says she noticed that some programs where she interviewed lacked a female presence. "I knew programs without women weren't a good fit for me," she says. "When I interviewed with Dr. Hayes at Mayo Clinic, it had a big impact on me. Dr. Roger was my research mentor during my fellowship. Seeing women doing what I wanted to do at Mayo Clinic was a big factor in my decision-making. I saw that I could follow in their footsteps."

Now associate program director for the Cardiovascular Training Program, Dr. Dunlay is interested in attracting even more women to Mayo Clinic. "The biggest thing we can do to attract women to cardiology is to have more women cardiologists," she says. "Seeing us being successful and happy is impactful to those considering cardiology positions. Dr. Hayes and others have been good at helping women get in leadership positions and achieve academic promotion."



The Alumni Association is considering forming a subgroup for women physicians and scientists. Help us determine the interest level by emailing mayoalumni@mayo.edu or calling 507-284-2317 to tell us of your interest.

‘I didn’t think it mattered to me if there were females cardiologists on staff. I realized then how much I may have missed out on.’

Rekha Mankad, M.D. (CV ‘07), Division of Cardiovascular Ultrasound, came to Mayo Clinic in 2007 after having been in two private practices in Pittsburgh. Her husband, Sunil Mankad, M.D. (CV ‘06), Division of Cardiovascular Ultrasound, was recruited to the department, and they came as a “package deal.”

When Dr. Mankad joined the Mayo Clinic staff, she was used to working among primarily male colleagues. “I didn’t think it mattered if there were female cardiologists on staff,” she says. “However, when I saw the female cardiologists and dual-physician couples here at Mayo, I said to myself, ‘These are individuals who have traveled the same road as me.’ I realized then how much I may have missed out on by not having female mentors and colleagues. The men I’d worked with were really great, but I have a deeper connection with the women I have had the privilege of working with here.”

Dr. Mankad’s career changed at Mayo Clinic. “I hadn’t had an academic career with research because I was also raising children and was in private practice,” she says. “And I didn’t see any women doing it. My male colleagues who had academic careers had stay-at-home wives. I had never envisioned myself doing research. However, the environment at Mayo Clinic is conducive to academia, and there are so many people to help you along the way. I’m so happy that I have been able to do some research and publish papers; these activities have enhanced my career as a cardiologist.

“As a woman, when you see mostly men in a specialty, you identify it as a male specialty and have trouble picturing yourself in that role. When female trainees come to me today for advice, I tell them to do what they love. It’s always difficult for everyone, men and women alike, to balance work and family life. If you are passionate about a career choice, even if it is ‘male-dominated,’ you should go for it. You don’t want to look back and have regrets. Life is difficult, and there are always choices to be made. Do what makes you happy.”

‘Women here are so visible, approachable and involved with trainees and mentoring others. There’s a strong spirit of helping each other.’

Marysia Tweet, M.D. (I ‘11, CV ‘15, CVEC 16), Division of Ischemic Heart Disease and Critical Care, says she is privileged to have had women in cardiology at Mayo Clinic pave the way for her.

“Mayo Clinic is a great place to work, and leaders are trying to make it an even better place to work for everyone,” she says. “Even though our department is a bit higher than the national average for women on staff, it feels like it’s even higher because the women here are so visible, approachable, and involved with trainees and mentoring others. There’s a strong spirit of helping each other.”

When Dr. Tweet interviewed for a fellowship, some institutions had an obvious lack of women. “That was concerning,” she says. “One place said it was because they didn’t offer part-time status. It was very uplifting to see so many women in cardiology at Mayo Clinic.”

Dr. Tweet, who has been on staff for two years, has five children. Before she accepted a staff position, she asked if she could work part time. “Some others told me not to dare to ask for it,” she says. “I hesitated asking because the answer could have been no, but it was a deal-breaker for me at the time.” Dr. Tweet returned to full-time status after a year and receipt of a BIRCWH scholar grant to study women and heart disease.

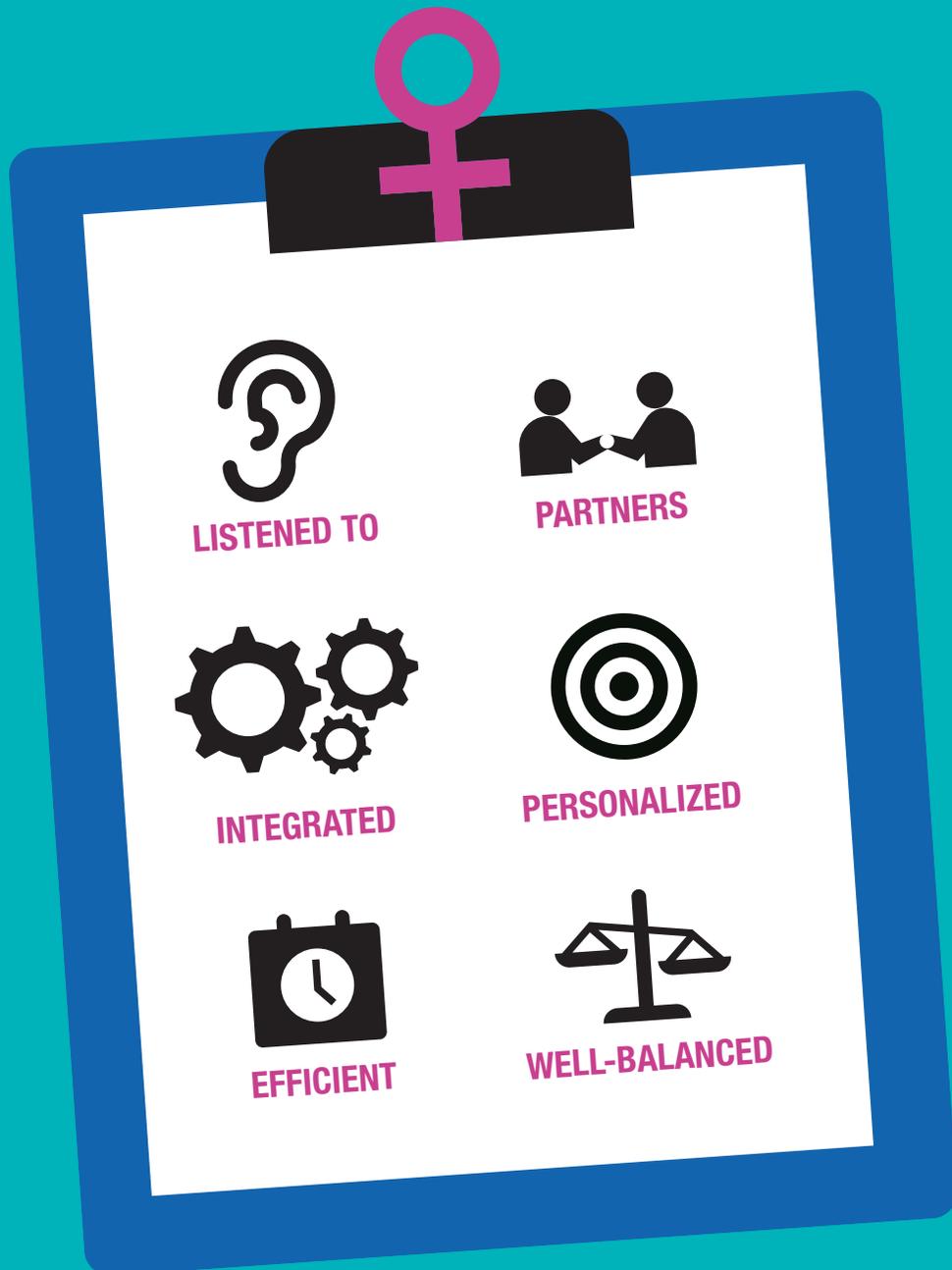
Dr. Tweet now mentors other women cardiology trainees. “When you have great role models — both women and men — it becomes second nature to do that for others,” she says. “Recently a female trainee interested in cardiology was told to avoid this specialty if she wants to have children. I encouraged her to go for it. It’s possible, and the more women who go into cardiology, the more the culture will change.” ▲

Editor’s note: The individuals featured in this story are just some of the 39 women on cardiology staffs across Mayo Clinic locations. Visit alumniassociation.mayo.edu/news for perspectives of additional women cardiology staff members at Mayo Clinic.

CENTER FOR WOMEN'S HEALTH



WHAT WOMEN WANT



Mayo Clinic in Rochester opened a new Center for Women's Health this fall to provide full-service integrated care for women along with strong research and education components. The new center fills a gap identified by research conducted by Mayo's Center for Innovation.

The research revealed that women, who make 80 percent of health care decisions for their families, want health care that is other than what they currently receive. Surveyed women want:

- To feel listened to and taken seriously by health care providers
- To feel like partners in their health care
- For their care to be integrated
- For their care to be personalized and focused on them as whole persons
- To efficiently use their time
- To be provided with the tools and ability to live a well-balanced life

Stephanie Faubion, M.D. (GIM '97), Division of General Internal Medicine in the Department of Medicine at Mayo Clinic in Rochester, is medical director of the Center for Women's Health. "At Mayo Clinic, women's health isn't in a single department or building," she says. "Rather, practice areas across the clinic provide expertise in aspects of women's health. The Mayo Clinic Center for Women's Health is an effort to further integrate women's health care and be proactive in connecting patients to care that will enhance their experience and improve health outcomes. Our mission is to optimize the health and well-being of women throughout their lives by integrating sex and gender concepts into patient care, research and education."

The center's patient navigator helps to coordinate appointments and facilitates additional evaluations the patient may need, removing this burden from the patient and making the best use of her time.

During the first phase of what will become a full-service center, the Mayo Clinic Center for Women's Health is focusing on women in three areas:

- High risk for breast cancer
- Thyroid cancer
- Inflammatory bowel disease

Women with any of those conditions can access care through the center and also can be seen for other health care needs. For example, a woman with inflammatory bowel disease could have full-service care for that condition and also have her bone, heart and sexual health addressed during her visit.

"We believe the Center for Women's Health will help us expand research and education initiatives to advance evidence-based understanding of the impact of sex and gender in medicine," says Dr. Faubion. "As always, we will share the knowledge we gain to benefit women everywhere."

The Center for Women's Health better positions Mayo Clinic to:

- Disseminate new practice guidelines to provide women with the best evidence-based care
- Increase recruitment of women in clinical trials to ensure they are not underrepresented or understudied
- Nurture the next generation of women health researchers so they are competitive in securing internal and external funding
- Host seminars and continuing medical education courses to educate the health care workforce
- Incorporate sex and gender concepts into curriculum at Mayo Clinic School of Medicine to ensure future physicians provide appropriate care for female patients ▲

“ We believe the Center for Women's Health will help us expand research and education initiatives to advance evidence-based understanding of the impact of sex and gender in medicine.”

– Stephanie Faubion, M.D.

Methodist-Kahler School of Nursing students and faculty in the former Methodist Church Building where classrooms were located, circa 1959.





A HISTORY OF ROCHESTER'S NURSING SCHOOLS



The nursing profession is fundamental to Mayo Clinic's world-renowned patient care. Mayo Clinic has a rich history of educating nurses, whether through the former Rochester-based nursing schools or current educational offerings through Mayo Clinic School of Health Sciences and Mayo Clinic School of Continuous Professional Development.

From 1906 to 1970, the two major nursing schools in Rochester graduated 7,692 nurses. Originally, nursing students fulfilled the role of nurses at the hospitals. Later, graduating nurses were hired by Mayo Clinic and affiliated hospitals.

Saint Marys School of Nursing

The first nursing school in Rochester, Saint Marys Nursing School, was established in 1906 in response to the Sisters of Saint Francis being unable to keep up with the Mayo brothers' growing practice at Saint Marys Hospital. Sister Joseph Dempsey decided to open a training school to give the hospital a constant supply of nurses. The Saint Marys Hospital Training School for Nurses opened as a two-year program with two students and expanded the training to three years within the decade. The school's motto was "Enter In To Learn, Go Forth to Serve."

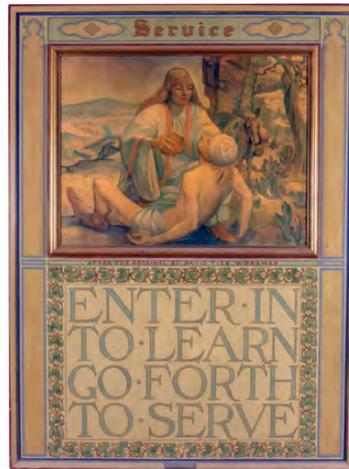
The school's name was changed to Saint Marys Hospital School of Nursing in 1932 and to Saint Marys School of Nursing in 1949.

During World War II the U.S. initiated the Cadet Nurse Corps to stimulate interest in the nursing profession. Corps students received generous financial assistance and attention from a military recruitment program, which emphasized that to be a nurse was patriotic. These efforts helped to swell the ranks of nurse applicants. American Red Cross records indicate that about 250 Saint Marys Nursing School alumni served as nurses in the military.

Saint Marys was included in the first list of schools accredited by the National League of Nursing Education. When a representative of the Department of Diploma and Associate Degree Programs visited in 1953, these comments were recorded:



SISTER JOSEPH DEMPSEY



The Saint Marys School of Nursing class of 1927 presented this painting, which hangs in the entrance to Marian Hall at Mayo Clinic Hospital, Saint Marys Campus.

"The close and smoothly organized administration of this large and active program is a tribute to all involved. From a brief observation of students in this school it seems that they are an unusually happy, healthy group who are serious about nursing and what it has to offer.

"The impression gained through the hospital is that everyone is concerned with the good care

for the patients and all categories of personnel are kindly and solicitous. Much credit is due to the administrators of the nursing programs and the hospital for the attainment of such an excellent atmosphere for the care of patients and the instruction of student nurses."

In 1963 curriculum for the Saint Marys diploma program was planned, and students were expected to pay for their nursing education. (In the early years, nursing students received lodging, board and laundry at the expense of the hospital, and they paid no tuition.) By 1967 all classes in the sciences were offered at Rochester State Junior College. That same year the directors of Saint Marys School of Nursing, Methodist-Kahler School of Nursing and Rochester State Junior College announced that the diploma programs would cease to exist and that an associate degree program in nursing would be established at the college.

Saint Marys School of Nursing graduated its last class in June 1970. The school had educated 3,865 graduates.

Methodist-Kahler Nursing School

In 1916 the Colonial Hospital opened as a convalescent hospital in Rochester. The following year the Kahler Roberts Corporation opened the Stanley hospital. Maintaining an adequate supply of registered nurses was a problem for the expanding

Rochester hospitals in a rural community of 12,000 people. World War I aggravated this problem when many nurses enlisted in military service.

To assist in solving this problem, Melvin Henderson, M.D. (S '54), of Mayo Clinic, chief of staff of Colonial Hospital in Rochester, and Mary Gill, nurse and superintendent of nurses at Colonial, recommended establishing another training school. The Kahler Roberts Corporation established the Colonial Hospital Training School of Nurses with admission of five students in 1918. Students were admitted in succeeding months until there were 35 in the one-year program.

The program was lengthened to two years in 1919 and then to three years, when it was established as a diploma program in professional nursing. The name of the school was changed to Colonial and Allied Hospitals School for Nurses and then to the Kahler Hospitals School of Nursing.

In 1943 the Kahler School of Nursing was approved by the U.S. Public Health Service to offer



Mayo Clinic nursing today

Mayo Clinic employs 9,312 nurses throughout the three Mayo Clinic campuses and Mayo Clinic Health System.

its students the opportunity to join the Cadet Nurse Corps. Students had to promise to remain in essential nursing for the duration of the war. During World War II, 407 students of the school participated in the Cadet Nurse program.

The hospitals and school were sold in 1954 and incorporated as Rochester Methodist Hospital, a nonprofit Minnesota corporation. The school was renamed Methodist-Kahler School of Nursing.

In 1970 the school issued its 3,827th diploma before closing. Rochester Community and Technical College became the major institution granting nursing degrees in Rochester.

Methodist-Kahler Nursing School celebrated its 100th anniversary in September 2018 with an all-school reunion in Rochester.



SAINT MARYS SCHOOL OF NURSING AND ITS CRUCIAL ROLE DURING WORLD WAR II



Earlier this year the History Center of Olmsted County in Rochester hosted an exhibit, “Courage and Compassion: Our Shared Story of the Japanese American World War II Experience,” which shared examples of support for the Japanese-American community during and immediately after World War II. The phase of the exhibit that visited Rochester showcased Saint Marys School of Nursing and its role in educating Japanese-American nurses during World War II.

In February 1942 President Franklin D. Roosevelt signed Executive Order 9066, ordering the mandatory evacuation of all persons of Japanese ancestry. Two-thirds of the 110,000 people forced into relocation camps in desolate areas in the Western and Midwestern United States were U.S. citizens.



Japanese-American nurses in the Cadet Nurse Corps contributed to World War II efforts.

Because of restrictions placed on persons of Japanese descent on the West Coast, Midwestern schools were encouraged to accept Japanese-American nursing students from the camps. Saint Marys School of Nursing participated in the program and admitted its first Japanese-American student in 1942. Over the next several years, Saint Marys would accept more Japanese-American nursing students than any other school in the country. Forty-two Japanese-American women from U.S. incarceration camps were admitted to the school’s nursing education program.

Mitchell Maki, Ph.D., is president and CEO of Go For Broke National Education Center, the nonprofit organization that sponsored the traveling exhibit. The organization educates the public on the valor of Japanese-American veterans of World War II and their contributions to democracy. “Saint Marys Nursing School and the Rochester community showed courage during a time of crisis,” she says. “These courageous people teach us that we cannot tolerate discrimination against individuals based on the color of their skin, the God they worship or their country of origin. They exemplify the best that America has to offer.”

Memories of Teruko Yamashita

Teruko Yamashita entered Saint Marys School of Nursing from the Gila River, Arizona, internment camp, which held 16,000 people. Prior to internment her family had lived on a 30-acre ranch in Selma, California, where they raised grapes. Both of Yamashita’s parents were born in Hiroshima, Japan, and all five of their children were born in the U.S.



Cadet Nurse
Teruko Yamashita

“With the uncertainty about our future, the Cadet Nurse Program was not only a way to leave camp but also a great opportunity to receive such a wonderful education — and free! It was like a dream come true. It was also a way to serve my country during the war. Many of my classmates and friends were already

volunteering to join the U.S. Army. They wanted to prove their loyalty to the U.S. despite being incarcerated behind barbed-wire fences.

“I received my acceptance letter and entered Saint Marys for the February 6, 1945, class. I was issued a pass, signed and stamped with an official seal, stating that I ‘may travel and reside within the areas of Western Defense Command heretofore prohibited to persons of Japanese ancestry.’

“I traveled to Rochester, Minnesota, by train. For three years I had lived with my family of seven members in one little room in a city of barracks. Leaving for the outside world alone was a little frightening. Arriving in Rochester I was overwhelmed by how big and huge everything looked — the buildings, homes, streets. But how great it felt to be free! The joy of breathing the fresh air of freedom is indescribable. From the warm desert of Arizona, arriving in Rochester in February in the middle of winter was a shock! It was bitter cold, but at the same time it was simply beautiful — my first sight of snow.

“My classmates were very friendly and thoughtful and treated me as one of them. The instructors and hospital staff were very helpful and kind, and seemed to go out of their way to make me feel welcome and comfortable.

“I pledged to my country my service in essential nursing for the duration of the war. We Cadet nurses received our sharp-looking gray uniforms and berets, with the red epaulets, silver insignias and Maltese cross. On May 12, 1945, our Cadet nurse induction ceremony was held, which included proudly marching down the streets of Rochester, wearing our uniforms, with the banner of the Corps in front.

“I only wish that my parents could have been there to witness my graduation. They would have been so proud! I was their first child to receive advanced education.

“After graduation in 1948, I worked in the emergency room at Saint Marys Hospital. I returned to California in the fall and worked in Oakland at the Peralta Hospital. In 1951 after my marriage I moved to Denver, Colorado, and worked at St. Luke’s Hospital until my first child was born in September 1952.

“Attending Saint Marys School of Nursing was one of the best things that happened to me. It not only gave me a rewarding career, it taught me skills in organization and discipline and gave me self-confidence. The knowledge acquired helped me in raising my family and lasted throughout my life. It instilled in me this wonderful desire to continue learning new things and to always help others.”

Memories of Fumiye Yoshida Lee

Fumiye Yoshida Lee and her family were kept at a relocation camp in Idaho.

“Every dark cloud has a silver lining. A day in January was the silver lining for me — acceptance from Saint Marys School of Nursing in Rochester, Minnesota. A fantastic opportunity to be accepted at one of the best hospitals in the U.S. to work with the Mayo Clinic doctors. Thirteen Niseis (children of Japanese immigrants who were born and educated in America) were accepted in a pilot program, and we lived up to their high expectations.

“Jan. 21, 1943: The gates clanged behind me. I was on the outside. I left with mixed feelings — elated on one hand to be rid of the morbid situation; disheartened at leaving my family behind; and then apprehensive after all the negative propaganda about what kind of reception awaited me. I had to excel for my folks, for myself and for all Americans of Japanese ancestry. I boarded the train — a free woman on my way to fulfill my early dreams of becoming a nurse.

“I donned my gray and red cadet uniform and marched with 269 other Rochester student nurses to the Mayo auditorium for an impressive induction ceremony. The sisters were very gracious and helpful. I will forever remember them as they were influential in our everyday activities and classes.” ▲





A FRONT-ROW SEAT TO A HALF-CENTURY OF SURGICAL HISTORY



Most of the surgeons and surgical trainees in the last 50 years at Mayo Clinic in Rochester had their operative notes transcribed by Shirley Hultz — a count of more than half a million cases.

Shirley Hultz retired as a surgical transcriptionist this year. Having started in the job right out of Wabasha High School in 1967, she worked with luminaries including James Priestley, M.D. (S '33), Oliver Beahrs, M.D. (S '50), O.T. Claggett, M.D. (S '40), and Donald McIlrath, M.D. (S '62).

Hultz started her career when the recording process involved a transcriptionist going to the operating room immediately after the completion of a procedure, taking notes in shorthand and transcribing the notes for the patient medical record regardless of time of day — or night.

“The latest I was at the hospital — Saint Marys for most of my career — was 3 a.m.,” says Hultz. “When we were assigned to the late shift, we usually worked till about midnight or whenever the last surgery was done.”

When the surgeon finished a procedure, he flipped a switch in the OR to illuminate a light in the transcriptionist office. The lights corresponded to particular operating rooms.

**“The progress in surgery was amazing,
and I had a front-row seat to it.”**

– Shirley Hultz

“It usually took about five minutes for experienced surgeons to dictate their notes,” says Hultz. “Then we went right back to our office and typed the notes. At the end of his work day, the surgeon came to our office and signed all of his cases. I usually handled 20 to 30 cases a day.”

Hultz says “his” because she was on the job for a decade or two before a woman surgeon joined the staff.

When she started the job, Hultz participated in a one-month training class to learn basic anatomy and medical terminology. Transcriptionists were introduced to one specialty at a time over two years.

“I started with plastic surgery — probably an excision of a cyst or something like that,” she says. “We started with the easiest specialties and worked up to the more difficult ones. I have pretty good medical knowledge after all these years. You can’t help but soak it all in if you pay attention.

“I was fascinated over the years by the progress in techniques and surgical abilities. When I started, a bone tumor meant amputation. Then came joint replacement and reconstruction and scopes.



Shirley Hultz with David E. Patterson, M.D. (U '81), Department of Urology, circa 1985.

The microscopic and laparoscopic procedures revolutionized the way surgery is performed. The progress in surgery was amazing, and I had a front-row seat to it.”

Hultz recalls running after Franklin Sim, M.D. (I '66, OR '70), who dictated on his way to the locker room, and following Peter Mucha Jr., M.D. (NS '73, S '76), to his office, where he could smoke, to take his dictation.

A significant change occurred in the late 1980s with the introduction of computers. Shorthand was replaced by handheld recorders soon thereafter. The transcriptionist went to the OR and held a recorder for the surgeon to dictate into. Hultz continued using shorthand for years after the change.

“The surgeons liked that I still used shorthand because they could dictate while scrubbing in for the next case and not worry about the sound of water messing with their dictation,” she says.

The next major change was for surgeons to dictate into a telephone. In 1990 transcriptionists ceased going to the OR at all. In 2000 they were moved offsite to the Mayo Clinic Support Center. Today transcriptionists dial into a telephone system to retrieve physicians’ dictation. Some physicians use voice-recognition software to record notes, and transcriptionists edit rather than transcribe. Physicians also have the option to dictate to a computer, without the involvement of a transcriptionist.

While Hultz accepted change as a necessity in medicine similar to the remarkable advances she witnessed in operative techniques, she missed the personal contact with surgeons.

“It was a pleasure to do what I did over all those years and get to know the surgeons,” says Hultz. “It was a great growth and learning experience, too. I met so many wonderful people who helped me along the way.”

Surgeons' reminiscences

Michael Farnell, M.D. (S '80)

Shirley Hultz had been at Mayo Clinic for about a dozen years when Dr. Farnell was a surgical chief resident. "I learned how to dictate properly structured operative notes from Shirley. She made sure we got the terminology right when we tried to describe the way we sewed various loops of intestines together, and made sure we had the preoperative and postoperative diagnoses properly structured in the operative notes. She fixed issues of syntax and diction so our notes flowed smoothly. Despite my fumbling oration, she would structure a beautiful operative note that was a work of art. Shirley is the epitome of the Mayo Clinic culture at its best — professional, dedicated and striving to be the best she could be."

Thomas Shives, M.D. (OR '79)

Dr. Shives joined the Mayo Clinic staff in 1979. "When you were a resident, the transcriptionists were helpful teachers who taught you how to dictate efficiently and accurately. You don't get training in dictation in medical school.

"The transcriptionists also tracked us down if we tried to hide or take a break after a case. They were very conscientious and made sure our notes were completed and in patients' records the same day. Shirley and her colleagues had an important impact on the surgical practice and lives of surgical patients at Mayo Clinic. She is an icon in the field of medical transcription."



Thomas Shives, M.D.,
dictates, 1984.

Roger Dozois, M.D. (S '71)

Dr. Dozois worked with Shirley Hultz the entire 25 years she was based at Mayo Clinic Hospital — Saint Marys Campus. "Shirley was so experienced that if you forgot to mention something in dictation, she knew each procedure and gently prompted you. She made us be more precise at times.

"I'm French-Canadian, and my English wasn't the greatest, especially when I was a resident in the 1960s. She'd ask me to clarify to make sure my notes were accurate. She and I did at least a few thousand cases together. Surgeries often lasted well into the evening, and she was always there waiting for us. If I went to the lounge after a case because I was tired, she chased me down and made me dictate."

David Farley, M.D. (S '94)

As a resident, Dr. Farley observed Shirley Hultz interacting with staff physicians and gently correcting them — "Don't you mean a choledochojejunostomy?" He says she was always at the ready to provide service to Mayo Clinic's legendary surgeons and young staff physicians like him. "She knew what went on in the OR like the back of her hand.

"When I joined the staff after training at Mayo for six years, it was an honor to call for a transcriptionist to take my dictation after a case. I was nervous the first time I dictated to Shirley, who had worked with legends such as (Donald) McIlrath (S '62), (Dwight) McGoon (S '57) and (Martin) Adson (S '84). She may have had to give me a couple of looks to get me going the first time. Then, after a few months, we were like old friends."

Michael Sarr, M.D. (GI '80)

Dr. Sarr says Shirley Hultz trained five decades of surgeons — residents and staff alike — in how to dictate operative notes. "Shirley was efficient and exacting. She reminded us if we forgot something. I performed weight-loss operations and almost always removed the gall bladders. At the end of a dictation, Shirley would say, 'Did you also take out the gall bladder?' Shirley and her colleagues played a prominent role in the timeliness of our operative notes. If we operated on a patient, the notes would be in their chart by the end of the day. We couldn't leave the OR until we signed the notes. It was the world's best operative dictation system." ▲



DISTINGUISHED ALUMNI AWARD RECIPIENTS



**2018 recipients • Honoring excellence in
patient care, research and education**



The 2018 Mayo Clinic Distinguished Alumni Award recipients:
Chung Owyang, M.D., Judith Kaur, M.D., C. Terrence Dolan, M.D.,
Robert Avant, M.D., and Vanda Lennon, M.D., Ph.D.

The Mayo Clinic Board of Trustees established the Mayo Clinic Distinguished Alumni Award in 1981 to acknowledge and show appreciation for the exceptional contributions of Mayo alumni to the field of medicine including practice, research, education and administration. Individuals who have received the award have been recognized nationally and often internationally in their fields.

The 2018 Mayo Clinic Distinguished Alumni Awards were presented on Oct. 8, 2018.



Robert Avant, M.D. (FM '77)

Emeritus executive director
American Board of Family Medicine
Bonita Springs, Florida

Robert Avant, M.D., founded and was the first chair of the Department of Family Medicine at Mayo Clinic in Rochester and in Florida. He served as executive director of the American Board of Family Medicine (ABFM) and on its board of directors. He led the ABFM through its first mandatory continuing accreditation and CME certification requirements, and the process of adopting the general competencies created by the American Board of Medical Specialties that became the scaffold for maintenance of certification. Dr. Avant was president of the Society of Teachers of Family Medicine and Association of Departments of Family Medicine. He received the Thomas Johnson Award from the American Academy of Family Physicians — the highest honor a medical educator can receive in family medicine. He was bestowed a distinguished chair as the Parker D. and Isabella G. Sanders Professor of Primary Care at Mayo Clinic.

Mayo Clinic: Chair, Department of Family Medicine, Rochester (1977-1991); chair, Section of Family Medicine, Florida (1991-1993); director, Family Medicine Residency Program (1978-1985); professor of family medicine, Mayo Clinic College of Medicine and Science (1985-1993); Parker D. and Isabella G. Sanders Professor of Primary Care (1986-1993)

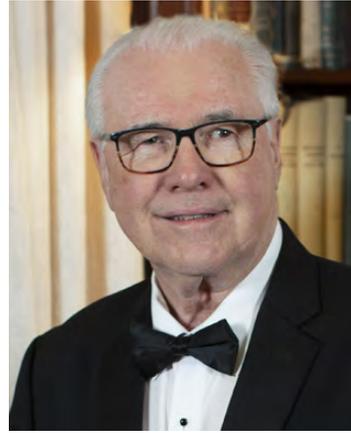
Residency: U.S. Air Force, Grand Forks Air Force Base, North Dakota (1964-1966)

Internship: San Bernardino County Hospital, San Bernardino, California (1963-1964)

Medical school: University of Minnesota Medical School, Minneapolis (1959-1963)

Undergraduate: University of Minnesota, Duluth (1955-1959)

Native of: Chisholm, Minnesota



C. Terrence Dolan, M.D. (M '68, PATH '68)

Director of Pathology Laboratories
St. John Medical Center
Clinical professor of pathology
University of Oklahoma Medical School
President, Regional Medical Laboratory Inc.
Tulsa, Oklahoma

C. Terrence Dolan, M.D., was a trailblazer in realizing the potential of data analytics in patient care and laboratory management. He co-founded Pathology Laboratory Associates and has been its managing partner since 1980. He co-founded Regional Medical Laboratory (RML) at St. John Medical Center, serving as president and CEO and as a member of its board of trustees. RML is one of the largest hospital-owned laboratories in the U.S. With several others, Dr. Dolan developed the initial PathNet Laboratory Information System within the Cerner Corporation, which is used by more than one-third of U.S. hospitals and clinical laboratories around the world. He also led development of Enterprise Data Warehouse, one of the most robust data warehouses in health care.

Mayo Clinic: Associate consultant, Section of Microbiology and Immunology, Rochester (1968-1969); consultant, Department of Microbiology and Immunology (1969-1972); instructor in microbiology, Mayo Clinic College of Medicine and Science (1969-1972)

Residency: Clinical and anatomic pathology (1965-1968), microbiology (1968), Mayo Clinic School of Graduate Medical Education, Rochester, Minnesota

Internship: Creighton Memorial-St. Joseph's Hospital, Omaha, Nebraska (1962-1963)

Medical school: Creighton University, Omaha (1958-1962)

Undergraduate: University of Missouri, Kansas City (1954-1958)

Native of: Kansas City, Missouri



Judith Kaur, M.D. (ONCL '94)

Division of Hematology and Medical Oncology
Department of Internal Medicine
Mayo Clinic, Jacksonville, Florida
Medical director, Native American Programs
Mayo Clinic Comprehensive Cancer Center
Professor of oncology
Mayo Clinic College of Medicine and Science

Judith Kaur, M.D., is a leading voice on American Indian/Alaska Native cancer issues and a former member of the National Cancer Advisory Board. She was one of the first NCI-funded investigators to collect better data on cancer in Native American communities, bringing greater awareness of its impact on tribes in the Midwest and Western U.S. Dr. Kaur is involved in national research and outreach programs to American Indians and Alaska Natives, with a special interest in women’s cancers. She was the principal investigator for a molecular markers study in breast cancer in American Indians and Alaska Native women, and a mammographic and clinical risk-factor analysis study.

Mayo Clinic: Consultant, Division of Hematology/Oncology, Department of Internal Medicine, Florida (2015-present); consultant, Division of Medical Oncology, Rochester (1997-2015); medical director, Mayo Clinic Rochester Hospice (1994-2015); professor of oncology, Mayo Clinic College of Medicine and Science (2007-present)

Fellowship: Hematology and medical oncology, University of Colorado Health Sciences Center, Denver, Colorado (1982-1984)

Residency: Internal medicine, University of Colorado Health Sciences Center (1979-1982)

Medical school: University of Colorado Health Sciences Center (1977-1979); University of North Dakota, Grand Forks (1975-1977)

Master’s degree: Education, Northwestern University, Evanston, Illinois (1966-1967)

Undergraduate: Augustana College, Rock Island, Illinois (1964-1966)

Native of: Chicago, Illinois



Vanda Lennon, M.D., Ph.D. (N '78)

Division of Clinical Biochemistry & Immunology
Department of Laboratory Medicine and Pathology
Department of Immunology
Mayo Clinic, Rochester, Minnesota
Professor of immunology and neurology
Dorothy A. Adair Professor
Mayo Clinic College of Medicine and Science

Vanda Lennon, M.D., Ph.D., pioneered autoimmune neurology through groundbreaking research in autoimmunity and tumor immunology. She founded the Mayo Clinic Neuroimmunology Laboratory and established the first Autoimmune Neurology Fellowship in the U.S. Her research reflects her early recognition that cancer is a significant initiator of neurological autoimmunity. She has discovered and defined neural autoantigens of clinical significance, investigated mechanisms of IgG-mediated disorders of synaptic transmission at the neuromuscular junction and autonomic ganglia, and identified autoantibodies targeting CNS channel proteins.

Mayo Clinic: Director, Neuroimmunology Research Laboratory, Department of Immunology, Rochester (1978-present); consultant, Department of Neurology (1978-present); consultant, Division of Clinical Biochemistry & Immunology, Department of Laboratory Medicine and Pathology (1989-present); consultant, Department of Immunology (1978-present); professor of immunology and neurology, Mayo Clinic College of Medicine and Science (1983-present); program director, Autoimmune Neurology Fellowship (2006-2016); Dorothy A. Adair Professor (2012-present)

Graduate: Ph.D., immunology, University of Melbourne, Australia (1973)

Postdoctoral fellowship: Salk Institute for Biological Studies, San Diego, California (1972-1973)

Research fellowship: Walter and Eliza Hall Institute of Medical Research, Parkville, Australia (1968-1971)

Internship, residency: Internal medicine, Montreal General Hospital, McGill University, Montreal, Quebec, Canada (1966-1968)

Medical school: University of Sydney, Australia (1960-1966)

Native of: Sydney, Australia



Chung Owyang, M.D. (GI '78)

H. Marvin Pollard Professor of Internal Medicine
Professor of molecular and integrative physiology
Chief, Division of Gastroenterology & Hepatology
Director, Pollard Institute for Medical Research
University of Michigan
Ann Arbor, Michigan

Chung Owyang, M.D., has had one of the most successful careers in gastroenterology, making invaluable contributions to the science. His groundbreaking research has focused on neurohormonal control of digestive functions including pancreatic endocrine and exocrine secretion, GI motility, and eating behavior. Dr. Owyang has received continuous NIH funding for more than 30 years. He is past president of the American Motility Society and was inducted into the American Society of Clinical Investigation and American Association of Physicians. He received the AGA Julius Friedenwald Medal — the highest honor the American Gastroenterological Association bestows on a member. In addition to these contributions to medicine, Dr. Owyang has traveled to China often since the early 1980s to promote academia and research with colleagues at various universities. He has received honorary professorships from top medical institutions in China for his role in helping train a generation of academic gastroenterologists in that country.

Fellowship: Gastroenterology, Mayo Clinic School of Graduate Medical Education, Rochester, Minnesota (1975-1978)

Residency: Montreal General Hospital, Montreal, Quebec, Canada (1973-1975)

Internship: Montreal General Hospital (1972-1973)

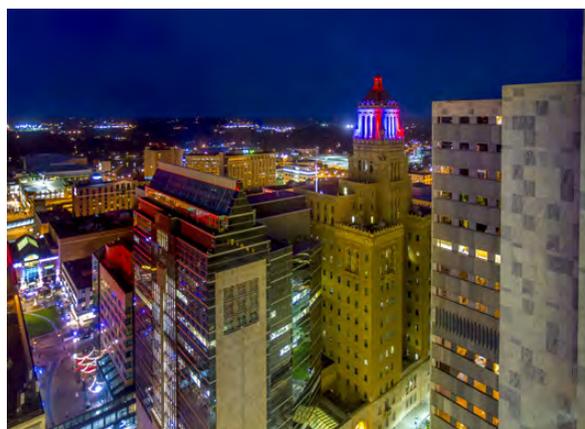
Medical school: McGill University, Montreal (1968-1972)

Undergraduate: McGill University (1965-1968)

Native of: China



SAVE THE DATE



MAYO CLINIC ALUMNI ASSOCIATION BIENNIAL MEETING

Sept. 26–28, 2019

**Hilton Hotel
Rochester, Minnesota**

We hope to see you on the Rochester campus next year for reconnecting with colleagues, friends, mentors and students. The conference headquarters will be a new Hilton Hotel opening in 2019 in the heart of downtown Rochester.

MAYO CLINIC UPDATE

Growth on Mayo Clinic campuses

Changes are underway at Mayo Clinic campuses, including expansion of the Gonda Building on the Rochester campus, a new investment of \$144 million for two major capital projects to be constructed on the Florida campus, and a \$648 million expansion that will almost double the size of the Phoenix campus in the next five years.

Gonda Building expansion in Rochester

The Gonda Building on the Rochester campus will expand by 11 floors. The expansion will include four floors for new clinical space and seven floors for a premier hotel space. The new clinical space will allow expansion of the Mayo Clinic Cancer Center and Outpatient Procedure Center.

Mayo Clinic's partner in the expansion project is Pontiac Land Group, a Singapore-based real estate developer. The collaboration allows for the acceleration of the long-planned third and final phase of the Gonda Building. The two organizations will engage in a joint venture for ownership of the hotel, which will be operated by a major hotel group to be identified. Pontiac Land will develop the hotel space.

Preliminary plans are for construction to begin by the end of 2019 or early 2020, with project completion by the end of 2022.



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Florida projects

- Mayo North addition — Five-story, 120,000-square-foot building with two-story building link between Mayo and Cannaday buildings; space for eight operating rooms and procedural space for cardiology, gastroenterology and hepatology, and other departments. Expected completion: 2021
- Patient parking garage — 1,000-space garage adjacent to Cannaday Building; two-story connector building with 25,000 square feet of space for retail and other use. Expected completion: 2020

Other recent capital projects on the Florida campus include:

- Dorothy J. and Harry T. Mangurian Jr. Building — Integrated services for complex cancer, neurologic and neurosurgical care; home to discovery, patient-centered research and clinical trials. Completed: 2018
- Positron emission tomography (PET) radiochemistry facility — Radiochemistry laboratory and cyclotron. Completed: 2018
- Mayo South Building — Space for new molecular imaging center and cardiovascular and cardiothoracic surgery programs; space to expand spine center and pain rehabilitation program. Expected completion: 2019
- Collaboration between Mayo Clinic and United Therapeutics Corporation — Three-story, 75,000-square-foot building with technology to increase the volume of lungs for transplantation, and a biotechnology center to attract companies to northeast Florida. Expected completion: 2019

In the last three years, Mayo Clinic in Florida has more than doubled its space and added more than 1,000 new staff members, including 130 physicians and scientists.



Dorothy J. and Harry T. Mangurian Jr. Building

Arizona projects

The Arizona Forward project will add 1.4 million square feet of building space with expanded clinical capacity, support services and infrastructure at the campus located near Loop 101 and 56th Street in North Phoenix. The expansion plan will create almost 2,000 new jobs, including almost 200 physicians, by 2029.

- Six-story patient tower with new patient rooms, clinical and rehab space, and outpatient surgical center
- Three-floor addition to existing four-story Mayo Clinic Building for clinical services
- Three-story building to house expanded emergency, laboratory medicine, radiology and pharmacy
- Central plant building to support additional building square footage
- 1,000-space underground patient parking garage
- 1,600-space multilevel staff parking garage



Refer-a-friend

You can now refer friends and family who are not your patients to Mayo Clinic via the Alumni Association website: alumniassociation.mayo.edu/refer

Mayo Clinic joins hospitals to launch not-for-profit generic drug company

Mayo Clinic has joined a coalition of seven hospitals in launching Civica Rx, a not-for-profit generic drug company that will help patients by addressing shortages and high prices of lifesaving medications.

Other initial governing members of Civica Rx are Catholic Health Initiatives, Hospital Corporation of America, Intermountain Healthcare, Providence St. Joseph Health, SSM Health and Trinity Health. The seven organizations represent about 500 U.S. hospitals and will provide leadership for the Civica Rx board of directors and much of the initial capitalization for the company. The Department of Veterans Affairs will work in consultation with Civica Rx to address its needs.

Three major philanthropies will join Civica Rx as governing members: the Laura and John Arnold Foundation, Peterson Center on Healthcare, and Gary and Mary West Foundation. Philanthropic members will further support and safeguard the company's not-for-profit, social welfare mission.

Civica Rx, a manufacturer approved by the Food and Drug Administration, will directly manufacture

generic drugs or subcontract manufacturing to reputable contract manufacturing organizations. The company has identified 14 hospital-administered generic drugs as the initial focus of its efforts and expects to have its first products on the market as early as 2019. The company will provide generic medications to the retail market, offering an affordable alternative to products from incumbent generic drug companies.

Civica Rx will first seek to stabilize the supply of essential generic medications administered in hospitals — many of which have fallen into chronic shortage situations that put patients at risk.

“This endeavor demonstrates the need for collaboration to solve the most complex health care challenges of today,” says John Noseworthy, M.D. (N '90), president and CEO of Mayo Clinic. “I am pleased to see our collective commitment to improving the health and well-being of millions of patients come alive through this mission-driven initiative.”



Mayo Clinic designated a 2018 Disability Equality Index Best Place to Work

Mayo Clinic has received a top score on the Disability Equality Index and designation as a 2018 Disability Equality Index Best Place to Work.

This is the third consecutive year that Mayo Clinic has been a top scorer on the annual benchmarking survey.

In its application, Mayo Clinic highlighted the addition of:

- A full-time diversity recruitment specialist focused on recruiting and retaining people with disabilities
- The launch of the Self-Identify Campaign, an invitation to voluntarily self-identify as a person with a disability

- The creation and consolidation of key messages and resources around disability awareness
- The Return to Work program, which is a section dedicated to helping medical recovery by utilizing work as therapy in an environment focused on communication, collaboration and respect
- Available accessibility and accommodation services
- Addition of questions in Epic, Mayo Clinic's electronic health record, to assess accommodation needs for patients with disabilities

Mayo Clinic establishes pediatric hematology/oncology fellowship to recognize former trustee Barbara Bush

Mayo Clinic has established the Pauline Robinson “Robin” Bush Honorary Fellowship in pediatric hematology/oncology at Mayo Clinic School of Graduate Medical Education in recognition of Barbara Bush and her commitment to Mayo Clinic as a distinguished emeritus member of the Board of Trustees.

The goal of the fellowship is to train aspiring physicians or physician researchers alongside Mayo’s experts in pediatric hematology/oncology so young patients and their parents can be confident they are receiving the most innovative treatments and compassionate care for years to come.

In 1953 Pauline Robinson “Robin” Bush, the second child of former President George H.W. and Barbara Bush, died of childhood leukemia at age 3. The Bushes donated Robin’s body to cancer research and later said they found comfort in knowing that she may have helped other children live. Barbara Bush was involved in supporting childhood cancer treatment and research throughout much of her life.

The first Pauline Robinson “Robin” Bush Honorary Fellows are:

- Melissa Azul, D.O. (PDHO ’21)
- Mira Kohorst, M.D. (MED ’13, PD ’16, PDHO ’19)
- Paulina Roman Moreno, M.D. (PDHO ’20)
- Kirk Wyatt, M.D. (MED ’14, PD ’17, PDHO ’20)



Mayo Clinic receives \$10 million grant from Gerstner fund

Mayo Clinic received a \$10 million grant from the Louis V. Gerstner Jr. Fund at Vanguard Charitable on the recommendation of Louis V. and Robin L. Gerstner. The grant will support five initiatives across Mayo Clinic’s Arizona, Florida and Rochester sites, and continues a long relationship with Mayo Clinic that includes the Gerstner Family Career Development Awards in Mayo Clinic’s Center for Individualized Medicine.

The grant advances research in the use of augmented human intelligence in cardiovascular care, and advances care for arthritis and spine pain using regenerative medicine and data analytics. The grant also provides specialized education opportunities for nurse practitioners and physician assistants.

Louis V. Gerstner Jr. is a former chair and CEO of International Business Machines Corp, and former chair of The Carlyle Group, a private equity firm.

Mayo Clinic research identifies genes that increase risk for triple-negative breast cancer



Research led by Fergus Couch, Ph.D. (PATH '97), chair, Division of Experimental Pathology and Laboratory Medicine at Mayo Clinic in Rochester, has identified specific genes associated with an increased risk for

developing triple-negative breast cancer.

Dr. Couch and his colleagues performed genetic testing on 10,901 patients with triple-negative breast cancer. They found that alterations in BARD1, BRCA1, BRCA2, PALB2 and RAD51D genes were associated with a high risk for triple-negative breast cancer and a greater than 20 percent lifetime risk for overall breast cancer among Caucasians. They observed a similar trend among African-Americans. Mutations in the BRIP1 and RAD51C genes were linked to a more moderate risk of triple-negative breast cancer.

Previous studies have found genetic variations in BARD1, BRIP1, PALB2 and RAD51C in triple-negative breast cancer patients. The new study shows this in more detail and identifies new specific, strong associations between the susceptibility genes RAD51D and BARD1 and triple-negative breast cancer.

The findings will enable expanded genetic testing to identify women at risk for triple-negative breast cancer and may lead to better prevention strategies. Dr. Couch says the new findings may lead to revisions to the National Comprehensive Cancer Network screening guidelines, which recommend only BRCA testing when a patient has a family history of breast cancer or is diagnosed at age 60 or younger.

Dr. Couch is the Zbigniew and Anna M. Scheller Professor of Medical Research in Honor of Dr. Thomas McDonald.

Obituaries

W. Philip Ball, M.D. (I '51), died Feb. 4, 2016.

Stanley Cassan, M.D. (I '69, THD '71), died Feb. 27, 2018.

Alan Chaimov, M.D. (OPH '62), died July 4, 2018.

Peter Copeman, M.D. (DERM '69), died July 13, 2018.

John Cox, M.D. (P '67), died July 12, 2018.

Ross Dobson, M.D. (S '54), died Jan. 30, 2018.

Robert Gibb, M.D. (PATH '54), died July 16, 2018.

Raymond Hansen, M.D. (PD '65, PDA '67), died Jan. 15, 2015.

Donald Holsinger, M.D. (I '61), died June 3, 2018.

Brian Jarchow, M.D. (I '57, R-D '60), died May 21, 2018.

George Khoury, M.D. (PDC '63), died Oct. 18, 2017.

Douglas Loberg, M.D. (ANES '78, I '83), died Dec. 8, 2010.

Vance MacDonald, M.D. (S '68, NS '72), died June 19, 2017.

Robert McRoberts, M.D. (OR '72), died July 29, 2018.

Francis Milone, M.D. (OR '62), died Aug. 16, 2018.

Dolphin "Henry" Overton Jr., M.D. (OBG '60), died Aug. 4, 2018.

Roland Moskowitz, M.D. (I '60), died on Aug. 2, 2018. Dr. Moskowitz was a 2008 recipient of the Mayo Clinic Distinguished Alumni Award.

Complete obituaries and alumni news
alumniassociation.mayo.edu/people

Mayo Clinic Alumni magazine is published quarterly and mailed free of charge to physicians, scientists and medical educators who studied and/or trained at Mayo Clinic, and to Mayo consulting staff. The magazine reports on Mayo Clinic alumni, staff and students, and informs readers about newsworthy activities throughout Mayo Clinic.

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alumniassociation.mayo.edu/winter

