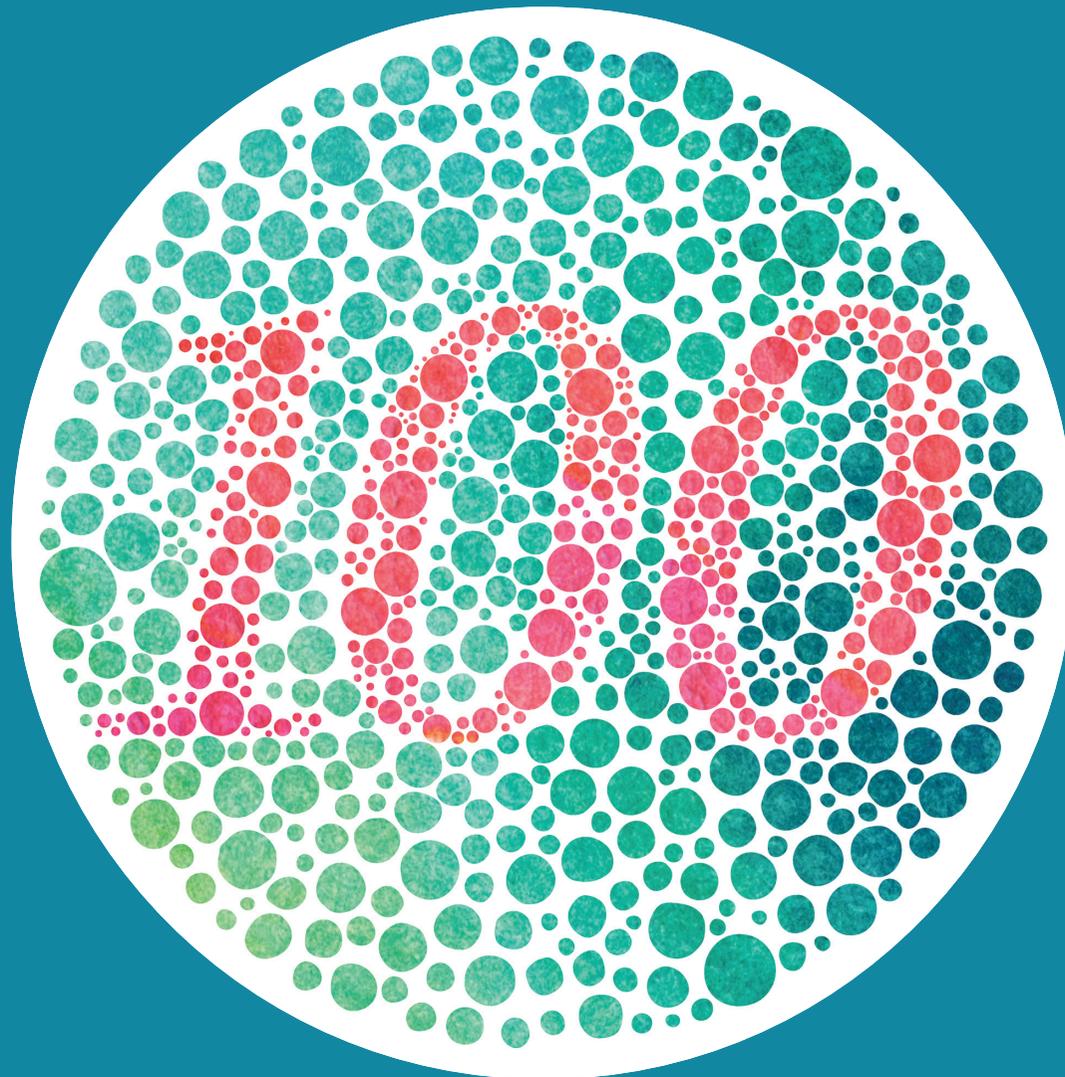


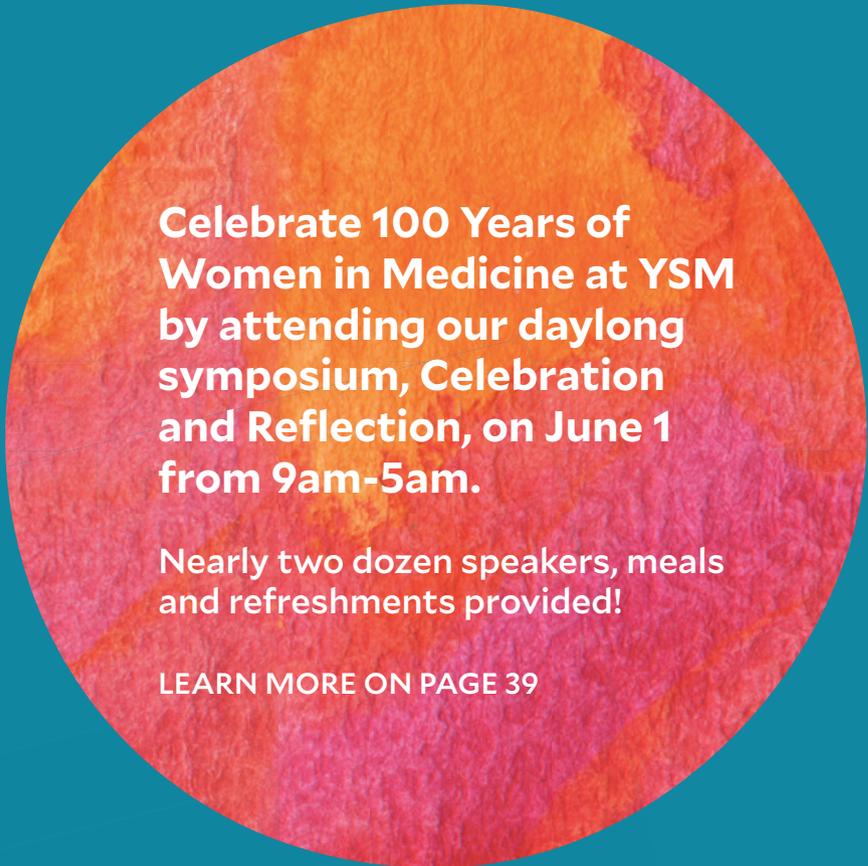
yale medicine magazine



A century of women at Yale School of Medicine

Spring 2018

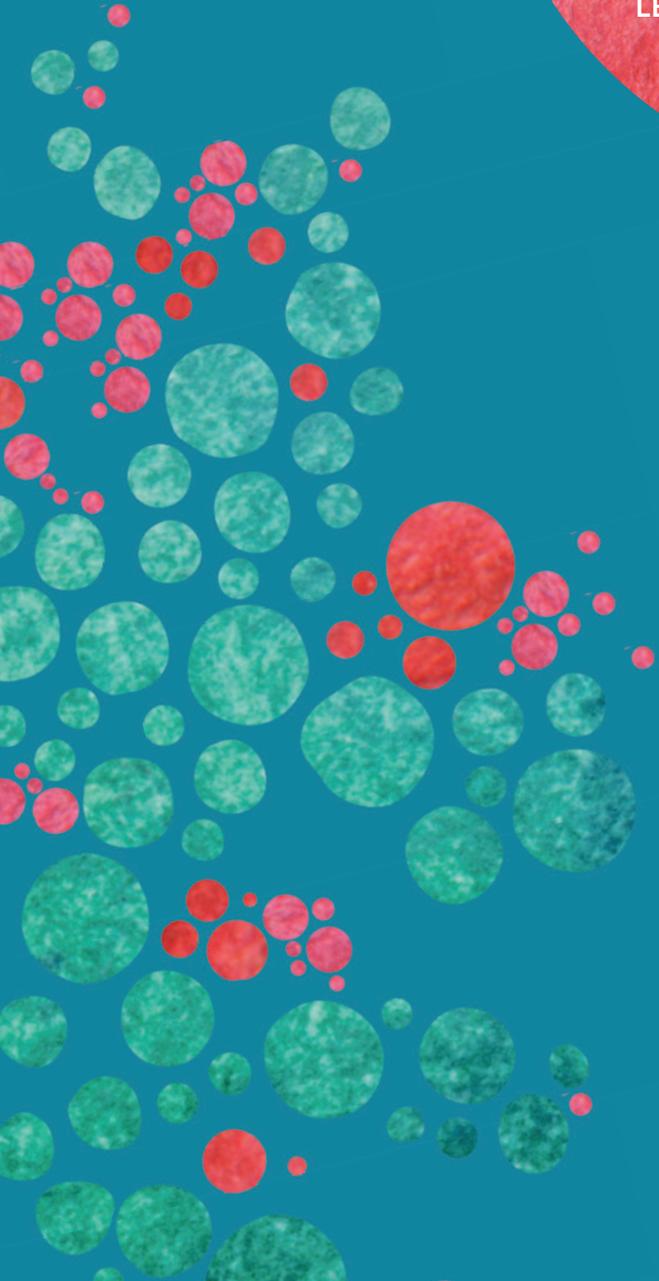
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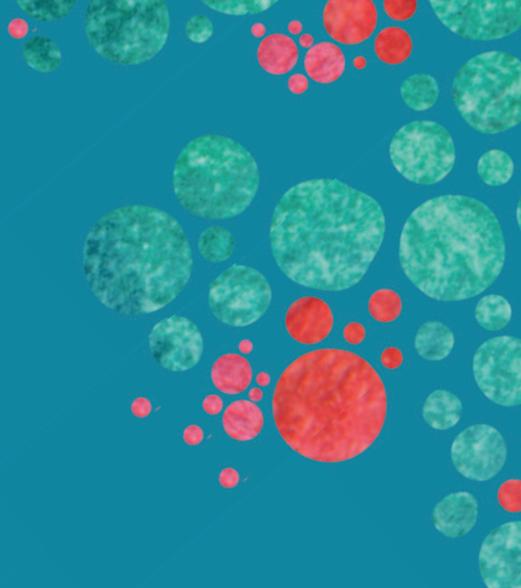


**Celebrate 100 Years of
Women in Medicine at YSM
by attending our daylong
symposium, Celebration
and Reflection, on June 1
from 9am-5am.**

Nearly two dozen speakers, meals
and refreshments provided!

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Women at Yale School of Medicine: a perspective

So much comes down to basic biological details. For years, common wisdom used the euphemism “plumbing” to describe the essential differences between men and women, as though the organs associated with being male or female determined everything about them—professional opportunities, social boundaries, acceptable fashion, and all

the other diverse variables that factor into human identity.

Being born with female “plumbing” brought restrictions, leaving many women imprisoned on the wrong side of the biological divide. Even today women say they have to work twice as hard to enjoy opportunities similar to those of men. Not to mention that women continue to have fewer choices about how to use their “plumbing,” with decisions about their

bodies determined by governments, employers, and health insurers in ways very different than for men.

Ironically, it was plumbing that helped Yale School of Medicine open its doors to female students at the beginning of the last century. A timely donation of funds sufficient to build a bathroom for female students changed the scope of what was possible for women, initiating an era in which they assumed their place beside men as medical students at Yale.

This is more than a cute story. Institutional reforms both small and large, combined with the efforts of advocates and pioneers, have helped create the current moment at Yale School of Medicine. The gender mix of our student body reflects the general population. More women are on our faculty, including as administrators and department heads. This truth reflects recruiting initiatives begun in the 1970s and 1980s. In real terms, equality has never been closer on the slow march of progress.

But generations-long biases take generations to change. This issue is dedicated to the brave women from decades ago who laid the groundwork for the present moment, as well as to those who are a part of Yale School of Medicine’s social and professional fabric today. Their voices and perspectives are what will continue to drive Yale School of Medicine to greater levels of success in an increasingly diverse and competitive world.

Adrian Bonenberger
Editor, Yale Medicine Magazine

SECOND OPINION BY SIDNEY HARRIS



"FIND OUT WHO SET UP THIS EXPERIMENT. IT SEEMS THAT HALF OF THE PATIENTS WERE GIVEN A PLACEBO, AND THE OTHER HALF WERE GIVEN A DIFFERENT PLACEBO."

Send letters and news items to

Yale Medicine Magazine, 1 Church Street, Suite 300, New Haven, CT 06510 or email ymm@yale.edu. Please limit letters to 350 words and include a telephone number. Submissions may be edited for length.

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Abbreviations used in *Yale Medicine Magazine* include HS to denote the final year of residency for house staff, FW for the final year of a fellowship, and YNHH for Yale New Haven Hospital.

Yale SCHOOL OF MEDICINE

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The long steady march toward gender equality

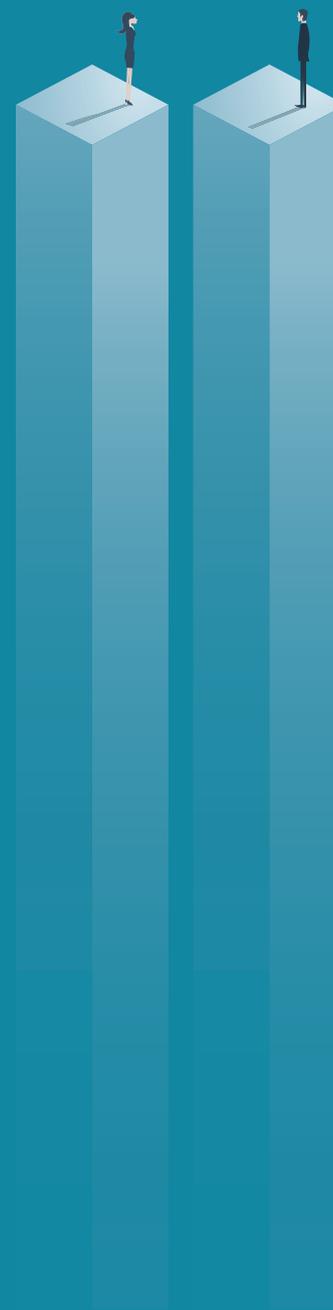
AN ONGOING CHALLENGE in the United States and the world is how to measure women's contributions to life and the workplace equally—to find a way of compensating them, and protect them from the specific forms of harassment to which they are often subjected. Dean Robert J. Alpern, MD, talks about initiatives that have succeeded in narrowing the gap between where Yale School of Medicine is and where it would like to be.

The struggle for gender equality has been long and difficult. Is the end in sight? It's a continuous thing we need to keep working on. I think we're getting closer because of what we've learned, and what society's learned. There's a much greater understanding of the lack of equality, greater understanding of the magnitude of the challenge. These are not simple problems; medicine and science have been male-dominated cultures for a while now. We're looking at ways to open those places up to women interested in careers, and one of those ways will likely involve examining metrics for success in medicine and science.

What are some of the key gender equality issues you've seen as Dean of Yale School of Medicine that have been surprising? When you talk about the women on our faculty, if you'd asked me five years ago, I would have thought sexual harassment was something that affected 5 percent of them. It's become clear that the problem is much more widespread. We need to take that on and eliminate it. Our doctors shouldn't feel unsafe in certain situations. The key is to eliminate it completely.

Various issues one might think are easy to resolve relate to raising a family. The classical career paths in medicine have not made it easy to navigate that. We need to rethink career paths, the trajectories that are unforgiving to people who slow down their productivity for a year or two.

And ultimately, many of these things come down to unconscious bias. There's a big educational component, too. Even since I've been here I've seen change, and we'll keep working on ways to create a truly equal workplace for everyone. We're headed in the right direction.





Honoring the tradition



Having honed her skills on the faculty of Johns Hopkins University, Nita Ahuja is fully prepared to lead Yale's department of surgery as their first woman chair

TO REACH THE OFFICE OF NITA AHUJA, MD, MBA, Yale's newest chair of surgery, one passes portraits of her 14 predecessors. Under the heading "Surgery Department Leaders," they presided from 1813 (when Nathan Smith, MD, became surgery's first chair) until 2016, when Ahuja's predecessor, Robert Udelsman, MD, MBA, left the post. It's a quick overview of Yale School of Medicine's history, and in terms of gender distribution, the history of medicine as well. The wall will have to be updated.

Ahuja, the first woman to lead the department, is also the William H. Carmalt Professor of Surgery, and surgeon-in-chief at Yale New Haven Hospital. She is one of 19 women who chair surgery departments in the United States, according to the Association of Women Surgeons. Medicine and surgery in particular have traditionally been male-dominated fields. But that is changing.

"It's catching, isn't it?" Ahuja said of the slew of female surgeons—five—who joined the surgery department faculty after her appointment in February. "If there's one woman, she's an outlier, right?" she said. But "once you make it past a tipping point, it becomes the norm."

As chair, Ahuja aims to focus on sustaining and improving Yale's top-notch clinical care, expanding laboratory research, and training tomorrow's surgeons. She also wants to make the surgery department staff more reflective of the population it treats.

Ahuja came to Yale from Johns Hopkins University, where she completed her residency, joined the faculty, taught, and conducted research for nearly 25 years.

"She was a superstar—great clinician and teacher and had fabulous research experience and ideas," said Julie Freischlag, MD, now CEO of Wake Forest Baptist Medical Center in North Carolina. Freischlag hired Ahuja as Hopkins faculty in 2003. "I always knew she would be a chair."

At Hopkins, Ahuja gained renown for research on cancer epigenetics, or the study of certain types of changes to the DNA

of cancer cells. While genetic changes alter DNA sequences, epigenetic changes—such as the addition of methyl groups to the proteins around which DNA wraps—do not. Ahuja also started programs to treat two types of tumors requiring complex surgeries: sarcomas and peritoneal cancers. “I’ve always worked to say, ‘What are we not offering? Let’s figure it out and let’s make sure we are offering it so patients get the best [care that can be provided],’” she said.

At Yale, Ahuja will continue building programs to give patients optimal care. For example, a new cardiac institute is on the horizon, she said.

Another of Ahuja’s goals is to shore up the “leaky pipeline” in which women fail to attain higher medical leadership positions. She also hopes to make the department more inclusive. “The idea is to welcome all people,” Ahuja said. “You want to find the best and select them and welcome them to your department, say, ‘If you think you want to come in here, we want to engage you,’ and that means it shouldn’t be defined by gender or by your race or other things. We want the best.”

Talent, hard work, and support from mentors and family helped propel Ahuja to the top.

Born in India, she immigrated to the United States with her parents and sister at age 8. “It was mostly about you two girls getting a good education and doing what you want,”

Ahuja’s father told her. Ahuja wanted to be a doctor.

Heading into medical school at Duke University in 1989, she had not yet selected a specialty, but after a year of breast cancer research in the lab of James Iglehart, MD, now at Harvard, she decided to become a cancer surgeon. This wasn’t an obvious choice for a woman, she recalled. “There were no women surgeons at Duke at that time. The entire department, I think, had one woman who was in the laboratory doing research.”

Ahuja’s first mentor in surgery was an Ob/Gyn, Charles Hammond, MD, and he made her feel that surgery was a career option. “He made it open,” Ahuja said. “He welcomed me.” Ahuja initially thought she would become a gynecologic oncologist but ultimately decided on surgical oncology and began a joint residency and fellowship program in surgical oncology at Hopkins in 1993.

Midway through the program, in 1999, Ahuja was confronted with a dilemma familiar to female doctors: the overlap between medical training and childbearing years. She was pregnant, and as a resident, had no real maternity leave. She and her husband could not afford round-the-clock childcare, so Ahuja’s mother moved in to help take care of the baby. “My parents are a big part of how I arrived in this position,” Ahuja said. “I had my baby and then went back to work.”

In 2003, Freischlag became chair of surgery at Hopkins. “This was an important move not only for Johns Hopkins but I think for the country as a whole,” Ahuja said. Not only was Freischlag the first female chair of surgery at Hopkins but she was also one of the first in the country and among the first at a big institution. That same year, Freischlag hired Ahuja and since then “has been a role model and really a big supporter,” Ahuja said.

Just as her mentors at Duke and Hopkins fostered her rise to leadership, Ahuja wants to support future leaders at Yale. “That’s what someone did for me and that’s what motivates me today to pay it forward to the next generation,” she said.

Her interest is not limited to advancing women in surgery. “It’s not like women bring anything magical, you’re just bringing different perspectives,” she said. What’s paramount, she said, is diversity, which helps improve an organization’s ability to innovate and adapt during times of rapid change as in medicine today. “As there are different types of leaders we now allow the people behind them to see that it’s OK for them to be different and bring different viewpoints,” Ahuja said. She brings the perspective of an Indian-American woman. “Hopefully,” she said, “that means more diverse leaders can thrive at Yale School of Medicine.”

—Ashley P. Taylor



ONLINE EXCLUSIVES

Richard Silverman retired after 40 years of serving the Yale community, 19 of which as the director of admissions for Yale School of Medicine. His retirement party early February featured many fond memories of his involvement with the school, including a touching speech delivered by his daughter.

For more on Richard Silverman, visit ymm.yale.edu/retirement



London artist paints powerful portraits of YSM luminaries

In the coming months, a commissioned portrait of Carolyn Slayman, PhD, a nationally renowned geneticist and longtime leader at the medical school who died in 2016, is expected to join those of her colleagues and forerunners.

The British portrait artist Alastair Adams, whose portfolio includes images of former British prime minister Tony Blair

as well as other Yale luminaries, is on the job.

Adams views portrait painting as a challenge to do more than create a picture that looks like a person. “That’s the starting point,” he said. “The other side of this portrait is about being able to visually process people’s testimony about what the person was like, too.”

Adams, a past president of the Royal Society of Portrait Painters, teaches at England’s Loughborough University and has published papers on portrait painting. During a series of transatlantic visits, he is learning all that he can about

Slayman, studying her appearance in photographs and talking to those who knew her best, including her husband, Clifford Slayman, PhD, professor emeritus of cellular and molecular physiology, and Dean Robert J. Alpern, MD.

“She quite clearly was a much-loved character,” Adams said, “but she also carried around huge swaths of the history of the School of Medicine and its politics and its characters and its decisions in her head. She was an absolutely vital cornerstone to the life and the running of the school.”

Then, too, there are the telling details—what Adams calls “touchstones” in a subject’s life—in this case, Slayman’s fondness for fish symbolism (she was a Pisces); her use of yellow legal pads; her connections to her home state, Maine; her morning tea with lab technician Ken Allen, who worked with her for 42 years.

“The question,” Adams said, “is then, ‘How do you bring those things together to create some sort of a statement?’”

Portraits, he believes, should be more than simple representations.

“What you’re looking to do, as well as produce an image of a person, is to create a painting that has their tone of voice about it,” he explained.

A viewer can detect that tone in Adams’ other paintings. Rich with luminous texture and detail, they reward lingering



The artist practicing his craft—Adams sees in his portraits a lifetime of habits and hobbies, and brings them to life on canvas.

examination, and his subjects sparkle with personality. He has painted several portraits of Blair: One, for example, depicts a direct gaze and a laid-back pose, the leader's hands shoved into jeans pockets; another now hangs in London's National Portrait Gallery. More recently, Adams painted Yale College Dean Marvin Chun, PhD, the Richard M. Colgate Professor of Psychology and professor of neurobiology, then the Master of Berkeley College on the undergraduate campus, in scarlet academic regalia before the Berkeley coat-of-arms and the last blossoming of a familiar cherry tree.

Adams is also beginning research for a future portrait of Dorothy Horstmann, MD, the polio pioneer and the medical school's first female professor.

But for now, the Slayman portrait will keep Adams busy with a host of decisions—what size it should be, where to depict the scientist (her lab? an office?), how to work in details of her personal life—ultimately, how to create a posthumous portrait that depicts Slayman clearly and with integrity to both those who knew her and those who didn't.

—Jenny Blair, MD '04



Groundbreaking study seeks to quantify patient bias

Doctor bias toward patients is well known, as are efforts to combat it. Classes at every medical school teach the ethics

of health care and how to interact compassionately with the sick. Physicians have always taken this aspect of their profession seriously. They're one of the few professions with an oath or code, and the Hippocratic oath's requirement that doctors "do no harm" testifies to the great power they wield.

There's another side to this: patient bias toward doctors. Surprisingly, far fewer studies have explored this problem. Funded by a grant from the AMA's Joan F. Giambalvo Fund for the Advancement for Women, Yale researchers are attempting to quantify this old and pernicious form of discrimination.

"We've invested a lot of research into looking at physician prejudice toward patients, and how much of a role that plays in delivering effective health care," said Basmah Safdar, MD. "Up until now, we haven't really looked at it from the other side."

Safdar is one of four experts from different disciplines who have come together to measure how patients feel about doctors of different races and genders. She and Rachel Solnick, MD, Gordon Kraft-Todd, a psychologist, and Kyle Peyton, a political scientist, aim to create a statistically and scientifically sound foundation on which further studies can be built.

"There's been some research in this area over the past couple of decades," said Solnick. "But this is the first study that's experimentally isolating the physician's race and gender to see if those elements are

changing the patient's ratings" of their doctors.

Kraft-Todd agrees. "I'm not aware of any studies specifically in the direction of patients' attributes toward doctors about race or sex bias," he said.

One inspiration for the study was a widely reported incident in 2017, in which a black female doctor was dismissed by airline attendants after responding to a request to render aid during a passenger's health crisis.

Another inspiration was the wealth of anecdotal experiences of doctors, such as Esther Choo, MD '01, MPH, who has written about her professional experiences with prejudice as a mother, a woman, and a person of color.

"Women physicians are perceived differently," said Safdar. "It's something that we often talk about, whether in the larger national community, or within specialties or among peers. People understand it and acknowledge that there is a disparity in perception, and then ... they just move on." Safdar hopes that if the hypothesis of the study—that patients demonstrate bias toward doctors—is proven, a baseline can be established that can help advocates find ways to make being a doctor safer for physicians. Especially given the phenomenon of physician burnout.

Based on extensive anecdotal evidence and prior studies that focused on doctors rather than patients, Solnick and the other researchers believe there could be a connection between bias and



ONLINE EXCLUSIVES

New Haven's largest providers of primary care will be consolidating services in a renovated facility on Long Wharf.

For more on story, visit ymm.yale.edu/longwharf

Basmah Safdar is proud of the progress society has made in expanding roles for women in medicine, but feels that there's still room for growth.



doctors becoming overstressed, reaching their emotional limits, and having to reduce hours or stop working altogether.

A 2007 study in *JAMA: The Journal of the American Medical Association* “found minority medical students who had reported adverse effects due to racial prejudices also reported higher amounts of burnout,” Solnick said. “Similarly, other studies report racial stressors for minorities. From this perspective, there’s a solid research base for this experiment.”

The study, “Race, ethnicity, and medical student well-being in the United States,” established a clear correlation between the racism that minorities in medical school experienced and lower quality of life as well as higher rates of depressive symptoms and burnout.

Another *JAMA* article described how doctors who are

mothers experienced higher rates of burnout. This study, which started as a conversation in a Facebook group, was highlighted by Choo in an op-ed piece in the *Huffington Post* in 2017.

While bias may be just one cause of physician burnout, the issue has attracted attention at the highest levels, with tens of millions of dollars of productivity at risk.

Patient bias may also play a role in determining how and why it’s so difficult to close the pay gap between men and women in medicine. Patient satisfaction is one important factor in determining promotion and compensation, and if patients are inclined to be less satisfied with care provided

by female or minority doctors, those women and minorities may be viewed as less valuable to their institutions.

“The recent focus on patient-centric care emphasizes quality metrics as the best way of measuring a patient’s experience,” said Solnick. “That’s important and necessary. But we need to determine how a patient’s internal prejudice may be playing into those quality metrics.”

Hospitals, clinics, private practices, and academic institutions actively seek ways to make medicine an equitable profession for everyone, while creating the most comfortable environment possible for patients seeking treatment. In some cases, these two imperatives may come into conflict.

Discussions of progress and personal testimony are good, but anecdotal evidence hasn’t been sufficient, according to Safdar. “Creating awareness based on feelings and perceptions is one thing, but concrete changes require data—especially when it comes to deep-seated cultural norms,” she said. From Safdar’s perspective, this experiment and others like it are crucial for continuing efforts to reach professional and social equality.

The study, which began in February and will likely be completed in April, relies on a web-based interface. It draws on technological advances that have been repeatedly validated in other studies.

—Adrian Bonenberger

round up

a collection of recent
scientific findings

FINALLY, A CLASS THAT'S A JOY TO TAKE

Laurie Santos teaches the most popular course ever at Yale College in terms of enrollment, "Psychology and the Good Life." An introductory-level Psychology class that is accessible to all, the course attracted almost 1,200 students. Perhaps it's not very surprising, considering how important "happiness" and the pursuit thereof is to people living and working in the United States. After all—it's in the Constitution!

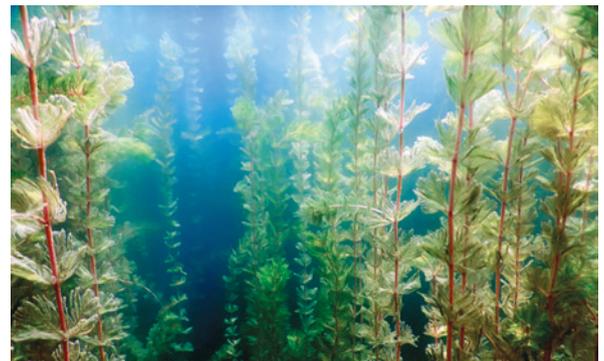


PSYCHOPATHS SHOW SIGNS OF CONDITIONAL EMPATHY



For years, the common sense description of psychopaths is that they are people who could not empathize with other humans. Lack of empathy was seen as one of the driving forces behind the awful cruelty in which psychopaths often indulged. This description, however, led to a sort of paradox: if psychopaths can't empathize, why are they seen as so effective at manipulating others? A recent Yale study demonstrates that while psychopaths can in fact understand others' perspective, they do so opportunistically. Chilling stuff.

FIGHTING FIRE WITH FIRE: VIRUS FROM A LAKE KILLS GERM-RESISTANT BACTERIA



An 80-year-old was dying from a serious bacterial heart infection. Resistant to all antibiotics, the infection defied the treatments of Deepak Naryan, MD. Contacted by a research scientist, Naryan heard an unusual proposal: use a pond-dwelling virus that hunts the specific bacterium infecting the patient's heart to treat the infection. It worked, lending credence to the hypothesis that researchers have only begun to scrape the natural world's potential for combatting illness and disease.

The labor of generations has begun to bear fruit

Although it's been 100 years of women at YSM, there's more work still to be done.

THE YALE COMMUNITY—and the School of Medicine in particular—prides itself on equality. When it comes to gender balance, YSM thrives on the various perspectives of faculty, students, administrators, and alumni. This dialogue, with all its messiness and confusion, is the lifeblood of a vibrant scientific and socially just culture.

The stories in this issue bear witness to that principle. “Women at Yale School of Medicine: 100 years of progress,” by Kathleen Raven, talks about the challenges facing women who stepped into medicine in the early 20th century, as well as the challenges that stubbornly persist today. “Pioneering women’s health: Profiles in courage” by Jenny Blair, MD ’04, takes a look at some of the YSM doctors who helped blaze the path for women’s health. Ashley Taylor speaks with several current students about their experiences growing up as women in other cultures. And Jill Max compiles a moving tribute to Carolyn Slayman, PhD, a beloved administrator and YSM family member whose impact on the school defies measurement.

As YSM celebrates 100 years of women as students, it’s worth considering the remarkable achievements of all the women who have been or are part of the school—and the people who stood by them and helped advocate for justice. It’s also important to note that YSM is the kind of place where this type of progress is possible.

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Carolyn M. Mazure is proud of WHRY's accomplishments over the past 20 years, and excited about ongoing and future projects.

Women's Health Research at Yale

ABBY ROTH | ROBERT LISAK PHOTOGRAPH

When Women's Health Research at Yale (WHRY) was organized 20 years ago, women were not regularly studied and there was limited understanding of how sex and gender differences affected health outcomes. That's changed in a big way.

Playing to Yale's research strengths, WHRY has launched over 90 studies on women's health in areas as diverse as cardiovascular disease, cancers, osteoporosis, reproductive health, autism, obesity, addictive behaviors, and intimate partner violence.

Now heading into its third decade, this self-supporting center remains at the national forefront of initiating research on women's health and uncovering sex and gender differences that affect health outcomes.

"WHRY's Pilot Project Program offers researchers the opportunity to explore vital questions that would otherwise not receive funding," says Akiko Iwasaki, PhD, Waldemar Von Zedwitz Professor of Immunobiology and Molecular, Cellular and Developmental Biology. "If you don't invest in this type of early stage research, you won't have any breakthroughs."

Since its inception, WHRY has provided \$5 million in "seed" grants, resulting in \$95 million of new external grants. Funds go directly to faculty to continue the research, a key element of WHRY's long-range plan to integrate the study of women's health and sex/gender differences into the fabric of research at YSM.

"These funded investigations are not 'one-off' studies," says Carolyn M. Mazure, PhD, Norma Weinberg Spungen and Joan Lebson Bildner Professor in Women's Health Research and professor of psychiatry and of psychology. "They are part of a program of research in an important area that has now shifted its attention to better understand the influence of sex and gender on how diseases and conditions develop, present symptoms, and respond to treatment."

Of those funded, 55 percent are women, 72 percent have been junior or mid-level faculty, and 62 percent received external funding to continue their work.

IMPORTANT SCIENCE

Both basic science and clinical science are important to WHRY in advancing women's health.

"Innovative laboratory studies provide essential models for how we can understand health and disease biology," Mazure says. "They provide the necessary foundation for subsequent studies on humans."

For example, recently in *Science*, Martin Kriegel, MD, reported on lab work that directly evolved from his WHRY-funded project as an assistant professor of immunobiology. He showed that bacteria in the small intestines of mice and humans can travel to other organs and trigger an autoimmune response that can be suppressed by targeting the bacteria. Such findings provide new approaches for treating autoimmune conditions, such as systemic lupus, which occur at far greater rates in women.

Clinical investigations funded by WHRY often have immediate practical application, such as work by Pamela Ventola, PhD, assistant professor in the Child Study Center, showing the efficacy of a treatment for girls with autism spectrum disorder. Previously, the social-interaction behavior therapy had been tested only with boys.

In one of WHRY's earliest studies, Peter Salovey, PhD, Chris Argyris Professor of Psychology, demonstrated the efficacy of public health messages now regularly deployed to encourage women at elevated risk for breast cancer to use routine mammography screening.

WHRY's Pilot Project Program also fosters interdisciplinary collaborations. For example, Alessandro D. Santin, MD, of the Department of Obstetrics, Gynecology and Reproductive Sciences, is committed to developing new approaches to the treatment of ovarian cancer. Santin and W. Mark Saltzman, PhD, Goizueta Foundation Professor of Biomedical Engineering and a pioneer in the development of nanoparticles, began working together to use these ultra-tiny delivery systems that can preferentially target and bind to ovarian cancer cells and administer a potent chemotherapy agent.

KNOWING OUR HISTORY

Although many conditions such as autoimmune disease, Alzheimer's disease, depression, and opioid addiction affect women disproportionately or in different ways women were generally not included as participants in clinical research until the mid-1990s. It was then that the National Institutes of Health (NIH), the greatest single funder of biomedical research in the country, began requiring the inclusion of women.

"The exclusion led to a significant gap in our empirical base of knowledge on women's health," Mazure says. "As a result, we have not had sufficient data on the diseases and conditions that most affect women, and we have not had a clear understanding of how women and men differ in matters of their health."

The focus on studying males is not unique to human investigation. In January of 2016, the NIH began requiring that laboratory researchers use both male and female animals and tissues and determine the sex of cells. WHRY has been funding studies in female model systems since 2000, with studies by Amy Arnsten, PhD, professor of neuroscience, on the role of gender in stress-induced cognitive dysfunction; Ronald Duman, PhD, Elizabeth Mears and House Jameson Professor of Psychiatry, on neurotrophic response to ovarian hormones; and Jane Taylor, PhD, Charles B.G. Murphy Professor of Psychiatry, on sexual dimorphism in motivation and inhibitory control.

The NIH's new rule recognized that the differences between males and females exist even at the individual cellular level, where nuclei typically contain either XX (female) or XY (male) sex chromosomes and influence much more than hormone production: They affect how our genome is read.

NEW DAY AT YALE FOR SEX AND GENDER RESEARCH

After graduate school and three years at the NIH, Mazure received fellowship training at Yale before being invited to join the faculty. As a clinician and an NIH-funded researcher studying depression, Mazure found that stress is a more potent pathway to depression in women than men and used these findings to inform treatment interventions.

Observing how data on women's health and sex and gender differences were lacking in other medical specialties, Mazure sought and received a grant in 1998 from The Patrick and Catherine Weldon Donaghue Medical Research Foundation to create Women's Health Research at Yale.

WHRY's prime directive is to develop research that has a practical benefit to women's health and to understanding health differences between and among women and men.

In addition, WHRY shares new health findings with the community and trains the next generation of researchers through its various educational programs. The graduates have gone on to significant research positions and studying women's health and sex/gender differences.

THE WAY FORWARD

While the past 20 years have led to WHRY making numerous advances in research, practice, and education, significant challenges remain. In a recent study led by Sanket Dhruva, MD, published in *JAMA Internal Medicine*, it was shown that medical devices are not generally evaluated for safety and effectiveness on the basis of the users' sex, age, or race.

"The future of integrated science and medicine lies in precision," Mazure says. "That means paying attention to sex and gender."

Mazure knows there will always be a reason to study women and the differences between and among women and men. And she feels confident that WHRY has been built to last and lead the way.

"If we are to help people live happier, healthier, more productive lives, we can't overlook the differences that might exist in more than half of everyone on the planet," she says. "Now is the time to embrace and study what makes us different." */yale medicine magazine*

Abby Roth is communications officer and director of Communications, Medical Education at Yale School of Medicine.

Women at Yale: A view from students in their own words

Women medical students share thoughts about the School of Medicine.

BY ADRIAN BONENBERGER

Yale School of Medicine consists of many viewpoints. Tenured faculty, adjuncts, postdoctoral fellows, clinicians, residents and administrators all have unique perspectives. It is also a place where students go to learn the fundamentals of healing and leading. *Yale Medicine Magazine* asked three students their thoughts about being female at YSM.

Cheryl Zogg, an MD/PhD student going into her third year at the medical school, is positive about the school's culture. "I have always felt welcome here," she says. "As someone who's planning to go into a very male-dominated field, surgery, there have been times that I've looked around and been aware of myself as a female. ... Ultimately, that's never felt like a negative or something that's held against me. Yes, I am a woman, but that's secondary to what I want to accomplish."

Asked about the role of mentorship, she observes that "At the end of the day, I am trying to be the best student and researcher that I can be. Everyone at YSM is tapping into a long and proud tradition of leadership and inspiring role models. A large part of that at the moment is white, middle-aged men."

Careful to point out that her positive experiences at YSM are based on years of advocacy, Zogg adds that things could improve. "Looking at the women's fountain [outside Sterling Memorial Library] is a humbling reminder that things have changed and are continuing to change, and that there's still room to grow," she says.

Sue Xiao, a fourth-year medical student, is circumspect when it comes to gender and racial equality. "Although we've made a lot of progress over the last 100, 150 years, medicine is still taught from a male-dominated perspective, both in terms of theories and the history of the field. We learn about discoveries that were made by men, and that were obviously the result of social factors that promoted men to be in leadership positions where they could take advantage of those discoveries."

Xiao believes that imbalance in gender and race are two sides of the same coin. "My first year here I participated in an Asian-American interest group. There were three students to each mentor. And given the number of

Asian-Americans now in medical school and medicine, it felt like there weren't as many faculty here. There's definitely room to improve."

Her classmates were instrumental in helping Xiao feel welcomed on campus. "There's a generational gap as well. Perhaps 30 years ago, there were fewer minority students entering medicine and then academia, and the faculty numbers would reflect that," she says. "My male classmates are allies, too. We're all part of a movement—we support each other. It's broader than any individual."

"I found the most amazing group of friends, my med school colleagues, as well as outstanding faculty mentorship," says Libby Cummings, a fourth-year medical student who's headed to a residency at the University of California, San Francisco. "I matched in primary care internal medicine, and I've been in a reflective mood, lately, finishing things up. This place has been a home, in terms of social support."

Cummings' social experience helps frame what she feels YSM does well, and also what she feels it could do better. "There's a big push among students to make YSM feel more inclusive. I helped run the U.S. Health Justice student elective course, which is all about observation and empathy, and intersectionality," Cummings says. "But while nobody has ever looked at me and said, 'I don't think you're going to be a good doctor because you're a woman,' I've had interactions where I really feel the person does think that. It's subtle. Patients making comments about my appearance, being harassed en route to the hospital in my white coat. Being interrupted frequently while presenting on rounds. When colleagues expect me to fulfill administrative roles on teams."

Ultimately, Cummings is optimistic. "It's cool to be here at a time when equality is such a big part of the conversation and people do want to grapple with it, even though there aren't any easy fixes," she says. "Role models are important. My mom was in the first class of women at Bowdoin, and ended up becoming one of the first women lawyers in Maine. I'm the first doctor in my family. These things are important."



Women in medicine around the globe: Complex stories behind the numbers

BY ASHLEY P. TAYLOR | EVAN SIMKO-BEDNARSKI PHOTOGRAPH

While the last century witnessed a march toward gender equality in the United States, the same was not true everywhere in the world. In some countries, traditional patriarchal cultures make it difficult for women to finish high school, let alone study medicine, while in the Scandinavian countries, societal support for women coincides with an even higher proportion of women doctors than exists in the United States. According to data from the Kaiser Family Foundation, as of October 2017, 34 percent of American doctors were women. Yet the relationship between a society's overall gender equality and the proportion of its doctors who are women is not as straightforward as one might expect. In patriarchal countries like Japan, for example, strong records on women's rights exist alongside low numbers of women doctors, while in Russia, more than half the doctors are women, but the way that came to be is not a tale of gender equality but rather the opposite.

Ya Haddy Sallah, a first-year medical student from Gambia, hopes to live up to the example set by powerful female role models in her community.

“These are very complex constructs,” says University of Michigan professor Reshma Jagsi, MD, DPhil, director of the university’s Center for Bioethics and Social Sciences in Medicine. In a 2014 study, Jagsi and colleagues examined the factors that influence women’s participation in medicine in countries with differing proportions of women doctors, according to data from the Organization for Economic Cooperation and Development, as well as different scores on the Gender Inequality Index (GII), a United Nations Development Program measure, in which a higher score indicates greater inequality. “Certainly when you see a dramatic

from lowest to highest inequality according to the GII 2015, it ranked 146. Perhaps not surprisingly, Gambia’s patriarchal culture makes it difficult for women to succeed in medicine. Sallah does not remember seeing a single woman doctor while growing up. Her parents valued education and sent her to high school, but many of her peers did not have such opportunities. Gambian girls and boys are treated differently from the beginning, Sallah says. “Girls are expected to do chores in the home, help take care of the younger siblings, while boys have more liberty to play and do other things” and are more likely to be encouraged in school, she says. “I

Christine Ngaruiya

“There are more women that are being afforded the opportunity to pursue higher levels of education, who are more present, and so as a result there’s a movement from them because there’s now, sort of, a quorum.”

minority of women in the physician workforce, you might speculate that there are broader issues relating to gender and equity that are causally important,” Jagsi says. “But simply because you see women in the majority or representing half of the workforce does not necessarily mean that the culture is egalitarian.”

Despite the challenges they face, women all over the world are becoming doctors. Some of the best choose to study at Yale.

For instance, first-year medical student Ya Haddy Sallah, MPH, is from Gambia, which suffers from persistent gender inequality. Such harmful practices as female genital mutilation and child marriage persist in the West African nation, and on a list of 156 countries ordered

know that in many schools girls dropped out at an early age because their parents thought it was more important to pay for their sons to get an education than it was to pay for their daughters.” In the early 2000s, in an effort to correct the gender disparity in education, the government made secondary school free for girls. But even with free tuition, parents still have to pay for textbooks and uniforms, Sallah notes. And cost is not the only barrier to education. In many families, Sallah says, school is considered less important than meeting traditional social obligations: marriage and childbirth; taking care of the home; working. “The pressure to support the family starts very young for Gambian women,” she says.

This is not to portray Gambian women as victims. Sallah takes care to stress that the resilience of older women from her community helped inspired her career. “I knew that medicine was still a possibility for me because I had seen strong women achieve a lot, despite all the strain that was put on them,” she says.

A TEMPLATE FOR EQUALITY

In other parts of the world, medicine is more gender-neutral or even female-dominated. In Sweden, Finland, and Norway, 40 to 60 percent of doctors are women. This figure likely reflects their societies’ overall emphasis on gender equality—according to the GII, they are among the 10 countries with the lowest gender inequality worldwide, ahead of the United States, which ranks 43 in the hierarchy—as well as such policies as state-sponsored day care that support working mothers.

In Russia, women have consistently been around 70 percent of doctors since the 1950s. This is a statistic with which third-year medical student Evgeniya Tyrtova, raised in southern Siberia, is familiar. Having studied in the United States since her senior year of high school, however, Tyrtova finds it hard to gauge how true the statistic is to her own life.

Growing up, Tyrtova never felt as if boys had more opportunities than she did. “I don’t think I saw any kind of gender disparities,” she says. “I think this stems from USSR tradition. So I guess, back when USSR was present, there was a notion that men and women are equal, and it included all areas of life, including workplace.” After the Soviet Union fell in 1991, she says, that view persisted.

After graduating from Fairleigh Dickinson University with a degree in nursing, Tyrtova returned to Russia to apply to medical schools. She spent five months shadowing a neurological oncologist at a hospital. In Russia, as in the United States, surgery is a male-dominated specialty, and of the six or seven physicians in the department, she says, two were women. “But I do not think they were treated differently from their male colleagues,” she adds.

According to Jagsi, the rise of women doctors in Russia was more complicated than the simplistic explanation that women were treated equally to men in the USSR. The growth in the proportion of women

doctors in Russia followed the deprofessionalization (or proletarianization) of medicine under Soviet rule, when doctors became state employees and medical societies were abolished. Under Soviet rule, the most prestigious and best-paid jobs were in industry. Medicine lost much of its social cachet and became one of the most poorly paid professions. Because of that, Jagsi doubts that the high number of women practicing medicine in former Soviet republics is indicative of a true move toward gender equality. “It may actually speak to a decrease in the power and prestige of the medical profession,” she says. Perhaps, then, the rise of women doctors in Russia is a case of the right outcome proceeding from the wrong reasons.

To further complicate the narrative of female ascendance, increasing the share of women doctors is only the first step toward gender equality in medicine. Even in countries with high proportions of women doctors, such as Norway, Sweden, and Russia, gender disparities remain at leadership levels. There’s also a dearth of women leaders in academic medicine in Kenya and Uganda, where Christine Ngaruiya, MD, MSc, DTMH, assistant professor of emergency medicine at Yale, travels regularly to mentor doctors. It’s important that women have female role models to show them what’s possible professionally, she says. In many universities she’s visited across Africa, young doctors “may not have as many visible mentors to aspire toward because there just aren’t as many women in these positions.” Furthermore, the few women who are in positions of authority are often so busy with clinical work that they have little time for mentorship.

At the same time, Ngaruiya sees evidence that times are changing. For example, she says, the Kenya Medical Association now has its first woman chairperson, Jacqueline Kitulu, MD, MBA. “There are more women that are being afforded the opportunity to pursue higher levels of education, who are more present,” Ngaruiya notes. “And so as a result there’s a movement from them because there’s now, sort of, a quorum.”

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Ashley P. Taylor, is a frequent contributor to Yale Medicine Magazine.



"To be such a scholar, such a leader, and such a lovely person is a rare combination."
—Linda Lorimer

Remembering Carolyn Slayman

BY JILL MAX | PHOTOGRAPHS COURTESY OF CUSHING/WHITNEY MEDICAL LIBRARY

When Carolyn Walch Slayman, PhD, was named chair of the Department of Human Genetics (now Genetics) in 1984, she was the first woman to head a department at the School of Medicine, and the second at Yale University. That she didn't expect the news to make a big splash—it was a front-page story in the *New Haven Register*—is typical of the matter-of-fact attitude that helped characterize her extraordinary life as a pioneer, scientist, and leader.

Slayman was an iconic figure at the School of Medicine for almost 50 years. Career-defining moments that others might have dwelled upon, Slayman took in stride. Besides becoming the first woman chair at YSM, she was the only woman in her class when she earned her doctorate at Rockefeller University in 1963; the medical school's first deputy dean for academic and scientific affairs; and the first woman to hold a deputy deanship at YSM. As the Sterling Professor of Genetics and a professor of cellular and molecular physiology, she was recognized for her research on the biochemistry of membrane transport.

Her influence on the school and those who have walked its corridors is far-reaching. She helped scores of colleagues, both junior and senior, in countless ways, large and small. Whether it was navigating career advancement, writing a successful grant application, supporting an annual retreat for junior investigators, or finding space for an incubator, she took the time to devote her full attention to resolving the problem at hand. She helped create and advance myriad research programs and core facilities, and spearheaded the renovation and modernization of

the medical school's laboratory space. She also was instrumental in securing funding for and helping to oversee many institutional grants, notably the National Institutes of Health Clinical and Translational Science Award, which has brought over \$150 million to the school since 2006.

The School of Medicine recently established the Carolyn Walch Slayman, PhD, Professorship to honor Slayman's memory. Beyond this fitting institutional recognition of her contributions, there was an outpouring of grief, recollections, and tributes when she passed away in December 2016. A small selection of these appear here. [*yale medicine magazine*](#)

Jill Max is a contributing editor.

It is her ability for relationships, to hold a seemingly unlimited number of people in mind and truly know them and their stories that stands out, perhaps above all. Even when she was deep in thought in her office working at her computer (and sitting in her very low chair suited just for her), she was always ready to say hello, hear a concern, or share a story. She had a remarkable ability to see the strengths in a person, to see the possibility where others saw only what was wrong, and to be always accepting and encouraging even as she accepted their—and all of our—frailties. And she could remember the smallest detail about a person's story while holding the big picture always clearly in focus.

Linda Mayes, MD
Chair, Yale Child Study Center; Arnold Gesell Professor of Child Psychiatry, Pediatrics and Psychology



In virtually every meeting with her I learned something about leadership, about how to treat people with respect, how to have difficult conversations, when to say yes, and how to say no, gently, but firmly.

Steven Girvin, PhD
Eugene Higgins Professor of Physics & Applied Physics; former Deputy Provost for Research

Over the years, whether it was working toward some impossible grant deadline or speaking about how to support one of the superstar junior faculty—one of her favorite topics—she was always guiding me, helping me to find my voice, helping me to find my way.

Tesheia Johnson, MBA, MHS
Chief Operating Officer, Yale Center for Clinical Investigation

In the mystery that is this journey that we are all sharing, I feel blessed to have had the opportunity to share part of my journey with her.

Daniel Colón-Ramos, PhD
Associate Professor of Cell Biology and Neuroscience

For me, she was a valued confidante and advisor. Almost every major decision I had to make, I would think about it, decide what I wanted to do, and then talk to Carolyn about it. And I knew that if she agreed with me, then I was making the right decision.

Robert J. Alpern, MD
Dean and Ensign Professor of Medicine

She was a class act. She “died with her boots on” so to speak ... never complaining and engaged 'til the end.

Marna Borgstrom, MPH
Chief Executive Officer, Yale New Haven Health

Carolyn was a constant, caring force at the medical school, the nucleus that held our center true.

Amy Arnsten, PhD
Professor of Neuroscience and of Psychology



Slayman's commitment to YSM spanned many years, and impacted people across the community.

Brilliant voice of reason who always knew the right thing to say.

Jeffrey Bender, MD

*Robert I. Levy
Professor of Medicine (Cardiology)
and Professor of Immunobiology*

To be such a scholar and such a leader and such a lovely person is a rare combination.

Linda Lorimer, JD

Former Vice President for Global and Strategic Initiatives, Yale University

She brought a sense of honesty to everything in her tranquil focus on our work and our character. She made us all better. One feels a kind of hole in thinking of her absence.

Jon Butler, PhD

Professor Emeritus of American Studies, History & Religious Studies; former Dean of the Graduate School of Arts and Sciences

She was always so interested in both our scientific and personal journeys throughout our careers, something I think each of us in the YSM family will always remember fondly.

James Duncan, PhD

*Ebenezer K. Hunt
Professor of Radiology and Biomedical Imaging and Professor of Biomedical Engineering*

It is hard to

adjust to a world without Carolyn. I sorely miss her wit, her wisdom, and her warmth. I am incredibly fortunate to be among the many, many people at Yale who have benefited from her brilliant presence as a mentor, a colleague, and a valued friend.

Lynn Cooley, PhD

Dean of the Graduate School of Arts and Sciences; CNH Long Professor of Genetics; Professor of Cell Biology and of Molecular, Cellular, and Developmental Biology; and Slayman's first recruit as Chair of Human Genetics

She was extremely warm, calm and always had a broad perspective and a human touch to all her communications. The key to every university is keeping people at every level inspired and engaged. I think we need more people like her. She will be dearly missed.

Valentina Greco, PhD

Associate Professor of Genetics and of Dermatology and Cell Biology

Carolyn was always a joy to work with. The part that always stood out for me as one of her strengths was that she never had any personal ego stake in an outcome other than what's going to be the very best for the institution. I think that ability to see the big picture of institutional goals and how to maximize the benefit for the entire institution was one of her greatest strengths and something that I always valued in Carolyn.

Richard Lifton, MD, PhD

President, Rockefeller University

Louise Farnam graduated from Yale School of Medicine the same year women finally earned the right to vote. Though voting and studying medicine were seen as revolutionary at the time, it was merely the beginning of a much broader struggle for equality.



Progress over 100 years

BY KATHLEEN RAVEN | PHOTOGRAPH COURTESY OF CUSHING/WHITNEY MEDICAL LIBRARY

If Louise Farnam, PhD '16, MD '20, one of Yale's first women medical students admitted, were to stroll past Sterling Hall of Medicine today, she might be struck by the number of female students, faculty, and administrators on campus. Just over a century ago, Yale School of Medicine wasn't training women to become physicians. Today, women make up about half the student body and 39 percent of full, associate, and assistant professors, according to January 2018 data from the medical school. Two women now serve as deputy deans in the medical school's leadership. Out of 29 total chairs, five women—the highest number in the school's history—lead Yale's academic departments: anesthesiology, emergency medicine, and surgery, as well as the Child Study Center (CSC), and Center for Musculoskeletal Care. Linda Mayes, MD, chair of CSC, and the Arnold Gesell Professor of Child Psychiatry, Pediatrics and Psychology, is the first woman to hold the title of special advisor to the dean.

Women physicians over the centuries

From the midwives of ancient times to recent Nobel Prize winners, women have always had a role in the advancement of medicine. These women, including many with Yale connections, are just a few of those who have made significant contributions to medicine.

COMPILED BY BETH HOWARD

THE PACE OF PROGRESS

In some ways, Yale School of Medicine is a pioneering place for women in medicine. Women have been teaching at the medical school longer than in any other school at Yale University. Florence Bingham Kinne, a pathologist, was hired in 1905 as Yale's first woman instructor. When Yale established the Office for Women in Medicine in 1975, it was the first of its kind in the country. The Committee on the Status of Women in Medicine (SWIM) was founded in 1979 to address issues related to gender equity at the School of Medicine. That same year, a group of women faculty and postdoctoral students created the Phyllis Bodel Childcare Center, whose namesake, a mother of three, was the first director of SWIM. By the 1990s, the medical school, matching a national trend, accepted male and female medical students in near-equal shares. In January 2017, Darin Latimore, MD, became the school's first deputy dean for diversity and inclusion. "That was a huge step forward," says Susan Baserga, MD/PhD '80, professor of molecular biophysics and biochemistry, of genetics, and of therapeutic radiology, and author of several monographs on the history of women at the medical school.

The school is also making progress on the contentious issue of equal pay. A cornerstone project of the dean's office is an annual review of medical school salaries in an effort to ensure that every faculty member is fairly compensated. Every spring, Robert J. Alpern, MD, dean and Ensign Professor of Medicine, meets with each department chair and section chief, along with other leadership and administrators, to examine how faculty are being paid for their work. "We go through about 2,000 salaries in two months, department by department, and faculty member by faculty member," Alpern says. "While we had tried to address this with a regression model that considered education, rank and years in rank, Association of American Medical Colleges median salaries by specialty, grant dollars and clinical collections, there were too many qualitative characteristics that could not be quantified but were critical to define excellence, causing the model to be a poor predictor of individual salaries. Reviewing each faculty member in depth was much more effective in our achieving equity, and resulted in significant salary corrections for men and women, but with a higher percentage of corrections for women." But after all that, we still end up with somewhere

Ancient Greece

Metrodora writes *On the Diseases and Cures of Women*

Metrodora (c. 200-400 CE), a female Greek physician, wrote the oldest medical text known to have been penned by a woman. Among many other innovations, she pioneered surgical treatments for breast and uterine cancers.

12th Century

The first woman gynecologist

Although an early collection of treatises called the *Trotula* was mistakenly attributed for centuries to a woman by that name, medieval Europe did produce a learned woman considered an expert in medical diagnosis and treatment: Hildegard of Bingen (1098-1179), a German Benedictine abbess who wrote two volumes on medicine titled *Causae et Curae*.

16th Century

The birth of nurse- midwifery

Louyse Bourgeois (1563-1636) paved the way for the modern profession of nurse-midwifery as royal midwife to King Henry IV of France and his wife Marie de Médicis. She delivered the babies of the French aristocracy and made important contributions to obstetrics through her writings.

1820

Florence Nightingale is born

Nightingale (1820-1910) fundamentally changed the role of nursing in hospitals and introduced standards of hygiene that reduced hospital infections. She played a key role in advancing new professional training standards. In 1860, she started the first scientifically based nursing school at St. Thomas' Hospital in London.

between a 2 and 3 percent gender difference, which is why we undertake the detailed process of conducting individual faculty reviews.”

A more challenging issue is the total number of women faculty at the medical school. There should be more women in some departments as endowed chairs and in leadership positions, according to Paula Kavathas, PhD, professor of laboratory medicine, of immunobiology and of molecular, cellular, and developmental biology; and former chair of the Women Faculty Forum (WFF). Every five years, the group publishes a report, *Women, Men, and Yale University: The View*, on female and male faculty numbers across Yale University. For the 2016–17 report Kavathas served as co-author. “We really need to look at the departments where women are so few,” Kavathas says. “I think we need to be leaders in this area.”

Other significant steps have included the establishment of a mentoring program in 2010, with Linda K. Bockenstedt, MD, HS '85, the Harold W. Jockers Professor of Medicine as its initial director. The position was created to promote mentoring systems and to focus on helping women and underrepresented minority groups. At that time, results of a survey found that when faculty in Yale’s Arts and Sciences departments



were promoted to tenured professor, career satisfaction levels went up significantly. This was also true for men at the medical school, but not for women faculty members. “We didn’t have specific reasons for this,” Bockenstedt, now deputy dean of faculty affairs, says, noting that one possibility related to the overall climate.

A self-appointed historian on YSM’s decision to admit women, Susan Baserga appreciates the administration’s recent efforts to address gender inequity.

ROBERT LISAK PHOTO

1849

First woman graduates from medical school

Elizabeth Blackwell (1821–1910) was the first woman to earn a medical degree in the United States. In 1857, with her sister, Emily Blackwell, MD; and Marie Zakrzewska, MD, she opened the New York Infirmary for Women and Children. She also published *Pioneer Work in Opening the Medical Profession to Women* in 1895.

1863

First woman surgeon employed by the U.S. Army

Mary Edwards Walker (1832–1919) is thought to have been the first U.S. woman surgeon and was also the first woman surgeon in the U.S. Army. For her contributions to the Army during the Civil War, during which she was captured and imprisoned, she was awarded the Congressional Medal of Honor in 1865.

1864

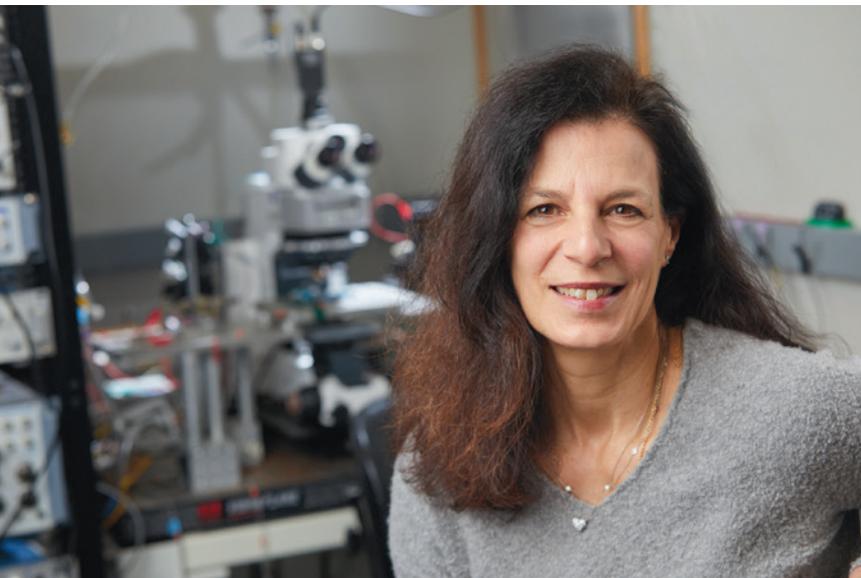
First black woman graduates from medical school

Rebecca Lee Crumpler (1831–1895) was the first black woman to earn an MD degree in the United States and one of the first black physicians to publish a medical text. Crumpler wrote *A Book of Medical Discourses: In Two Parts* in 1883. After the Civil War, she cared for freed slaves.

1889

First Native American woman receives medical degree

Susan La Flesche Picotte (1865–1915), was the first Native American woman to become a doctor, 35 years before Native Americans were recognized as U.S. citizens. She oversaw the medical care on her Omaha reservation, which covered some 1,350 square miles.



Elizabeth Jonas wants YSM to set the standard for equality, and feels that there's still work to be done.

In a more recent faculty survey to assess culture at the medical school, one of the issues identified was that women—and men—wanted to have a better understanding of and more transparency in the promotion process. “What became clear [is that] even the fundamental aspects of being a faculty member were not

understood,” Bockenstedt says. Through junior faculty training and meetings, the dean’s office has redoubled its efforts to clarify the pathways to promotion. In terms of gender equity, the past decade has seen some progress for full tenured professors. In 2002, 16 percent of tenured faculty at the medical school were women, according to *The View*, published for the first time that year. By 2016, that number increased to 23 percent.

“We want to be thought of as a women-friendly school that is thinking about these issues and addressing them as a high priority,” says Alpern. “Equality, inclusion, and a respectful environment for everyone are major priorities for the school.”

ADDRESSING UNCONSCIOUS BIAS

Louise Farnam dealt with outright bias, but women today fight a more nuanced battle against what is now recognized as unconscious bias. Unconscious, or implicit, bias remains widespread in American society. In many professions, a person may rate a job performance lower if told the worker is a woman, for example. When writing letters of recommendation, scientists and doctors may unconsciously refer to men as “researchers” and “colleagues,” and to women as “teachers” and “students.”

1908

Sara Josephine Baker reduces NYC’s infant mortality rate

As a physician, Baker (1873–1945) made remarkable contributions to public health, including drastically reducing maternal and child mortality rates in New York City’s immigrant communities in the early 1900’s. She also tracked down Mary Mallon, aka Typhoid Mary—twice.

1908

Mary Engle Pennington named first woman lab chief of FDA

Mary Engle Pennington (1872–1952), a renowned bacteriologist, was hired to implement the 1906 Pure Food and Drug Act. A former research fellow at Yale, she spent more than 40 years educating the government and the general public in the techniques and importance of proper handling of perishable food.

1916

First women admitted to the Yale School of Medicine

Louise Farnam (–1949), Helen May Scoville and Lillian Lydia Nye, were the first women students. Although Nye transferred to Johns Hopkins, Farnum and Scoville both graduated from Yale in 1920. Farnum went on to work at the Hunan-Yale Hospital and College of Medicine in China.

1937

Florence Seibert lays the groundwork for the first tuberculosis test

After earning her PhD in biochemistry from Yale in 1923, Seibert (1897–1991) isolated the tuberculosis protein molecule, which led to the development of the first reliable tuberculosis test. She also pioneered safe intravenous therapy.

Unconscious bias has its start in childhood, when children are taught different gender roles. While it will take more time to address a deep-seated and generations-long issue, the effort to do so is a sign of progress, says Carla Rothlin, PhD, associate professor of immunobiology. “What appeals to me is that we recognize that this is a problem, and that society has an obligation to address this problem,” she says.

Latimore explains that bias is built into institutions and who their leaders have traditionally been as well. “We still think of the two genders very differently, and our role expectations of gender are still different,” he says. Unconscious bias training can be effective for a hiring committee during the recruitment process. However, for unconscious bias training to stick, it must become ingrained in the school’s culture. “If you don’t change the culture to reinforce it on a daily basis, you will go back to your biases,” Latimore says.

Shirley McCarthy, MD, PhD, professor emeritus of diagnostic radiology, was a former co-chair of WFF. She retired in 2016, and believes the recent reinvigoration of SWIM (where she is currently an executive committee member) has the potential to help alleviate biases. “We have our own liaison system where we



meet with representatives from every department four to six times per year,” McCarthy says.

Elizabeth Jonas, MD, a current SWIM co-chair and professor of internal medicine and neuroscience, joined the organization last year. “I want Yale to be the place I have in my dreams,” Jonas says. “I want it to

A recently reinvigorated SWIM has Shirley McCarthy hopeful about the future of women at Yale School of Medicine.

ROBERT LISAK PHOTO (2)

1947

First U.S. woman earns Nobel prize in physiology or medicine

Gerty Cori (1896–1957), who received an honorary Doctor of Science degree from Yale in 1951, was the first woman in the United States to receive a Nobel Prize. It was awarded to her, along with her husband Carl, and Bernardo Houssay, for their discovery of how glycogen is metabolized in the body.

1948

First African-American woman graduates from Yale School of Medicine

Beatrix McCleary Hamburg (1923–2018) was the first African-American woman to graduate from YSM. After training in pediatrics and psychiatry, she focused her research and clinical practice on behavioral and developmental issues among adolescents. She also worked at the National Institute of Mental Health.

1952

Virginia Apgar develops scoring system for newborns

Apgar (1909–1974) developed the famous system, that bears her name and is still used to quickly assess a newborn’s health, identifying babies in need of special treatment. The Apgar score has been credited with changing the course of neonatology and saving the lives of innumerable babies.

1961

First woman appointed as professor at Yale School of Medicine

Among her accomplishments, Dorothy M. Horstmann (1911–2001) discovered that the poliovirus reached the brain by way of blood, a finding that contributed to the development of an effective vaccine. In 1969, she became the first woman at Yale to receive an endowed chair.

meet expectations for a modern university.” Jonas says that retaining women at Yale remains a problem, in part due to scarcity, but Yale could do more to keep the women that it hires. “If you get someone who is doing well, she will be wooed by other universities, and the problem is there just aren’t enough women in general—and underrepresented minorities in particular—in senior positions yet,” she says.

At least one alumna is tackling unconscious bias issues head-on in her current career. Esther Choo, MD ’01, MPH, an associate professor of emergency medicine at Oregon Health & Science University in Portland, has received acclaim for her efforts to call out bias. She recently co-founded Equity Quotient, an app-based service designed to enable academic medical centers to gather data points on their institutional climate based on five criteria: respect, value, safety, pay, and general culture. At the forefront of every institution’s goals related to gender equity should be pay, Choo says. “It’s a concrete thing, it’s not hugging a marshmallow. People hired for the same position should get paid the same amount.” Choo acknowledges that salary equity has many moving parts, but notes that if leadership makes pay equity a priority, it will likely happen.

MORE WORK TO DO

The number of women scientists at the medical school continues to grow, but progress is slow. Whereas there are roughly equal numbers of women and men among students and assistant professors at the medical school, women’s representation decreases with each step up the academic hierarchy. “Yale has made tremendous progress in my opinion,” Latimore says. “But we still have more to do.” He has begun developing a diversity strategy.

Mayes says that progress on gender equity may move more quickly if medical school culture focuses on the family as a whole rather than on traditionally accepted male and female roles. “Changing the culture is fundamentally about how we work together and have equitable and civil conversations,” Mayes says. As an example, a department head could suggest that a new father take a month off to be at home with his child, Mayes notes. “Quite frankly, we never think to say that to a man,” she says. “I think women’s issues—if we call them that—would be better advanced if we talked instead about family issues.” This point aligns with Alpern’s conviction that equality, inclusion, and a respectful environment ultimately benefit everyone.

1965

First woman president of the American Heart Association

A pioneer in pediatric cardiology, Helen Brooke Taussig (1898–1986) helped create the Blalock-Taussig-Thomas shunt in 1944 to improve survival in children with congenital heart defects. The procedure she and her colleagues developed, called the “blue baby operation,” opened the door to today’s coronary bypass operations.

1971

Florence Wald founds first American hospice unit

Wald (1916–2008), a former dean of the Yale School of Nursing, is considered the founder of the Hospice movement in the United States, for which she was awarded the honorary doctorate of medical sciences by Yale in 1995.

1972

Phyllis T. Bodel named first director of Yale’s Office for Women in Medicine

Bodel (1934–1978), an infectious disease investigator, also researched the experience of women in medicine. Her work challenged the thinking that women are less likely to have successful medical careers and led to changes in tenure rules allowing women greater flexibility to balance work and life.

1979

Joan A. Steitz discovers snRNPs and their role in gene splicing

A professor of molecular biophysics and biochemistry at Yale, Joan A. Steitz (1941–) was the first woman graduate student in the lab of James Watson, one of the co-discoverers of the structure of DNA, before she began her own pioneering work in RNA.

Every year the dean meets with every department to present the state of the school. This year, he has ended each of these talks with a quote long attributed to Ralph Waldo Emerson that defines the meaning of success. After one such presentation, Naftali Kaminski, MD, the Boehringer–Ingelheim Endowed Professor of Internal Medicine, and chief of Pulmonary, Critical Care and Sleep Medicine, pointed out that the original version of “Success” was written in 1904 by a woman: Bessie A. Stanley, an American author. Alpern has since incorporated the quote’s tangled attribution history into his departmental meetings. “At every talk,” he says, “I point out that once again a man received credit for a woman’s work—and that over time, that injustice has been remedied by careful historians.”

/yale medicine magazine

Kathleen Raven is an associate editor at Yale Medicine Magazine.



One of five women chairs at YSM, Linda Mayes sees the need for a more family-focused culture that permits flexibility within traditional gender roles.

1984

First woman named head of a department at Yale School of Medicine

Carolyn W. Slayman (1937-2016), an accomplished geneticist and beloved mentor, chaired the Department of Human Genetics (now Genetics). In 1995, she became the first woman to hold a deputy deanship, for academic and scientific affairs.

1990

First woman and first Hispanic to be U.S. Surgeon General

Antonia Novello (1944-), a native of Puerto Rico, specialized in several disciplines, including nephrology, pediatrics, and public health, and held top posts at the former National Institute of Arthritis, Metabolism, and Digestive Disorders and the National Institute of Child Health and Human Development.

1995

Christiane Nusslein-Volhard wins the Nobel prize for research on the genetic control of embryonic development

Nusslein-Volhard (1942-), who received an honorary doctor of science degree from Yale in 1990, shared the Nobel Prize in Physiology or Medicine with Eric Wieschaus and Edward B. Lewis for research elucidating the earliest stages of embryonic growth.

2009

Elizabeth Blackburn Wins the Nobel Prize for the Discovery of Telomerase

Blackburn (1948-), a postdoctoral fellow at Yale between 1975-1977, received the Nobel Prize in Physiology or Medicine with Carol W. Greider and Jack W. Szostak for delineating how chromosomes are protected by telomeres and discovering the enzyme telomerase, which has led to groundbreaking cancer therapies.



Laura Ment (left) and her daughter, Anna Duncan, chatted with *Yale Medicine Magazine* about changes at YSM over the years, and growing up in the Yale/New Haven community of which they're both proud to be a part.

Like mother, like daughter

BY ADRIAN BONENBERGER | EVAN SIMKO-BEDNARSKI PHOTOGRAPH

Laura Ment, MD, is one of Yale School of Medicine's preeminent leaders. She is professor of pediatrics and neurology and associate dean for admissions and financial aid. She directs YSM's START program, and she participated in Yale's Status of Women in Medicine initiative. And she is mother to Anna Duncan, MD '15, who is completing her residency in pediatrics at Children's Hospital of Philadelphia.

The two joined *Yale Medicine Magazine* to talk about their experiences as women and physicians at Yale School of Medicine and in the New Haven community. They described how the medical profession has kept pace with changes in opportunities for women in the outside world.

YMM Thank you so much for joining us, it's a real honor! Dr. Ment, what was Yale School of Medicine like for women when you arrived?

LAURA MENT, MD I came here in 1979, just out of residency. I had been a pediatric resident and neurology resident at Massachusetts General Hospital. You may not know this, but Yale has the oldest newborn intensive care unit in the United States. The physician who was chief of the newborn intensive care unit, Joseph Warshaw, who went on to be chair of pediatrics at Yale School of Medicine and then dean at Vermont, called me up as a second-year neurology resident and says, "I understand you're interested in neonatal neurology. My babies are surviving. Would you like to come work for me?"

ANNA DUNCAN, MD '15 That's lucky ... not how it works anymore!

LM It was incredibly lucky, and I feel very fortunate. I began as an assistant professor in 1979. Medicine has changed tremendously in the last 40 years—not just in

terms of who could practice, but also in terms of what is possible.

YMM How did that work, then? He scouted you, like, in professional athletics?

LM He was aware of what I was doing. He'd been at Mass General before Yale, so he knew the people there, and they told him about my interests. It still works this way to a certain extent, but then, word of mouth counted for a great deal more than it does today.

YMM My impression is that the cultural shift around institutions being more assertively equal opportunity across a broad spectrum—economic, racial, religious, gender—started in the early '60s.

LM In terms of women going to medical school, I think the real ramp-up started in the 1970s. This followed better opportunities for female undergraduates in the 1960s.

AD You were one of two women in your medical school class at Brown.

LM That's true, and at Mass General they always had one woman in each class of neurology residents. So, there I was. When I was a resident, I was able to see institutions change from "it's possible for women to be physicians" to "it's a priority for us to recruit and train more women as physicians."

YMM How did you feel, being part of that vanguard?

LM I loved it. My parents were extremely supportive. My father was a pediatrician. I went to Brown in 1966, and freshman week Dean Rosemary Pierrel, who was near the end of her career, gave this wonderful talk. She says "You can do anything you want to do. You can be anything you want to be. Be lawyers, be doctors." I believed her, and our family ended up in New Haven. Anna was born here.

YMM Dr. Duncan, what was it like for you, growing up and seeing Dr. Ment, your mother, experience professional success in this context? Did that have an impact on you?

AD She and my dad always encouraged us to be whatever we wanted to be. My brothers and I grew up going to the hospital with our mom on weekends, and we'd sit at the nurses' station or her secretary's desk. Yale and medicine were a big part of our childhood. I ended up studying architecture as an undergraduate—ultimately, though, I came back to medicine and decided that it was what I really wanted to do.

YMM How did you make that pivot from architecture to medicine? They're both science-heavy, but very different disciplines.

AD Growing up we always traveled and went to lots of museums, and I learned that I really loved the arts. I went to college at Brown, where your concentration didn't have to be your career. I combined art and medicine through volunteering, and over time the two merged for me. I also did some research in neonatology and ended up entering medicine myself. And I happened to know that Yale School of Medicine was a great fit for me. Like Brown, Yale encouraged adult learners and had great funding opportunities as well as the flexible "extra" year that most people take. About two-thirds of Yale's MD students do research between their

third and fourth years and have an additional or bonus fifth year of research. I worked in developmental biology with Mustafa Khokha, who is a pediatric intensive care specialist, geneticist, and great mentor. His lab studies the genetics of congenital heart disease and uses an animal model to understand signaling mechanisms leading to a child's phenotype.

LM And since she won't tell you, I will: The thesis she wrote based on that extra research won top honors. That is practically unheard of—for a woman to take top honors for her thesis.

YMM So if opportunities have increased in the past for women, and that's beginning to bear fruit, so to speak, in more women entering the field of medicine through Yale, where do you see there being work to do in the future? Is there more work to be done?

AD There is more work to be done. How many women department chairs are there at Yale?

LM We're very fortunate, we just appointed a brand-new woman chair of surgery.

YMM The first ever, I believe?

LM Yes, and, I think that is still unusual nationally. I was on the SWIM committee [Status of Women in Medicine] throughout the 1990s, and we have made incredible progress in this regard.

AD So there are more chairs of departments now, but it's not equivalent.

LM We are extraordinarily proud that there are now five women department chairs.

YMM Which is progress from the 1970s, when you joined Yale as an assistant professor.

LM Yes.

AD My residency program is a great example. My class was initially almost 50, and probably 39 of them were women. So it was a very large majority. There are still many more men in the higher positions there, but I have also seen many women as heads of departments as well. And that's really great to see. So, it is happening.

LM A lot of it is getting through the pipeline. We built the pipeline, my generation, and we are working on fixing those parts of the proverbial pipeline to make sure they don't leak, and the throughput is more reliable.

YMM I like that metaphor!

LM It's a good one.

YMM So you both feel optimistic that while there is progress to be made, we are heading in the right direction.

LM There are opportunities for fellowships, training, and mentorship that were just ideas when I was a student and resident.

AD Speaking of mentorship, there is something we were talking about in the car coming over here. When I was young, they used to have a Take Our Daughters to Work Day. I think it started in 1993. And I came to the first one!

LM There were two girls here in the entire medical school. I read about the idea from *The New York Times*, a column written by Anna Quindlen called "Life In Your 30s." She wrote about how there was going to be a Take Our Daughters to Work Day. I thought, "I'm going to bring Anna." She didn't go to school that day, which suited her fine, though Foote School was less enthusiastic about the idea!

AD They were really upset.

LM All the teachers at Foote School gave us a hard time, but I took her to work. And it turned out that there was one other person, John Fahey, a pediatric cardiologist, who brought his daughter, too. Nobody else. The next year there were more, but by then, Anna didn't want to hang out with me ... she followed her father around.

AD Which was also very fun! He's a pediatric neurosurgeon, so I got to go to the OR.

LM Gary Kopf is a pediatric cardiac surgeon at Yale School of Medicine. He took Anna, put her on a big stool behind him, and she got to watch him operate on ...

AD I was able to see him operate on a young congenital heart disease patient.

LM There she was standing on a stool in the OR, because people took the project seriously. Now they call it Take Our Daughters and Sons to Work Day.

AD I don't know what people were saying about the utility of Take Our Daughters to Work Day at the time, but it had a huge impact on me. Seeing my mom accomplish what she has professionally, that's been inspiring. What they say about role models is true.

LM This takes continuous work. You can't forget where you came from, what you saw. Every woman who comes along, every female medical student, you can't let her down. ... Of course, you don't want to let anyone down, but you particularly have to be there for women because so few of them have role models in their family in the field of medicine, and it can be awfully difficult sometimes to be a pioneer, psychologically. There is a comfort in being able to say "Many others have done this, and so can I." And now Anna has a daughter of her own!

YMM Really? Congratulations!

AD Thank you! She's 4 months old. Having a daughter, especially as a resident, has shown me even more what my mom has had to go through, having a child while being within the intensity of a medical career. ... It's given me even more respect for her. I've always looked up to her, but this has really underlined how difficult it must have been for her to walk the path she has.

LM As a parent and a citizen of New Haven, I would also like to say that raising our family on Livingston Street, seeing the undergrads and graduate students walking into New Haven or waiting for the shuttle on Whitney in the cold—all these young people asking questions, posing hypotheses and answering them—we are all so fortunate to be in this culture here at Yale. It has been a marvelous experience, and sharing this opportunity is the greatest gift one can give. *yale medicine magazine*

Adrian Bonenberger is the editor of Yale Medicine Magazine.



Virginia Stuermer, acted decisively to bring medical care to women in New Haven during the 1960s. Now 94, she still speaks with a clear voice and a quick wit.

Pioneering women's health: Profiles in courage

BY JENNY BLAIR | ADRIAN BONENBERGER PHOTOGRAPH

For decades, despite mounting challenges, abortion and contraception have been legally available in the United States. But it was not that long ago that women lacked meaningful access to family planning. That situation changed in part thanks to two Yale faculty women: Gertrude Van Wagenen, PhD, who co-developed post-coital contraception—the so-called morning-after birth control pill—and Virginia Stuermer, MD, who defied legal barriers to provide patients with contraception and abortion services.

Born in 1893, Van Wagenen spent decades in the Department of Obstetrics and Gynecology, studying reproductive endocrinology with a colony of macaques.

Professor emeritus of obstetrics and gynecology and departmental historian Ernest Kohorn, MBBCh, MChir, vividly recalls those years: “When I first came to Yale in '65, there were monkeys walking around with bottles in the department, where the chair's office is now,” he says. (The colony was later moved to the hospital.)

Beginning in the 1930s, Van Wagenen, whom Kohorn describes as “delightful, very pleasant, very polite”—bred generations of the animals. She and Yale gynecologic surgeon John McLean Morris, MD, reported in 1966 that diethylstilbestrol (DES) can, in sufficient doses, prevent embryo implantation in both macaques and humans. DES was soon being used as the first morning-after pill. (It had also long been prescribed for other indications to pregnant women wishing to keep their pregnancies but was later linked to higher cancer risk in daughters of DES patients.) Improved versions were later developed, but Van Wagenen and Morris have been credited with paving the way. She died in 1978 at the age of 84.

Virginia Stuermer, 94, associate clinical professor emerita of obstetrics, gynecology, and reproductive sciences, is a Nebraska native. The daughter of a prairie nurse who visited patients by horseback, she made up her mind to become a doctor at age 4 and trained in her home state as well as New Jersey and Iowa before joining Yale's Ob/Gyn department in 1954.

At that time, Connecticut remained in the grip of the 1879-vintage Comstock law, which forbade not only the use of contraception but also even its discussion with patients by providers in public clinics. That surprised Stuermer, as such laws had been overturned in many other states.

“Everybody in the Midwest believed in contraception,” Stuermer recalls. “My training says [that] when a patient comes in for a postpartum examination, you say, ‘What do you want to use for contraception?’ It was just the routine thing.” She continued to practice as she'd been taught.

Despite such obstacles as no break room with beds for women physicians attending childbirths, Stuermer gained a sterling reputation at Yale, according to Mary Jane Minkin, MD, a clinical professor of obstetrics, gynecology, and reproductive sciences who trained with Stuermer in the late 1970s.

“She was just an incredibly solid surgeon. There was—pardon my language—no crapping around in Ginny’s OR,” Minkin recalls. “We wanted to grow up and be like Ginny.”

On November 1, 1961, then-department chair Charles Lee Buxton, MD, and Connecticut Planned Parenthood League executive director Estelle Griswold opened a birth control clinic in open defiance of the Comstock law. Ten days later, both were arrested and jailed. Stuermer was running the clinic that day.

The group, she recalls, “talked and talked and talked. And this went on for, I think, close to a year. I finally says, ‘It’s time to put up or shut up.’”

Stuermer offered to allow the clinic to run out of her own private offices at 2 Church Street South. First a New York City visiting physician then later, she herself did the procedures. It was, she says, the city’s first freestanding abortion clinic, and quite illegal.

“I suppose they could have thrown us in jail,” Stuermer reflects. “They would have arrested us and arraigned us

Mary Jane Minkin

“Ginny’s whole career has been very much devoted to making sure that women had access to contraception and safe abortion. Our department has always been staunch on the subject of reproductive rights, and Ginny set the tone for it.”

“I walked into the clinic to do the afternoon stint, and they says to me, ‘Dr. Stuermer, the police are here. What shall we do?’” she recalls. “I says, ‘Well, we’ll see the patient.’ Which we did.”

Stuermer herself avoided arrest—“I was an underling,” she explains.

Underling or not, she soon became medical director of Planned Parenthood for Connecticut. The Comstock law was ultimately overturned by the U.S. Supreme Court in 1965’s *Griswold v. Connecticut* ruling.

But abortion remained illegal, as it had been in Connecticut since 1821. Years before the Supreme Court’s landmark *Roe v. Wade* ruling in 1973, Stuermer joined a committee of New Haven providers and clergy that had decided to set up an outpatient abortion clinic.

and we probably would have ended up with a fine.” She doesn’t think they would have served jail time, “but maybe that’s too optimistic on my part.”

Regardless, she practiced unchallenged, and even after other area clinics opened when abortion was legalized, Stuermer continued to provide the service until she retired at age 79.

“Ginny’s whole career has been very much devoted to making sure that women had access to contraception and safe abortion,” Minkin says. “Our department has always been staunch on the subject of reproductive rights, and Ginny set the tone for it.” */yale medicine magazine*

Jenny Blair, MD '04, a freelance writer based in Montpelier, Vermont, has written frequently for Yale Medicine Magazine.

Celebration and Reflection: A century of women in medicine at Yale

A daylong symposium will commemorate the 100-year anniversary of the first women admitted to the School of Medicine.

BY JILL MAX

To matriculate as the first women at Yale School of Medicine in 1916, Louise Farnam, Helen May Scoville, and Lillian Lydia Nye needed to surmount an unusual barrier. The medical school's governing body had voted in 1915 to admit women, with the provision that a women's restroom be built to accommodate them. Farnam's father funded the construction, thus paving the way for the three women to enroll.

One hundred years later, the School of Medicine celebrates this milestone and the many accomplishments by women that have taken place since. On June 1, 2018, the school will host Celebration and Reflection, a symposium to celebrate the contributions of women faculty and alumnae. Sponsored by the Committee on the Status of Women in Medicine (SWIM), the Minority Organization for Retention & Expansion (MORE), and the dean's office, the event features speakers who will discuss their work, challenges faced by women in their fields, and hurdles encountered on the pathway to work-life balance.

"The symposium is significant because women are often not celebrated," says Elizabeth Jonas, MD, professor of neurology, who co-heads the planning committee with Margaret Bia, MD, professor of medicine (nephrology). "It's also important to have a forum to discuss issues that women need to address, such as equity in salary, resources, attention from donors and administrators, and leadership."

The symposium, which kicks off Alumni Weekend, includes sessions on the history of women in medicine, women in science and clinical care, the experience of being a woman in an underrepresented minority, and current issues that women face as they pursue careers in science and medicine. All of the symposium speakers are women, and each session features several faculty members from YSM. The keynote address will be delivered by Juanita L. Merchant, MD '81, PhD '84, the H. Marvin Pollard Professor of Gastrointestinal Sciences, and a professor of internal medicine and of molecular and integrative physiology at the University of Michigan

Medical School. The day concludes with a reception where attendees will have the opportunity to connect with friends, mentors, and former professors.

"We want this symposium to highlight all the expertise, talent, and resourcefulness of Yale faculty and alumnae, but we also would like each speaker to share her own special story—something that does not routinely occur at most symposia," says Bia. She notes that there are few opportunities for women to share their experiences and learn from one another, which is why organizers included the term "reflection" in the symposium's title.

The celebration of 100 years of women at YSM comes at a time when women are galvanized by the #MeToo movement and by women's marches around the country to protest the mistreatment and inequities that women continue to face. "We've been struggling along, not even realizing ourselves how repressed we are," says Jonas, who hopes for such changes as increasing numbers of women on faculty search committees. She notes that Darin Latimore, MD, the medical school's first deputy dean for diversity and inclusion, who arrived in January 2017, is helping to effect change through such efforts as increasing faculty awareness of unconscious bias among both men and women.

As part of the 100-year anniversary, the planning committee is creating a series of banners highlighting women in all areas of medicine and science during the past century. Bia and Jonas are also working on increasing faculty engagement through such departmental activities as an Internal Medicine Grand Rounds on May 17 that will be devoted to the history of women in the department. They are heartened by the enthusiastic response to the 100 Years of Women at YSM celebration and hope the momentum continues through artwork, exhibits, and other activities that promote women. "I hope it doesn't end on June first," says Bia.

The symposium is open to all faculty, students, staff, alumnae/ alumni, and clinicians in the community. To learn more and to register, visit medicine.yale.edu/centuryofwomen.



Committed virologist, veteran of the Chinese Civil War

She survived two decades of brutal war in China, then came to Yale and helped revolutionize the field of virology

By Jeanna Lucci-Canapari

With a powerful combination of grace and steely determination, Gueh-Djen (Edith) Hsiung, PhD, professor emerita of laboratory science, became a pioneer in her chosen field of diagnostic virology. During her long career, Hsiung became known for her uncanny ability to detect and characterize viruses, and became one of the first women to achieve the rank of professor at the Yale School of Medicine.

Hsiung's path to the laboratory bears the marks of history. She was born in Hubei, China, in 1918, and planned to go to medical school until World War II closed the Beijing school. Instead, she began work testing bacterial and viral vaccines for use in animals at a government facility in Lanzhou. From these

early days of her career, she exhibited tenacity that contributed to her later success. Marie-Louise Landry, MD, professor of laboratory medicine and of medicine (infectious diseases) and a close colleague, writing after Hsiung's death in 2006, recalled a story Hsiung told of her early days in China: "When charged with the transport of a stock virus for rinderpest vaccine without the benefit of refrigeration or dry ice, Hsiung injected the vaccine into a goat and then traveled to her destination for 27 days by truck, with the goat at her side."

After the war, Hsiung arrived at Michigan State University, where she completed her PhD in microbiology in 1953. Still pursuing her goal of attending medical school in the United States, she was turned down by Yale because she, at age 35, was considered too old. Like many women in science at that time, she took a position as a postdoctoral fellow at Yale, and from there launched her long career at both Yale and its affiliated Veterans Affairs Hospital in West Haven.

She took a position in the laboratory of Joseph Melnick, PhD '39, a renowned epidemiologist and founder of modern

virology, and worked with him on his breakthrough research on poliovirus. In Melnick's lab, she developed her striking knack for identifying viruses by cytopathic effect (CPE), a technique that later became recognized as the gold standard of diagnostic virology. There she also met and collaborated with Dorothy M. Horstmann, MD, a leader in polio research and the first woman to become a full professor at the School of Medicine in 1961.

In 1960, Hsiung became the first director of the Diagnostic Virology Laboratory at Grace-New Haven Hospital, Yale New Haven Hospital's predecessor. Hsiung then turned her burgeoning understanding of diagnostic virology into the definitive textbook in the field, *Diagnostic Virology*, and the first of its four editions was published in 1964. During her career, Hsiung also published more than 240 papers on the subject.

In her work, "she was energetic, precise, very careful," said John Booss, MD, professor emeritus of neurology at Yale, who was trained by Hsiung in virology as a postdoctoral fellow and worked closely with her. Booss recalled attending a conference on

virology with Hsiung. “She went to the microphone to contest a point, and she was quite firm about the position she was taking. And this stuck with me: after that exchange, she said to me, ‘It’s always a battle.’ There would always be people challenging your comments, and challenging your science.”

Her determination laid the foundation for a crucial discipline. In 1967, she became chief of the Virology Research Laboratory at the Veterans Administration Medical Center (VAMC) in West Haven and a professor in the Department of Laboratory Medicine at Yale. As a result of her initiatives, the national Virology Reference Laboratory of the Veterans Administration was founded in 1985 at the VAMC in West Haven, and she became its first director.

This laboratory was created to provide viral diagnostic services to VAMCs in the Northeast and beyond, and to research new methods of rapid viral diagnosis. VA hospitals nationwide were able to send frozen virus specimens overnight to Hsiung in West Haven, and receive a diagnosis within 24 hours.

Frank Bia, MD, professor emeritus of medicine

(infectious diseases), recalled his first meeting with Hsiung as a fellow doing clinical work at the VA. “I met this very ebullient Chinese woman who asked me who I was and what I was doing,” Bia recalled. “I told her I was looking for the virology lab, and she looked right at me and said ‘I’m the virology lab.’”

Bia became a longtime collaborator of Hsiung’s, and they published several papers together. “She had a unique ability in her laboratory to combine the interests of both MDs and PhDs so they could actually learn a lot from each other,” Bia said. The result was research directed at the needs of clinicians on the front lines of treating patients. She would ask, Bia said, “What were people struggling with on the wards? What was it they needed? Why develop testing for something that was unnecessary? And she relied upon the MDs to give her that perspective.” This perspective became particularly important at the onset of HIV in 1982, when feedback from MDs drove an understanding of the virus and became vital to delivering care.

Hsiung was a dedicated mentor to generations of trainees, both at Yale

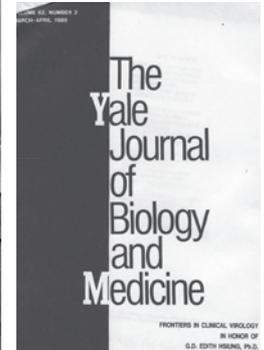
and in China and Taiwan. There, she conducted yearly training sessions at National Cheng Kung University, where she was also instrumental in setting up a virology laboratory that became crucial in understanding such regional epidemics as SARS and avian flu.

“She was very supportive of her trainees,” said Booss. Her talent for teaching extended beyond virology to another passion, Chinese cooking, even giving, according to Booss, a course in the cuisine at Yale. She often hosted friends and family

at her Branford home, where her parties were legendary, based on anecdotal evidence.

Those parties, however, were unlikely to feature much music. “She thought music was just cacophony; it was just noise to her,” recalled Bia fondly. “She was almost completely left-brained. She only read science. She called antique stores junk shops.”

“Those were fun times,” said Booss.



OPPOSITE Edith Hsiung dedicated long hours to research in her laboratory.

TOP LEFT Hsiung with colleagues at Yale School of Medicine.

TOP RIGHT Hsiung’s research and accomplishments were frequently included in YJBM.

BOTTOM Leaving a lasting legacy at YSM and at the West Haven VA, Hsiung’s research was translated into diagnostic tools for veterans.



A long voyage: Juanita Merchant's trip to the top of her field

JUANITA L. MERCHANT, MD '81, PHD '84, has spent decades exploring how chronic inflammation and regulatory pathways can lead to cancer in the gastrointestinal tract. In 2017, in recognition of her groundbreaking contributions to her field, she was asked to join the American Academy of Arts and Sciences.

Merchant is the H. Marvin Pollard Professor of Gastrointestinal Sciences, professor of internal medicine, and professor of molecular and integrative physiology at the University of Michigan Medical School.

Last year, she was one of just 223 African-American women to hold the rank of full professor at a United States medical school out of 182,786 faculty, according to the Association of American

Medical Colleges. She has earned many other honors, including her election to the Institute of Medicine of the National Academies in 2008.

"It's been a great ride, and I've really enjoyed academics," said Merchant, who also makes

time to mentor underrepresented minority students hoping to blaze their own trails as physician-scholars.

A Los Angeles native and the daughter of an elementary school teacher, Merchant attended public schools and considered becoming a math teacher. But she enjoyed her organic chemistry class at Stanford University so much that she changed her mind in favor of medical school. It was the mid-1970s, and Merchant recalls a mentor who was a woman of color suggesting she pursue both an MD and a PhD.

"You are a minority. You are a woman. If you really want to do academics, you need to do an MD/PhD, so that people will respect you," Merchant recalled the researcher telling her. "There were no women on faculty, at least in the STEM sciences, then."

In 1977, Merchant arrived at Yale School of Medicine, where she was the first African-American to earn a dual degree in medicine and cell biology. She worked with Fred Gorelick, MD, the Henry J. and Joan W. Binder Professor of Medicine (digestive diseases) and of Cell Biology, and the two remain close. In 1984 she went on to an internal medicine residency at Massachusetts General Hospital. Three years' post-residency lab work followed. After a year at UCLA, Merchant accepted a job offer at Michigan, where she has taught, cared for patients, and conducted research since 1991.



Juanita Merchant refused to compromise when it came to earning an MD and a PhD, and helps mentor others looking to succeed in the demanding dual degree program.

Merchant recently demonstrated how *Helicobacter pylori* infection can contribute to development of gastrointestinal cancer. Her research demonstrates how over time the bacterium destroys the acid-secreting cells of the stomach. This destruction, in turn sends a message to immune cells to turn into a new kind of cell that fosters a permissive environment for cancer.

She also studies the origins of gastrinoma, a type of cancer found in the duodenum or pancreas. These tumors have long been thought to arise from the epithelial cells lining the gut. But Merchant's group found evidence that they may actually arise from the enteric nervous system—specifically, from the nurse cells that surround gut neurons. If verified, the discovery could lead to totally different therapeutic options.

“Basically, there’s the possibility that we’ve been barking up the wrong tree,” Merchant said. “That really could change the way we approach these tumors.” She is working on a paper describing molecules that could attack the mutations leading to these cancers.

Merchant also discovered a protein that acts to promote colon cancer, as well as to prevent cells from undergoing a normal shutdown process called senescence. Interestingly, this protein is regulated by a butyrate, a substance made by the gut's natural bacteria from dietary fiber and known to be crucial for the health of colon cells.

“That’s why we always encourage

patients to eat a healthy diet high in fiber,” she said.

Merchant credits her Yale training with making her “bilingual.”

“The clinician isn’t going to know or necessarily care—because they are so busy—about how a small molecule docks onto some protein,” she said.

“I may not understand all the details about the biophysics, but I understand this protein is important in this disease state. ... We, the physician-scientists, being trained in both basic science and clinical medicine—we are the people that really bridge that gap the best.”

Today, Merchant runs a summer program that encourages underrepresented students to consider seeking an MD/PhD. The dual-degree path is tough, and the career seems daunting, she says. But, she added,



ONLINE EXCLUSIVE

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“I would say on the other side of it, having done my career this way, it’s been worth it.”

Another gap she works to bridge: impostor syndrome, a type of self-doubt that she used to feel herself and that she says she has seen over and over in high-achieving students of color. It can lead them to leave the academic ranks when they might have stayed and thrived had they had some mentorship.

“The system needs to be more sensitized to supporting these students,” she said.

Most of Merchant’s mentors have been white men—for instance, she recalled, “If he saw I was struggling with this particular essay, he reached out and helped.” She tells students of color that their mentors, too, may not look like them. But as more of them enter academics, she notes, this dynamic should change.

—Jenny Blair, MD '04



Psychiatry Professor Hadar Lubin: Healing through homecoming

In retrospect, it seems logical that Hadar Lubin, MD, assistant clinical professor of psychiatry at Yale School of Medicine and co-director of the Post Traumatic Stress Center (PTSC), would end up treating trauma. Conflict was an inescapable part of daily life, a direct part of almost every Israeli’s experience in the 1960s and 70s, as Israel

fought for its existence against repeated invasions. A heavy psychological toll was an inevitable byproduct. Emotional suffering from its fallout wasn’t.

Lubin began her psychiatric residency at the West Haven Veterans Affairs Medical Center in 1989. Owing partly to West Haven’s strong ties with Yale’s Department of Psychiatry, its VA was tapped as one of the Veterans Affairs’ National Centers for Post-Traumatic Stress Disorder (PTSD). The American Psychiatric Association had recognized the diagnosis in 1980, following studies of the impact of “combat trauma” on Vietnam War veterans. In 1992, Lubin was appointed medical director of the Specialized PTSD Inpatient Unit at the VA, and from 1994 to 1997 she served as its chief.

“Within the first few weeks of working there, I knew that psychological trauma was to be my career passion,” Lubin said. She served in the Israel Defense Forces as an intelligence officer, but was not directly involved in combat. She believes that her family’s experiences and resiliency provided “a protective shield that buffered the effects of that trauma.” These early experiences deepened her later understanding of the role of an individual’s social environment in “mediating the impact of toxic stress.”

It was at the VA that Lubin met David Read Johnson, PhD, a psychologist and drama

therapist who was then chief of the inpatient unit. With colleagues, they published studies of their work with Vietnam War veterans, including one identifying “homecoming stress” as the most significant predictor of the development of PTSD symptomatology.

“Our work at the VA greatly influenced the orientation of the Center,” Lubin said, contributing an understanding of the importance of integrating clients back into their communities. “The consequences of trauma interfere with one’s ability to feel affiliated, to feel a sense of connection.”

“And the avoidance is so intense that one isolates and eventually pushes people away,” she added.

Although some are veterans, the majority of the Center’s more than 250 clients seek treatment for what Lubin calls “civilian trauma” or “familial trauma.” This condition includes a range of incidents including early childhood trauma, sexual abuse, and domestic violence. Though every person’s experience of trauma is unique, there are similarities that are useful for clients and therapists to consider.

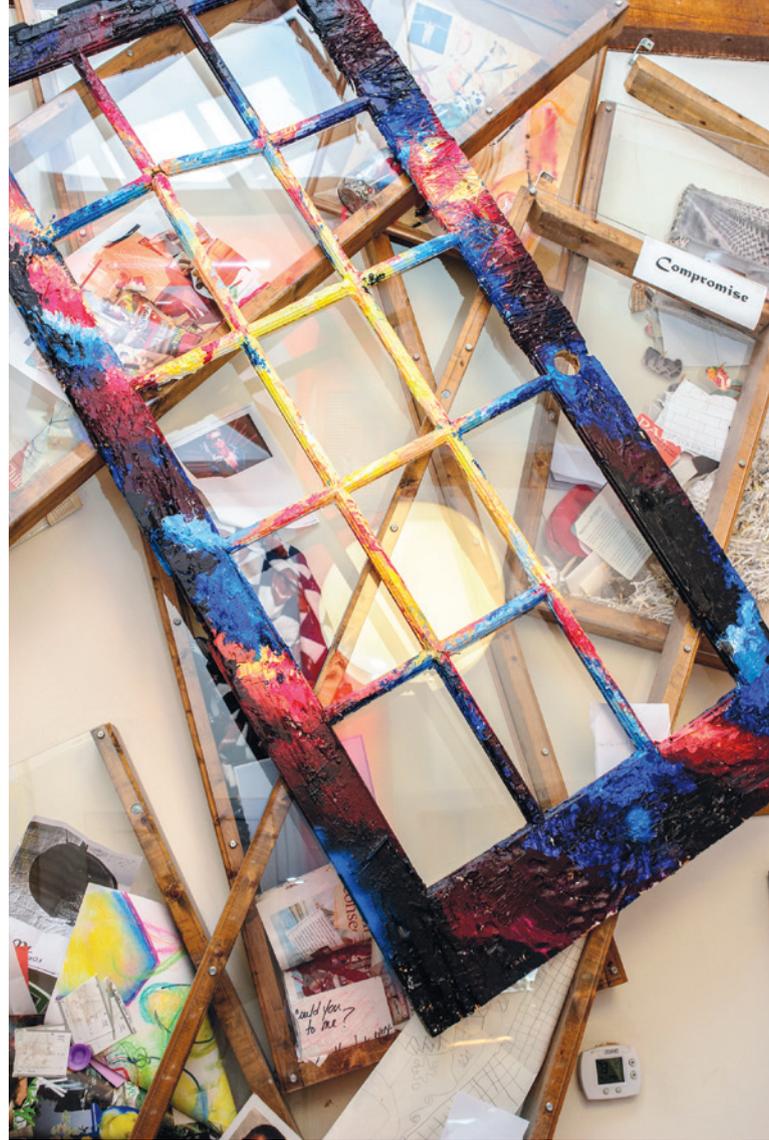
As trauma therapists, Lubin said, “we are not passive. We directly and actively engage with the clients and their traumatic narratives.” In addition to individual work, the Center also offers the Women’s Trauma Program, a Transitioning to Adulthood Group Program, and

Trauma-Centered Family Therapy. It also runs trauma-based public health intervention programs in elementary and high schools.

The Post Traumatic Stress Center is in a converted firehouse (itself a piece of New Haven history). It doesn't feel like a clinic—more like the office of a sculptor or artist than a clinic. A spiral staircase where the firepole used to be leads to the Remnant Wall, a display of items symbolizing trauma that clients have “shed.” Presented behind a transparent panel, the objects have been brought into the open to be confronted directly. The Center also maintains a collection of “Breaking the Silence” books—bound volumes of trauma and healing testimonies donated to the center by some clients for public display.

“Encouraging clients to share their traumatic stories lifts their burden and sense of isolation. They learn that although therapy is confidential, the traumatic events are not, as they reflect on the deeds of the perpetrators,” Lubin said. “We tell our clients the secrecy that comes with trauma protects the perpetrator, not them.”

Lubin believes that healing is a process. Clients are encouraged to mark key moments in their progress; they will celebrate milestones with symbolic



Hadar Lubin's firsthand experiences with war during the 1960s and 70s in Israel, then as part of the IDF, helped inspire her to aid military veterans.

enactments of transformation. These therapeutic ceremonies are informed by the Center's staff's understanding of trauma and its aftermath in a way that will highlight the progress that was made. A therapeutic ceremony may feature artwork or poetry that symbolizes strides made in the therapy. It may be a ritual as simple as a walk across a room into the embrace of family and friends, to underscore the importance of connecting to their social network.

Building on their work on the homecoming experience of Vietnam War veterans, Lubin and Johnson found that for civilians, what's key is how the disclosure of trauma is received.

“With a civilian trauma,” Lubin said, “there is no homecoming. The trauma is at home—hence the ceremonies, to heal the individual and the community.”

“Testimony is observed in a semipublic setting because the role of the witness is so central to the healing. In fact,” she explained, “we tell our staff and clients—and I stand by it completely—that trauma occurs alone, but healing can only occur in a social context. You cannot heal by yourself.”

—Deborah Cannarella



Michele Johnson: Serving with distinction

MICHELE JOHNSON, MD, became Yale School of Medicine's first female and African-American full professor. Her fields are radiology and biomedical imaging and neurosurgery. Achievement runs in the family: her father, a neurochemist, was the first African-American to earn a PhD in chemistry from the University of Delaware. She sat down with Kathleen Raven to talk about the value of hard work, setting high standards, and navigating a professional world that tends not to look all that much like her.

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What drew you to radiology? I was doing a sub-internship in pulmonary during my pediatrics residency. Once, I went with a radiologist to read chest X-rays. She looked at a film and noted the symptoms of cystic fibrosis and then she also pointed out the patient's thin ribs, which are what you might find with sickle cell disease. She relied on her knowledge of imaging and of clinical diseases to solve the same type of medical mysteries that I had wanted to solve when I went to medical school. I withdrew all of my pediatric applications and applied to radiology. It wasn't a frivolous decision. I was enchanted by the idea that I could be really good at doing this. I look at 2-D images, but I don't see them that way. To me, they all look 3-D, like living things—that's how my brain sees it.

What has been the biggest change in radiology since your first faculty position in 1985? When I was training as a fellow, the clinical magnetic resonance imaging

(MRI) procedure was just beginning to be used in radiology. At the time, interventional radiology was included in two-year programs, but now it has morphed into a separate fellowship. But the biggest treatment change has been the mechanical thrombectomy for stroke. This involves a retriever tool to extract a blood clot in the brain. This device looks like a little wire. You go in and remove the clot, which you see on the device as it comes out. The patient who previously wasn't able to move or talk can now do both. It's the closest to Lazarus as you can get. That goes along with the development of the MRI.

What do you anticipate will be the next sea change for the field? I think it will be finding image biomarkers to use along with precision medicine testing and pathology. Researchers are looking for imaging correlates of molecular biomarkers using MRI or positron emission tomography. The field is searching for certain types of contrast agents, or drugs, that, once injected, will go to certain territories

that will give us certain information about tissue type. This is going to help with making a diagnosis noninvasively without having to have a physical piece of tissue removed. I think this will filter down in clinical neuro-interventional radiology.

You are a female and a minority in medicine—is that significant? I came to Yale as an associate professor in 1999. I was promoted to full professor in 2014. During that time, I was busy. I didn't go to the chair and say, "Can I get promoted now?" You know, one of the books I've read about four times is by Linda Babcock, called *Women Don't Ask*. In it she talks about how two of her male colleagues with equivalent CVs to hers got promoted and she didn't. She had a good relationship with her chair and so she asked him why he promoted them and not her. He said, "Because you didn't ask." It's not about me and being promoted—it's the idea that even today it's not good enough to assume your efforts will

be recognized for their value. I was the first African-American female full professor at Yale in 2014—is that something to be celebrated or embarrassed by? I don't know. On the positive side, it sends a message to younger women that it's possible for them.

Why is it important to celebrate women in medicine? Women are different from men, but we're not so different that we can't be successful and happy and raise our families. One thing that's important is you've got to define what success means to you. I came from a family where education was at the forefront. My mother was valedictorian of her class and my father—there were three generations of people who went to college before him. The attitude was: Get your education because no one can take that away from you. And move forward with that attitude. It's not approaching each day saying, "Who's going to be mean to me?" It's saying that I can do anything I put my mind to and the biggest impediment to my success is me.

The End of Old Age: Living a Longer, More Purposeful Life

By Cathy Shufro

A couple of years ago, Marc E. Agronin, MD '91, attended a friend's 50th birthday party. One of the gifts was Dr. D. Crepit's Over the Hill Survival Kit, which included "50 sucks" lollipops and a bag of marbles for the "old geezer" being feted, who had presumably lost his.

Agronin, a geriatric psychiatrist, was dismayed by a gift that ridiculed old people. "How would we react to a similar gag gift that denigrated one's gender, ethnicity, or religious identity?" Agronin asks in his new book, *The End of Old Age: Living a Longer, More Purposeful Life*.

"If, already at 50, we're putting down aging, it's sending a negative message from the get-go," Agronin said in a recent interview. "It doesn't allow us to think about aging in terms of the power it can give us."

Agronin asks his readers to reject the idea that each year after midlife portends nothing more than loss. "We have to look at aging in a more positive light. It's not a

Pollyannaish approach; it's more accurate. If we measure creativity, purpose, and wisdom, we see enormous increases with age."

Agronin grounds his optimism in the 20 years he spent as a clinician and researcher at Miami Jewish Health Systems, a large long-term care provider in retiree-rich South Florida. Agronin believes that an affirmative picture of old age can be self-fulfilling. "There is an increasing body of research showing that such elements as a positive attitude and a sense of purpose are as powerful as diet and exercise in improving health, wellness, and longevity," says Agronin, who directs mental health services and the Alzheimer's disease clinical research program at Miami Jewish Health. "This mind-body connection is really profound. To a large extent, we age to our expectations."

Seeking enjoyment despite diminishing abilities can take people in surprising directions. Agronin tells the story of a woman with Parkinson's disease who at

85 was depressed and listless, unwilling to try new activities. Then one day, hearing music, the woman began to dance. She joined a Zumba class that welcomed disabled people, and dancing opened a door: she became more agile and animated.

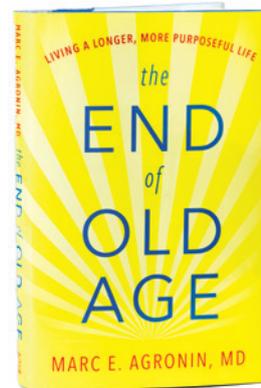
Another story: After cancer surgery, a bedridden man of 71 suffered months of pain and hallucinations. He began to draw on the wall beside his bed and to cut shapes from colored paper. That man, artist Henri Matisse, went on to create his famous cutouts and to design the Chapelle du Rosaire de Vence (Chapel of the Rosary) in Vence, France—which some art critics call his masterpiece. Matisse told a friend: "I have needed all that time to reach the stage where I can say what I want to say. ... Only what I created after the illness constitutes my real self: free, liberated."

Even lesser mortals can call upon their "wise selves" as they age. Agronin delineates five embodiments of

wisdom: the savant, who passes on knowledge; the sage, who provides advice and mediates conflicts; the curator, who provides care and support (often to grandchildren); the creator, who takes risks while finding novel approaches to art and other endeavors; and the seer, who shows exceptional gratitude and spirituality.

The 52-year-old Agronin discovered geriatric psychiatry during his first year at the School of Medicine, on a rotation with associate clinical professor of psychiatry Alan Siegal, MD. Agronin noticed that Siegal and his colleagues did more than push through lists of clinical tasks. "Staff working with the elderly often by necessity have to be more patient, gentler, have to spend more time developing a relationship," says Agronin. "In a flash, I decided I wanted to go into geriatric psychiatry."

He acknowledges that growing old means facing loss. But people can use the challenges of aging as tools for reinvention. When we do that, Agronin writes, "our strengths burst forth."



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A Match for the Ages

YALE SCHOOL OF MEDICINE just saw the biggest number of graduating students find homes with residency programs. If that wasn't impressive enough, every student seeking residency matched—unusual under normal circumstances, doubly so given the class size. “125 is our largest class in my memory, and the largest ever as far as I know,” said Nancy Angoff, MD, MPH, MEd, Yale School of Medicine’s associate dean for student affairs. “This isn’t the first time we’ve had 100 percent of our students match, but it’s been a while since it last happened.” Of the two students who didn’t apply for residency programs, one will enter an MBA program, and another plans to pursue employment as a consultant.

—Adrian Bonenberger