

ANNUAL REPORT 2021-2022



Yale Department of Internal Medicine

Department of Internal Medicine faculty members participate in a variety of programs, clinics, and centers throughout Yale University, Yale School of Medicine, Yale Medicine, and Yale New Haven Health.

For more information, visit medicine.yale.edu/intmed/

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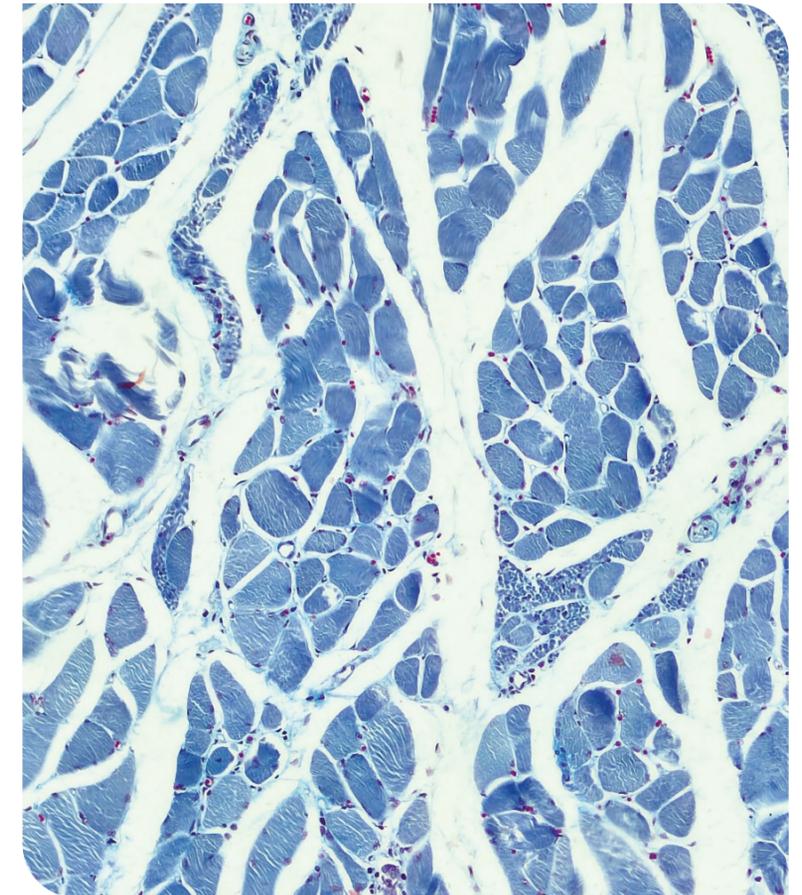
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Message FROM THE CHAIR



The Department of Internal Medicine continues to increase the size of its faculty and staff as well as expand the scope of its clinical care, research, and educational initiatives.

We saw patient volumes on the medicine service hit historic levels this year while finally emerging from the COVID-19 pandemic. In March 2022, Yale New Haven Hospital (YNHH) was named a leading hospital in early COVID care by Healthgrades, a Denver-based company that provides information about hospitals and health care providers. According to Healthgrades, YNHH's mortality rates were some of the lowest in the country; more impressively, there were no observed differences in care outcomes between white, Black, and Hispanic people.

Our faculty members have been honored for their educational excellence. Research initiatives at Yale received applause on the national and international stages. And our entire department acquired new prominence as its website and Boardman entryway were updated to highlight everything that makes our department not only unique but also an excellent organization to belong to.

We are poised to succeed in all our missions while committing to ongoing improvements in the well-being and sense of community among our clinicians, educators, researchers, learners, and staff.

Thank you for reviewing this report, which contains so many highlights from our department this year. Be sure to read the story about the Committed to Excellence wall display—one of our many endeavors to showcase the clinicians, educators, researchers, trainees, and staff members of the department. Scan the QR code below to learn more.

I would love to hear from you; please contact me with any questions or comments.

Sincerely,

Gary V. Désir, MD
Paul B. Beeson Professor of Medicine
Vice Provost for Faculty Development and Diversity
Chair, Internal Medicine, Yale School of Medicine
Chief, Internal Medicine, Yale New Haven Hospital



Overviews

FROM THE VICE CHAIRS

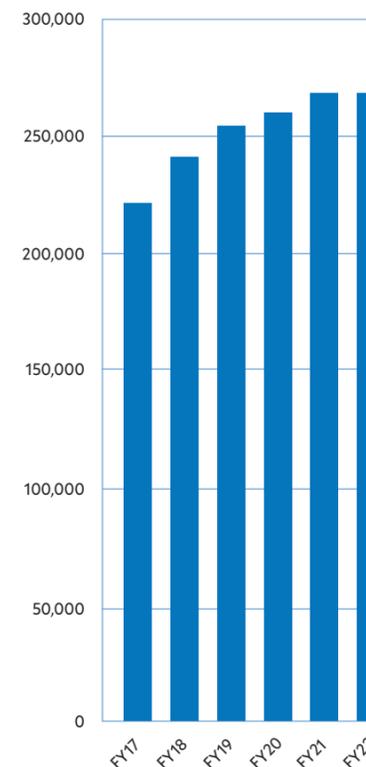
The Department of Internal Medicine has come a long way from its modest beginnings two centuries ago, and has grown remarkably under the stewardship of its leaders. Today, the department has nearly 2200 clinicians, educators, researchers, trainees, and staff.

Clinical Affairs

Lynn T. Tanoue, MD, MBA
Vice Chair, Clinical Affairs

Clinical Affairs in the Department of Internal Medicine have continued to thrive, demonstrating consistent growth and continued flexibility in response to the evolving COVID-19 pandemic.

Department of Internal Medicine
Completed Ambulatory Encounters



Kavya Mekala, MD

Ambulatory Care

The department's ambulatory practice extends over 46 sites across Connecticut, bringing Yale's Internal Medicine and specialty care within easier reach of patients. Despite ongoing challenges related to COVID-19, ambulatory care volume has risen over the years of the pandemic (>260,000 visits in FY22), the primary care practices and several subspecialty programs have moved to new facilities, more subspecialty programs have been opened, and many patients and providers have become adept in using telehealth technologies.

Inpatient Care

As is the case across the country, occupancy rates at Yale New Haven Hospital (YNHH) are at record high levels. The causes of this sustained rise in hospitalized patients are multiple, and not fully explained by the continued steady number of patients hospitalized with COVID-19. Internal Medicine teams care for the majority of patients hospitalized at YNHH. Support for this extensive enterprise requires the collective efforts of faculty and inpatient hospital attending physicians, physician-trainees, and specialty consulting services working alongside the many services and disciplines required to provide state-of-the-art inpatient care.

Clinical Affairs Team

The Clinical Affairs team provides personalized live and digital support to the department. Its Epic specialists have developed extensive physician-friendly content to optimize the use of electronic health records, with the intent that more time-effective engagement with Epic will give faculty more time to interact with patients face-to-face. During FY22, the Clinical Affairs team piloted Epic STARS, a series of interactive live tutorials to enhance physicians' Epic skills. Based on highly positive feedback, Epic STARS will be disseminated more widely in FY23. Access to these and many other clinical resources is available on the department's intranet site.

Faculty Development Workshop During Orientation

Over the past decade, the department has presented a series of faculty workshops on topics including self-awareness, emotional intelligence, unconscious bias, and resilience during new faculty orientation. This year, given the ability to resume in-person orientations, workshops on sharing bad news and disclosures as well as actor simulation sessions on critical conversations were offered. Collectively known as RISE (Resilience, Innovation, and Sustainable Excellence) at Yale, these workshops are facilitated by trained Department of Medicine faculty and reflect the department's commitment to faculty development.

Overviews FROM THE VICE CHAIRS



Darin Latimore, MD

Diversity, Equity, and Inclusion

Vandana Khungar, MD, MSc
Associate Chair, Diversity, Equity, and Inclusion (Interim)

Aba Black, MD, MHS
Associate Chair, Diversity, Equity, and Inclusion (Interim)

Stephen Huot, MD, PhD
Senior Associate Dean, Graduate Medical Education

The Department of Internal Medicine strives to create an inviting environment and an institutional culture of inclusivity in which each person's unique characteristics are valued and respected. The Office of Diversity, Equity, and Inclusion in Internal Medicine (ODEIM) was created in December 2020 and inaugurated in June 2021 to support and implement DEI plans and initiatives.

Leadership

In March 2022, a nationwide search began for a vice chair for Diversity, Equity, and Inclusion (DEI) after Inginia Genao, MD, left Yale to become the Penn State College of Medicine's first vice dean of diversity, equity, and belonging.

Genao accomplished much during her time since November 2016 as the inaugural associate chair for DEI. Among her many accomplishments, she formed ODEIM's Diversity Committee and developed a strategic plan to guide the office's work.

While each section continues to have vice chief representation, three faculty members—Vandana Khungar, MD, MSc; Aba Black, MD, MHS; and Stephen Huot, MD, PhD—have joined together as interim leaders.



Susan Kashaf, MD, MPH

Outreach

The first annual underrepresented in medicine (URiM) fellow recruitment dinner was held in November 2021. In January 2022, the fifth annual recruitment dinner for potential underrepresented in medicine (URiM) residents took place with over 400 virtual participants, including leaders and colleagues from across Yale New Haven Hospital's Office of Graduate Medical Education (GME); the Yale School of Medicine (YSM); and Yale New Haven Health (YNHH).

A group of faculty and residents representing YSM and YNHH traveled to Orlando, Florida, in April for the annual Student National Medical Association (SNMA)-sponsored medical education conference.

In August 2022, Yale held its first annual Yale- HBCU Virtual Residency Recruitment Fair with over 100 participants from across Yale and four historically Black colleges and universities: Charles R. Drew University of Medicine and

Science; Howard University College of Medicine; Meharry Medical College; and Morehouse School of Medicine. A group of Yale residents also visited Meharry to recruit prospective residents.

Joseph Oti-Nimoh, the first Visiting Students Scholarship Program participant, came to New Haven in late September. The department continues to receive and consider scholarship applicants on a rolling basis.

A medical student from Texas Tech University Health Sciences Center School of Medicine, Oti-Nimoh completed a four-week pulmonary medical elective.

As ODEIM continues its outreach and recruitment efforts, the GME office reports that the incoming residency class has more than 20 percent self-identified URiMs.

In addition to visitors from HBCUs, outreach efforts continue to include Hispanic-Serving Institutions (HSIs) and Native American Serving Non-Tribal Institutions (NASNTIs). ODEIM teamed up with Yale colleagues to attend the national Latino Medical Student Association (LMSA) Virtual Residency Fair for the first time in September 2022.

Advocacy

Throughout the year, events were held across YSM to support Ukrainian and Iranian faculty, staff, and trainees.



The Yale Minority Housestaff Organization visits Howard University.

NEWS

Yale Weight Loss Program Goes Primetime



Jorge Moreno, MD

BY **CECELIA SMITH**

A Telemundo TV program about bariatric surgery featuring Yale School of Medicine faculty Drs. John Morton and Jorge Moreno received a 2022 Emmy Award.

Yale School of Medicine faculty members John Morton, MD, MPH, MHA, and Jorge Moreno, MD, can now add "Emmy winner" to their CVs. The physicians are the featured experts in an award-winning episode of the Telemundo show, "Tu Salud Tu Familia—Cirugía Bariátrica"—a 30-minute segment on the risks and benefits of weight loss surgery.

But don't ask them for autographs just yet.

"It is certainly exciting to have been a part of the show; but the real win for us is the spotlight that the success of the show can shine on bariatric surgery, and our opportunity as an academic medical system to engage a broad community in our research and care options," said Morton, chief of Bariatric and Minimally Invasive Surgery for the Yale New Haven Health System.

"Tu Salud Tu Familia" (Your Health Your Family) is a weekly entertainment program focused on educating the Latino community on a range of health issues, including the value of clinical trials to develop treatment

options. A partnership between the host network, Telemundo, and the Yale Center for Clinical Investigation adds Yale physicians to the roster of experts tapped by producers for on-camera perspective.

"I got an email from my Chief saying 'Does anyone speak Spanish that can talk about weight loss?' and I thought, 'Sure!...' An Emmy was certainly not what I was expecting, but that honor really goes to the producers of the show and YCCI for the opportunity to tell this important story to an audience that needs to hear it," said Moreno, a Yale Medicine internist with a special interest in the management of obesity-related conditions.

Among Latinos in the United States, obesity and metabolic syndrome are increasingly prevalent.

Although bariatric surgery has become one of the primary treatment modalities for obesity and type 2 diabetes, rates of the surgical procedure are disproportionately low in qualifying Latino patients relative to non-Latino patients. Both Morton and Moreno are bilingual in Spanish and engage their patients in the language in which they are most comfortable.

"Cultural competency is important in delivering care to patients most in need, and I'm grateful that my mother (from El Salvador) insisted on my learning Spanish," said Morton.

"There are several reasons for the disparities — insurance, access to care, mistrust in the system, for example. But there's also evidence to suggest that many of these patients just aren't aware of the treatment options," said Moreno.

For Moreno and Morton, closing this knowledge gap is an opportunity to save lives.

"Information is power, both for patients seeking a better quality of life, and for physicians who are caring for these individuals and considering courses of care," said Morton.

And although the physicians are not signing autographs, they have something better to suggest...

"Come see us at Yale and let us sign you a doctor's note!" said Morton.

Yale Medicine's bariatric surgery program is recognized for its safety and expertise, serving patients with a body mass index (BMI) of 40+, or a BMI of 35-39 with accompanying health problems.

Overviews FROM THE VICE CHAIRS



Education & Academic Affairs

Vincent Quagliarello, MD
Vice Chair, Education & Academic Affairs

Dana Dunne, MD, MHS
Associate Chair, Education & Academic Affairs

Donna Windish, MD, MPH
Associate Chair, Educational Scholarship

Residency Updates

The Department of Internal Medicine Traditional Residency Program at Yale School of Medicine was ranked tenth in the nation by *U.S. News & World Report's* list of 2022's Best Internal Medicine Programs. The Yale Medicine-Pediatrics Residency Program enjoyed a very competitive match this year, and continues its tradition of innovative outreach, quality improvement, and research projects. The Yale Primary Care Internal Medicine Residency continues to excel as a leading program in primary care education, innovative medical education and research, and meaningful engagement with communities in New Haven.

Teaching Awards

The Yale Department of Internal Medicine's Primary Care and Traditional Residency Programs celebrated their graduations on June 6, 2022 and on June 7, 2022 respectively.

See the complete list of awards by scanning this QR code.



Medical residents at YSM may now choose one of five distinction pathway programs: Clinician Educator; Global Health & Equity; Investigation; Quality Improvement & Physician Leadership; and Race, Bias, and Advocacy in Medicine. Ten junior faculty members across Yale School of Medicine were appointed to the new role of Clinical Skills Mentor. The following six faculty are from the department:

Alex Choi, MD
Ben Gallagher, MD
Michael Beasley, MD
Sarita Soares, MD
Sharon Ostfeld-Johns, MD
Angela Kang, MD, MPH

Members serve on clinical skills committees and contribute to educational innovation as well as curriculum development and evaluation.

Education Development and Scholarship

The Office for Educator Development and Scholarship launched the [IM]EDucators educational faculty development series in March 2021 in partnership with the Yale School of Medicine Teaching and Learning Center. In addition, both the [IM]EDucator monthly noon Zoom series as well as the more intensive Clinical Teaching Faculty Development course (12–15 hours) are offered two to three times per year by the department in conjunction with the Yale School of Medicine Teaching and Learning Center.

In March 2021, the Advancement of Clinician-Educator Scholarship (ACES) Faculty Development Program, led by Donna Windish, MD, MPH, announced its third class:

Badr Al Bawardy, MD, assistant professor (Digestive Diseases)
Michael Beasley, MD, assistant professor (Cardiovascular Medicine)
Astha Chichra, MBBS, assistant professor (Pulmonary, Critical Care and Sleep Medicine)

Benjamin Gallagher, MD, instructor (General Internal Medicine)
Shana Gleeson, MD, assistant professor (Infectious Diseases)

The following 14 fellows were celebrated as they completed the Fellows as Medical Educators (FAME) certificate course in July 2022:

Department of Medicine fellows:

Cardiovascular Medicine:
Ricardo Avendaño, MD, and Amarnath Annapureddy, MD
Digestive Diseases:
Kay Chen, MD, and Laura Rotundo Sahyoun, MD
Endocrinology & Metabolism:
Brian Wojeck, MD, MPH
Infectious Diseases:
Mollie Tucker, MD, and Carlo Palacios, MD
Medical Oncology – Hematology:
Eric Chang, MD
Occupational & Environmental Medicine:
Romero Santiago, MD, MPH
Pulmonary, Critical Care and Sleep Medicine:
Katie McAvoy, MD

Department of Pediatrics fellows:

Gastroenterology: Sarah Abu-Alreesh, MBBS
Pulmonary: Eliaz Brumer, MD
Cardiology: Katherine Glover, MD
Infectious Diseases: Elissa Zirinsky, MD

The year-long course, co-led by Dana Dunne, MD, MHS, and Lindsay Johnston, MD, MEd, from the Department of Pediatrics, aims to enhance a fellow's preparation for a career as a clinician educator through participation in sessions exploring learning theory; teaching skills; curriculum development; and clinician educator careers, among other topics.



Donna Windish, MD, MPH



Ursula C. Brewster, MD



Sandip Mukherjee, MD

Alfred Lee, MD, PhD, clinician-educator track (Hematology)
Richard A. Martinello, MD, clinician-educator track (Infectious Diseases)
Sandip Mukherjee, MD, clinical track (Cardiovascular Medicine)
Marcella Nunez-Smith, MD, MHS, clinician-scientist track (General Medicine)
Margaret Pisani, MD, MPH, clinician-educator track (Pulmonary, Critical Care and Sleep Medicine)

William Ravich, MD, clinical track (Digestive Diseases)

Mark Schoenfeld, MD, clinical track (Cardiovascular Medicine)

Tamar Taddei, MD, clinician-educator track (Digestive Diseases)

Li Wen, MD, PhD, investigator track (Endocrinology & Metabolism)

Donna Windish, MD, MPH, clinician-educator track (General Medicine)

Eric Winer, MD, clinician-scientist track (Medical Oncology)

In addition, 23 faculty members were promoted or appointed to associate professor; 61 to assistant professor; and 21 to instructor, along with two adjunct faculty members who were promoted. Three people were promoted to senior research scientist; eight to research scientist; and 37 to associate research scientist.



Sarwat Chaudhry, MD



Yasuko Iwakiri, PhD

The FY 2022 A&P Committee reviewed all appointment and promotion information. The membership is as follows: Peter Aronson, MD; Lori Bastian, MD, MPH; Richard Bucala, MD, PhD; Gary Désir, MD; Auguste Fortin VI, MD, MPH; Terri Fried, MD; Rachel Lampert, MD; Richard Marottoli, MD, MPH; Deborah Proctor, MD; Michal Rose, MD; Albert Shaw, MD, PhD; and Lawrence Young, MD. New members to the FY 2023 committee are Margaret Pisani, MD, MPH; and David Fiellin, MD, after Fortin retired and Bucala stepped down.

Voluntary Faculty

Two members of voluntary faculty were recently promoted to associate clinical professor:

Eric Fan, MD
Steven Saunders, MD

Over the past five years, the number of voluntary faculty within the Department of Internal Medicine has increased to 427 members. Led by Adam Mayerson, MD, this group teaches in both inpatient and outpatient settings at various sites throughout the state, including Yale New Haven, Greenwich, Bridgeport, Griffin, Waterbury, St. Mary's, Norwalk, Middlesex, and Danbury Hospitals.

The committee activities are coordinated by Laura Whitley, manager, Faculty Affairs, with the assistance of Catherine Severino and Mansi Ahuja.



Jephtha Curtis, MD

Faculty Affairs

Lawrence Young, MD
Vice Chair, Faculty Affairs

Adam Mayerson, MD
Associate Chair, Community & Voluntary Faculty

Mentoring Program Expansion

The department mentorship program, which is required for all instructors, assistant professors, and associate professors to support successful career development, has been expanded to include the new Yale School of Medicine Faculty Development Annual Questionnaire (FDAQ). The FDAQ is an initiative from the Office of the Dean to promote mentorship for and feedback to faculty members from the department and section leadership.

Faculty Appointments/Promotions

The following faculty members were promoted or appointed to full professor:

Joseph Akar, MD, PhD, clinician-educator track (Cardiovascular Medicine)

Ursula C. Brewster, MD, clinician-educator track (Nephrology)

Sarwat Chaudhry, MD, clinician-scientist track (General Medicine)

Lauren Cohn, MD, clinician-educator track (Pulmonary, Critical Care and Sleep Medicine)

Jephtha Curtis, MD, clinician-scientist track (Cardiovascular Medicine)

Neera Dahl, MD, PhD, clinician-educator track (Nephrology)

Shuta Ishibe, MD, traditional track (Nephrology)

Yasuko Iwakiri, PhD, investigator track (Digestive Diseases)



Richard Bucala, MD, PhD

An End to Malaria?

BY RHEA HIRSCHMAN

Among other advances, new RNA treatments may hold the key to fighting one of the foremost scourges of warmer climates.

Malaria, the world's second most deadly communicable disease (after tuberculosis) has coexisted with humanity for over 100,000 years. While the mosquito-borne illness was virtually wiped out in this country in the early 1950s, many more U.S. travelers in the recent past have been returning from parts of the world where the disease is endemic. According to the Centers for Disease Control, about 2,000 Americans are diagnosed with malaria each year, most of them frequent travelers or immigrants.

But malaria exacts its greatest toll in sub-Saharan Africa, where it kills over half a million people annually. Most are children who have not yet developed any immunity to the disease. Another highly vulnerable population is pregnant women; immunity to the disease is decreased by pregnancy.

In addition to the personal suffering that malaria causes, its social and economic burdens are enormous. According to the Johns Hopkins Bloomberg School of Public Health, "The economic impact of malaria is estimated to cost Africa \$12 billion every year. This figure factors in costs of health care, absenteeism, days lost in education, decreased productivity due to brain damage from cerebral malaria, and loss of investment and tourism. Malaria [results in] sub-optimal agricultural production [and] reduces labor productivity. . . . [In] endemic areas, malaria may impair as much as 60% of schoolchildren's learning."



"Malaria is both a huge medical problem and a huge social problem," says Richard Bucala, MD, PhD, the Waldemar Von Zedtwitz Professor of Medicine (Rheumatology), and professor of pathology at the Yale School of Medicine, and of epidemiology (microbial diseases) at the Yale School of Public Health. "A malaria vaccine has long been the holy grail, but development has suffered from a lack of understanding of the disease's basic immunology."

Increasing resistance to treatment

The quest for a malaria vaccine is made even more urgent by limited treatment options. After World War II, DDT was used to kill the mosquitoes that carry the malaria parasite. Chloroquine, a cheap and effective drug, was developed to treat patients. But DDT proved to be toxic to humans and animals; the mosquitoes developed resistance to it; and the malaria organism developed resistance to chloroquine. Now, only one antibiotic treatment remains—artemisinin, a drug derived from an ancient Chinese herbal remedy. And, says Bucala, "We are finding resistance to artemisinin on the Thai-Cambodian border, which is the first place chloroquine resistance developed in the 1950s. We are losing tools for malaria control."

Malaria is caused by several species of *Plasmodium* parasites that are spread to humans through the bites of infected mosquitoes. The organism has evolved elaborate mechanisms to avoid destruction by the body's immune system, including secreting a protein (PMIF) that kills immunity-generating memory T cells. "It's been so difficult to create an effective vaccine," Bucala says, "because the infection is not associated with sterilizing immunity"—the ability of the immune system to stop pathogens from replicating within the body. "With malaria," he explains, "once you are infected, you are always infected. Even if the infection responds to treatment, you remain at risk for reinfection because protective memory T cells do not form. Moreover, it's not the organism itself that kills, but the body's inflammatory response to the infection."

In 2012, Bucala, whose research focuses on the relationship between protective immune responses and immunopathology, published a paper showing that the function of PMIF is to kill memory T cells. The next step was to develop a vaccine that would inhibit PMIF activity, allowing the body to attack the parasite and generate a natural immune response to the disease.

A former postdoctoral student in Bucala's lab, Andrew Geall, PhD—previously RNA vaccine platform leader at Novartis Pharmaceuticals and now at Replicate Bioscience—suggested using a novel RNA technology as the vaccine platform.

Self-amplifying RNA to the rescue

The mRNA (messenger RNA) vaccines so prominent in the news during the COVID-19 pandemic work differently from traditional vaccines. Rather than introducing a small amount of pathogen (live attenuated or inactivated) or one of its proteins into the body to trigger immunity, mRNA teaches cells how to make a specific protein to create a protective immune response against infection. Bucala and Geall created their antimalarial vaccine on a second-generation RNA platform: self-amplifying RNA (saRNA).

Self-amplifying RNAs contain the "teaching" vaccine mRNA plus a code for an enzyme that allows the genetic material to self-replicate inside the vaccinated cell over several weeks. "Replication means that you can inject much smaller amounts of vaccine to achieve adequate immunization," Bucala says, "making the vaccines cheaper and easier to distribute—much more accessible for the developing world." The replication function of saRNA is also critical because it activates intracellular immune pathways necessary for the generation of long-term protective memory T cells.

To test their vaccine, Bucala's group injected it into mice infected with a murine strain of malaria. In 2018, Bucala and Geall published the results in *Nature Communications*, showing that the saRNA-vaccinated rodents combatted a series of malaria infections better than those that received a control vaccine. "In the mouse models we used," Bucala says, "we saw an unprecedented level of protection against malaria by using saRNA for the MIF antigen."

While more research is needed—for instance, in determining the length of vaccine efficacy—Bucala is hopeful. Yale was granted a patent for this approach in 2021, paving the way for continued development and ultimate testing in human clinical trials. "We've been working on this vaccine for years," he says, "but the entire landscape has changed." He notes that one positive outcome of the COVID-19 pandemic has been widespread acceptance of the RNA vaccine platform with its potential for tremendous positive results, including the possibility of similar vaccines for other parasitic diseases. "What we have now is not just an improved iteration of an accepted approach but an entirely new strategy that targets the precise mechanism used by the parasite to subvert a person's immune response," he adds. Currently, Bucala is working with Oxford's Jenner Institute to further test the PMIF saRNA vaccine. Planning is also underway for testing against infection by *Plasmodium falciparum*, which causes the most lethal form of human malaria, in a trial in non human primates.

Overviews FROM THE VICE CHAIRS

Finance and Administration

Mark A. Holter, CMPE, CPA
Vice Chair, Finance & Administration

Finance

The department continues to grow and expand its reach with an operating budget of \$350 million.

The Blue Ridge Institute for Medical Research released its annual findings in February 2022. The Department of Internal Medicine earned a top 10 spot on the list with over \$141 million in funding from the National Institutes of Health—an increase of \$6 million from FY21. In addition, government and public sector funding increased during FY22. Overall, the department has approximately 890 active awards and 800–900 new proposals out for approval.

Clinical volume continues to grow year after year, with clinical work relative value units (RVUs) exceeding 1M units.

Administration

The size of the department's staff increased over the past year, with 436 staff working on administrative, finance, clinical support, or research roles.

There were additional changes within the business office leadership. In March 2022, Julie Parry was promoted to associate director of communications. The centralization of support services continued this year with the creation of a new associate director of administration position. Sarah Hagans, who had previously worked as operations manager in YSM's Department of Finance/Central Administration Unit, was hired for the new position in May 2022.



Susan Ardito



Grant Patterson



Cynthia Frank, PhD, RN



Sarah Hagans

Administration Workplace Survey Committee

During this fiscal year, the workplace survey committee started a Business Office Learning Series, an informal meeting designed to provide background on each team, its responsibilities, and how the team's work interacts with others in the business office. The group also launched an onboarding buddy initiative to help new members of the business office as they join the team. At the beginning of the summer, the committee also instituted a "No Meeting Friday" policy to provide the office with a large block of time to focus on work and projects.

Communications

The department communications team continued to extend its reach this year. The team organized to provide the administration, finance, clinical support, and lab staff with professional headshots. These headshots were then added to the website along with a new "Our Team" tab, which now features everyone who works within the department. During this fiscal year, the team also launched additional section publications.

In March, Amy Anderson was promoted to communications officer.

Department of Internal Medicine Service Excellence Awards

In June, Cynthia Frank, PhD, RN, clinical research nurse 3 (Infectious Diseases), and Susan Ardito, senior administrative assistant (Pulmonary, Critical Care and Sleep Medicine), were honored with Department of Internal Medicine Service Excellence Awards. These awards are presented annually at the spring Town Hall Meeting to recognize the outstanding attributes of one or more staff members of the Department of Internal Medicine at the Yale School of Medicine.



(l-r) Abhijeet Danve, MBBS, MD, MHS; Van Vu, PharmD; Vaidehi Chowdhary, MBBS, MD; Betty Hsiao, MD; and Lisa Suter, MD

Quality & Safety

Aldo Peixoto, MD
Vice Chair, Quality & Safety

The Department of Internal Medicine is dedicated to the ongoing improvement of quality and safety to provide the best possible patient care. The focus over the past year has been on building capacity and fostering a collaborative environment by aligning quality and safety efforts across the Department of Internal Medicine and Yale New Haven Health (YNHHS).

Several programs have expanded their reach, including the Graduate Medical Education (GME) Distinction Pathway in Health Equity, Quality Improvement, and Patient Safety. The pathway provides practical real-world education and experience for trainees interested in health care improvement, and is now offered to all residents and fellows. Developed by GME Quality and Safety Director Linda Fan, MD, faculty members Naseema Merchant, MBBS, and Michelle Hughes, MD, are key participants in the program's planning and structure.

The department launched its Quality Improvement Bootcamp in the fall of 2021. The multi-session course provided the foundation of quality improvement methodology. The curriculum was based on a course for trainees developed by Beth Emerson, MD, pediatric emergency medicine, and was adapted to include formative small-group discussions. The new format evolved into a GME course open to all faculty and trainees across YNHHS and Yale School of Medicine (YSM). The course, titled "The 2022–2023 Bootcamp in Health Equity and Quality Improvement," debuted in late fall 2022, and used a curriculum developed by Beth Emerson, MD; Aldo Peixoto, MD; Lou Hart, MD; and Linda Fan, MD.

A newer addition to programming is the monthly morbidity and mortality conference for resident physicians. Established in 2020 by Lloyd Friedman, MD, and former VA Chief Resident in Quality and Patient Safety (CRQS) Jadry Gruen, MD, the conference's aim is to foster a culture of safety for trainees by holding open dialogues on sensitive topics and cases without an attending present. This initiative is synched with the department-wide deployment of morbidity and mortality conferences in every section.

Another significant impact on quality and safety has been the expanded use of care pathways. The Care Signature enterprise across YNHHS is led by Deborah Rhodes, MD, and the Medicine Care Signature Council is chaired by Lynn Tanoue, MD, MBA. Multidisciplinary teams of experts determine processes and roadmaps for multiple inpatient and outpatient settings to standardize practice in care provision. The group decides on best treatment

for clinical conditions, and also builds pathways to improve process, efficacy, and safety. Since October 2020, 375 pathways have been launched—including COVID, mpox, heart failure, chronic obstructive pulmonary disease, pneumonia, acute kidney injury, and alcohol use disorders.

While there are many successes in the area of quality and safety, a noteworthy improvement was YNHHS's reduction in COPD readmissions from 26 percent to 20 percent from 2021 to 2022. The significant decrease in readmissions speaks to the collaboration and teamwork involved, including the work of key collaborators Adam Ackerman, MD; Evelyn Adekolu, MD; Olutayo Temitop Imevbore, MD; and Carolyn Rochester, MD.

In addition, the department has begun to observe strong results from the sponsored Quality Improvement grant projects in diverse areas—from screening for hepatitis B and tuberculosis in rheumatology patients receiving biological agents to monitoring of self-administered erythropoiesis agents and end-of-life discussions in oncology. The department continues to sponsor a yearly quality improvement grant competition in the spirit of supporting innovation in patient care. One of the grant winning teams is pictured above.

Overviews FROM THE VICE CHAIRS



Richard Kibbey, MD/PhD

Research

Barbara Kazmierczak, MD, PhD
Vice Chair, Basic Research

Harriet Kluger, MD
Vice Chair, Collaborative Research

Robert Soufer, MD
Vice Chair, Clinical Research



Harriet Kluger, MD

During the previous fiscal year, research leadership held two retreats focused on expanding the scope of research; creating prioritization for specific areas of exploration; and outlining the strategy for increased research infrastructure. Retreat participants identified four priority areas for the department's focus:

- Bioinformatics/data analysis
- Translational geroscience
- Program in immunometabolism
- Applied data science and precision medicine

As of late 2022, the initiatives in translational geroscience, bioinformatics/data analysis, and the program in immunometabolism are moving forward.

In September 2022, the Yale Claude D. Pepper Older Americans Independence Center launched a new pilot grant program focused on translational geroscience, and solicited letters of intent for projects to facilitate innovative and high-impact geroscience research, and establish or strengthen cross-disciplinary collaborations.

Research Space

Robert Soufer, MD, and the new departmental research vice chairs continue to partner with leaders across the school regarding the ongoing expansion of clinical and translational research space. Proposals have been submitted from strategic areas. In this past year the clinical research space at 135 College Street has increased by 4,400 square feet. The space has been remodeled to provide several dry bench workstations; clinical examination rooms; interview space; and accommodations for data management and storage.

New PhD Program in Translational Biomedicine

In recognition of the growing research expertise in clinical departments, the school has launched the Program in Translational Biomedicine, a new training initiative for PhD students. This program, co-led by Richard Kibbey, MD/PhD, from Endocrinology, and Megan King, PhD, from Cell Biology, supports the research training of PhD students interested in translational research. In addition, the program offers a track leading to graduate school appointment and the attendant ability to mentor graduate students for faculty in the department even if the faculty members do not have a secondary appointment in one of the basic science departments.

New Team Science Pilot Award Program

The Yale Office of Team Science launched a new program for YSM faculty who are developing large multi-component NIH grant submissions (e.g., P30, P50, P01, U01, U19, U54, and similar complex funding mechanisms). Principal investigators will be able to schedule a "studio" to convene a panel of experts to review proposals in the development stage. The department has made the use of this new program a priority.

New Leadership

In July, the department announced two new leaders in research: Barbara Kazmierczak, MD, PhD; and Harriet Kluger, MD. Kazmierczak became the new vice chair for basic research.

Her research interests include mechanisms of bacterial virulence, antibiotic resistance, and immune evasion. Under her leadership, YSM's MD/PhD Program has grown to be the fourth largest in the country. She will strengthen the basic science infrastructure and foster stronger connections between faculty within and beyond the department. Deepest appreciation to Lloyd G. Cantley, MD, who had served in that position for the past 15 years.

Kluger was named vice chair of collaborative research. This new leadership position was created to assist the department in facilitating interdisciplinary research within the Yale School of Medicine. Kluger directs the Yale Specialized Programs of Research Excellence (SPORE) in Skin Cancer, an example of the type of multi-project large grants that the department intends to pursue. She plans to expand what is being done in the laboratory into the clinic and vice versa, and increase the number and range of interdisciplinary investigations.

Looking Ahead

The department has prioritized the following areas to enhance clinical and translational research infrastructure: biostatistics and bioinformatics; and integrated EHR/genomic/biospecimen collection. The department is also working to improve post-award support, along with increasing support for junior investigators in such areas as the K-R transition, grant writing, and team science, along with establishing research forums to improve awareness and strengthen community. Plans to expand the Hospital Research Unit (HRU) are also being drafted.



Barbara Kazmierczak, MD, PhD

NEWS

Medication Results in More Than 20% Weight Reduction in Individuals With Obesity

People with obesity treated with a novel GIP/GLP-1 receptor agonist, tirzepatide, lost about 52 pounds on average, according to results of a new study that were published in *The New England Journal of Medicine*. The study, "Tirzepatide Once Weekly for the Treatment of Obesity," reports that highly significant weight reduction can be attained with tirzepatide.

"In this study, about nine out of 10 individuals with obesity lost weight," said Ania Jastreboff, MD, PhD, associate professor of medicine (Endocrinology) and pediatrics (Pediatric Endocrinology) at Yale School of Medicine and the lead author of the study.

SURMOUNT-1 was a Phase 3 trial investigating the efficacy and safety of tirzepatide. The study included 2,539 participants with obesity who were randomized to receive placebo, tirzepatide 5 mg, tirzepatide 10mg, or tirzepatide 15 mg for 72 weeks. Study participants on average had a body mass index (BMI) of 38 kg/m² and on average weighed 231 lbs. At the end of the study, those taking the 15 mg dose of tirzepatide had an average body weight reduction of 22.5%. Treatment with all three doses of tirzepatide resulted in substantial and sustained body weight reduction, the study's authors said. Side effects were primarily gastrointestinal, and included nausea, vomiting and diarrhea, and mainly occurred in the dose-escalation phase.

Jastreboff, the site-PI for SURMOUNT-1 at Yale, presented findings from the study at the American Diabetes Association Scientific Sessions in New Orleans on Saturday, June 4.

"These results are an important step forward in potentially expanding effective therapeutic options for individuals with obesity," said Jastreboff, who is the director of Weight Management and Obesity Prevention at the Yale Stress Center and co-director of the Yale Center for Weight Management. "Obesity should be treated like any other chronic disease—with effective and safe approaches that target underlying disease mechanisms; these results underscore that tirzepatide may be doing just that."

Currently, tirzepatide is not FDA-approved as a medication for the treatment of obesity. Tirzepatide was FDA-approved for the treatment of type 2 diabetes in May 2022, and is now commercially available for that use. The drug trial's sponsor, Eli Lilly, is working with the FDA on a timeline for approval of tirzepatide as a treatment for obesity.



Ania Jastreboff, MD, PhD

Goldman-Israelow, Shung are 2022 Iva Dostanic Award Recipients

For the recipients of the 2022 Iva Dostanic Physician-Scientist Trainee Award, patient care guides their scientific studies.



(l-r) Peter Aronson, MD; Benjamin Goldman-Israelow, MD, PhD; Dennis Shung, MD, PhD; and Gary Désir, MD

"It's inspirational to see Iva's legacy live on through the talented young people receiving this award in her name," said Peter S. Aronson, MD, the C.N.H. Long Professor of Medicine (Nephrology) and professor of cellular and molecular physiology, who oversees the award for YSM.

Shung arrived at YSM as an intern, and completed his internal medicine residency before joining the Digestive Diseases GI program as a fellow in 2017. In his first year as a fellow, he completed a systematic review of machine learning in GI bleeding, presenting his review at an international meeting in 2018 where it was designated a poster of distinction. He later developed a machine-learning model that was available to clinicians anywhere in the world so that they could use it to identify high-risk patients with GI bleeding. Shung's manuscript for this study was published in *Gastroenterology*, the highest-impact journal in the field.

"He will lead the next generation of researchers, using new and better techniques to advance the field," said Digestive Diseases Chief Loren Laine, MD, in his letter nominating Shung for the Dostanic Award.

Goldman-Israelow came to Yale School of Medicine as an intern in 2016 after receiving a PhD from Icahn School of Medicine at Mount Sinai, where his focus was on Hepatitis C. At Yale he was interested in gaining a better understanding of immunology while he continued research into the interactions between viruses and the immune system. In January 2020, as the virus that causes COVID-19 emerged, Goldman-Israelow developed university-wide protocols for pursuing SARS-CoV-2 research, and developed a mouse model for studying COVID-19, one of the first reports of this type of model for SARS-CoV-2.

"Our studies of COVID-19 patient immune dysfunction would not have been possible without Ben's expert ability to 'translate' between the clinical aspects of COVID-19 and our research," said Akiko Iwasaki, PhD, a Sterling Professor of Immunobiology and of Molecular, Cellular & Developmental Biology.

Erol Fikrig, MD, the Waldemar Von Zedtwitz Professor of Medicine and chief, Infectious Diseases, noted that Goldman-Israelow's "accomplishments and passion for medicine and research make him an outstanding candidate who epitomizes the ideal represented by the Iva Dostanic Award."

Shung and Goldman-Israelow will receive their awards and give talks about their research at the Department of Internal Medicine's Medical Grand Rounds on June 23.

Dennis Shung, MD, PhD, associate research scientist (Digestive Diseases), uses machine learning to identify patients most at risk from gastrointestinal (GI) bleeding. "How can we increase the time available for doctors to spend with patients? How can we make sure that providers are equipped to make the best decisions possible for their patients?" Shung said. "Machine learning tools can be used to improve the patient experience and enhance the hands-on presence of providers."

Benjamin Goldman-Israelow, MD, PhD, instructor and ABIM Physician-Scientist Research Pathway resident, arrived at the Yale School of Medicine (YSM) with a background in molecular virology. Caring for patients leads him to the scientific inquiries that can provide a better understanding of viruses, such as how they cause disease, and how scientists can create cures and vaccines to treat them. "I'm driven by my patients to understand the science," Goldman-Israelow said.

YSM's Department of Internal Medicine established the Iva Dostanic, MD, PhD, Physician-Scientist Trainee Award and Lecture in 2011 to recognize trainees who have a passion for science as well as clinical care—qualities exemplified by Dostanic, for whom the award is named.

Dostanic, a physician-scientist trainee at YSM, was accepted into the ABIM Physician-Scientist Research Pathway but delayed her training after she was diagnosed with ovarian cancer. While undergoing treatment, Dostanic was a research fellow in the Section of Pulmonary, Critical Care & Sleep Medicine (Yale-PCCSM), but unfortunately, her cancer returned. She died in December 2011, less than a week after receiving the first Iva Dostanic, MD, PhD, Physician-Scientist Trainee Award.

Since her death, Dostanic's parents, Dragana and Predrag Dostanic, have dedicated their lives to supporting physician-scientist trainees in the internal medicine department.

Overviews FROM THE VICE CHAIRS



Hilary Cain, MD

Veterans Affairs

Daniel Federman, MD
Vice Chair, Veterans Affairs

The Department of Internal Medicine has 97 faculty, trainees, and staff members working at the VA Connecticut Healthcare System (VACHS) in West Haven, Conn.

Allergy and Immunology

The Section of Allergy and Immunology has one faculty member, Christina Price, MD, who provides services through e-consults, telehealth, and in-person consultations. Drug allergies are addressed, and varied services that include management of immune deficiency in immunoglobulin infusions as well as allergen immunotherapy are provided. The section's areas of excellence include clinical research in adults with immune deficiency.

Cardiovascular Medicine

The section includes 11 full-time and nine part-time faculty, with an additional 12 advanced practice registered nurses. VACHS has a long tradition of cardiac surgery and interventional cardiology (coronary and peripheral artery angioplasty), with a large referral region (eastern New York, western Massachusetts, and Rhode Island) and a track record of excellent outcomes. In expanding the portfolio of advanced cardiac therapies, the VA central office has approved West Haven as a site for left atrial appendage occlusion (LAO) procedures, and conducted a site visit for potential approval of transcatheter aortic valve replacement (TAVR).

To serve a growing population of older and more medically complex patients with heart disease, VACHS has had a busy clinic for patients needing nonsurgical valve procedures for the past five years. The clinic is run jointly with cardiac surgery to provide convenience and improve coordination of care for this cohort of patients. The volume of patients and the complexity of the cardiac diagnoses has reached the point of having a contracted physician from Yale New Haven Hospital's Structural Heart and Valve Disease Program seeing patients in this clinic. An advanced practice provider has also been hired. LAO procedures are expected to begin in early 2023, with the completion of the TAVR demonstration simulation in early 2023 as the last step in approval of the TAVR program.

What began pre-COVID as a small opportunity to partner with the Hudson Valley VA has now blossomed into a large and ever-expanding virtual care program. In June 2019, S. Elissa Altin, MD, responded to the appeal of a podiatrist who was frustrated by sending many of her patients with foot wounds on long bus trips to the Bronx VA to see a vascular surgeon. Altin travelled to Hudson Valley, taught a technician to use a vascular Doppler, and set up a live camera joint clinic so that she could examine a patient's foot wounds from her office in Connecticut. This experience led to a busy clinic that provided a convenient local experience for the patient and the treating provider. This model of care has benefitted the health care system and stimulated considerable nationwide interest during the COVID pandemic. Altin's innovation quickly led to other ideas about extending VACHS physician expertise to other relatively underserved VA facilities. Altin's remote vascular clinic now serves both Hudson Valley and Central Western Massachusetts.

In collaboration with the VA Clinical Resource Hub program, a program for remote cardiac electrophysiology care for patients with pacemakers and automated implantable cardioverter-defibrillators (AICDs) has been launched at the Manchester, New Hampshire, VA. Using telemedicine, expert physicians and APRNs from West Haven are able to remotely monitor device function, adjust device parameters, and optimize care for about 130 cardiac patients in Manchester who would otherwise be referred to community physicians. This innovative program is unique to New England, and serves to keep care within the VA system; improve care coordination; and reduce cost. Ideally, this program will be replicated for cardiac device patients in western Massachusetts within the next year.

Overviews FROM THE VICE CHAIRS

New programs in preventive cardiology and coronary physiology have been a section highlight over the last year. The prevention program has expanded care and intervention to those patients at highest risk of heart disease, partnering with Health Psychology and Endocrinology (lipid and diabetes management) to devise a comprehensive care model. Over the last year, approximately 100 patients have gone through an extensive screening/counseling program and/or cardiac rehab. The program also has a nascent academic arm, generating four abstracts and manuscripts in the last 12 months.

In coronary physiology, Samit Shah, MD, PhD, is the principal investigator for a multicenter study to understand the common clinical problem of patients with typical chest pain but without obstructive atherosclerosis—also known as ischemia with no obstructive coronary artery disease (INOCA). Using a protocol developed and refined in the West Haven VA catheterization labs, Shah is now running the Discover INOCA registry, using invasive methods to characterize dysfunctional aspects of coronary physiology in this challenging group of patients. Robert Soufer, MD, who has devoted his career to understanding the relationship between mental stress and heart disease, is applying these same invasive methods to understand changes in coronary physiology during mental stress—a program unique to VACHS catheterization laboratory.

Endocrinology

VACHS Endocrinology is staffed by six faculty members (with a total of 2.5 FTE) who provide endocrine care for veterans in outpatient clinics in West Haven and Newington, and supervise endocrinology fellows in their longitudinal clinic.

Two faculty members, Section Chief Varman Samuel, MD, PhD; and Daniel F. Vatner, MD, PhD, have their own independent labs. Ana Luisa Perdigoto, MD, PhD, and Diana Athonvarangkul, MD/PhD, are junior investigators. Lisa Parikh, MD, and Grace Lee, MD, bring clinical expertise in endocrine subspecialties (e.g., obesity medicine, transgender care, and bone and thyroid diseases) to ensure outstanding health care for veterans and a comprehensive educational experience for trainees. Taken together, faculty members in this section produced 16 publications in FY2021/22.



Guadalupe Garcia-Tsao, MD

Samuel is currently serving on the VA's Clinical Practice Guidelines Committee for Diabetes. The section recruited Athonvarangkul this year to replace Barbara Gulanski, MD, MPH, who retired from VACHS after more than 20 years of dedicated service and leadership. Parikh and Vatner expanded their clinical expertise to develop specific roles in obesity medicine and clinical lipidology. With support from the VA, these roles could be added to the Clinical Resource Hub to make VACHS a regional center for these endocrine subspecialties.

Gastroenterology / Liver

Fourteen faculty members in digestive diseases work, teach, and train fellows and residents at VACHS. Led by chief Tamar Taddei, MD, this group published 88 peer-reviewed original research studies, eight editorials, and six separate society guidelines, along with 10 funded grants during FY2022. Two are high-profile VA Cooperative Study Program grants focused on colorectal cancer screening (Petr Protiva, MD, MPH, is the local site investigator) and hepatocellular carcinoma (Taddei is study co-chair). Several faculty members serve as associate editors of high-impact publications: Guadalupe Garcia-Tsao, MD, *The New England Journal of Medicine*; Wajahat Mehal, PhD, MD, *Journal of Hepatology*; Taddei, *American Journal of Gastroenterology*; Protiva, *BMJ Open Gastroenterology*; and Gyanprakash Ketwaroo, MD, *AGA GI & Hepatology News*.

These clinicians and researchers have received significant recognition for their careers and service: Garcia-Tsao received the 2021 Distinguished Scientific Achievement Award from the American Liver Foundation. Simona Jakab, MD,

and Taddei serve on the VA National GI and Hepatology Program's Hepatology Field Advisory Board. Jakab directs a nationwide lecture series for the VA Specialty Care Access Network; and Joseph Lim, MD, directs the VACHS Liver Update conference. Mehal and Jonathan Dranoff, MD, serve as regular members of NIH NIDDK study sections. Garcia-Tsao serves as a member of the AASLD Foundation Board. Loren Laine, MD, serves as chair of the NIH-funded Fecal Microbiota Transplantation National Registry Steering Committee and of the Digestive Disease Week Council. Taddei was elected treasurer of the AASLD, a position she assumed in January 2023.

Two junior faculty have joined the section: Amy Ogurick, MD, director of GI Clinics and GME site director for the Digestive Diseases Fellowship Program; and Louise Wang, MD, recipient of a five-year VA Career Development Award for the study of pancreatic cancer risk.

General Medicine

The section comprises 34 primary care, 11 hospital medicine experts, and four researchers, led by section chief Lori Bastian, MD, MPH.

Eight section faculty members were promoted to new roles this year at the VA Connecticut Healthcare System. They are:

- Seonaid Hay, MD, associate chief of staff for Education
- Cindy McNamara, MD, associate program director for Internal Residency, traditional track
- Jeffrey Kravetz, MD, chief of Primary Care



Varman Samuel, MD, PhD

- Rebecca Brienza, MD, MPH, chief of Primary Care, Firm A/COE
- Juliette Spelman, MD, chief of Primary Care, Firm B
- Matthew Zegarek, MD, associate chief of Primary Care, Firm A/COE
- Christopher Ruser, MD, associate chief of Medicine
- Jin Xu, MD, chief of Medical Consultative Services

This year, the VA Health Services Research & Development postdoctoral fellowship was up for renewal. Led by Bastian, the programmatic funding request was successful. In addition, Caroline Falker, MD, was given a mobile medical unit to expand care for VACHS's Homeless Patient Aligned Care Team.

In collaboration with the Harvey and Kate Cushing Professor of Medicine (Infectious Diseases) Saad Omer, MBBS, MPH, PhD, a working group of section members focused on combating vaccine hesitancy. The team of Spelman, Bastian, Ruser, and Kravetz developed electronic medical record-based tools capitalizing on VA data to reach unvaccinated veterans. They incorporated evidence-based language to assist with documentation and linking to easy vaccination options. Their efforts were published in the *Journal of General Internal Medicine*, one of the 25 publications from section faculty members this year.

Kravetz led a multidisciplinary workgroup with primary care, emergency medicine, and pharmacy personnel to create an outpatient remdesivir infusion clinic and then triage oral medications for treatment of COVID-19.

Minhee Sung, MD, was awarded two new grants related to her work with veterans with opioid use disorder and the use of buprenorphine.

Hematology / Medical Oncology

Seven faculty members care for patients with cancer and hematologic disorders at VACHS. The section has a robust clinical trials program and is a popular rotation for fellows and residents.

The VACT Hematology/Medical Oncology clinical trials program is highly active within the National Cancer Institute's (NCI) National Clinical Trials Network (NCTN), and continues to be the top enrolling site for NCTN studies across the Department of Veterans Affairs. Michal Rose, MD, is also the lead oncologist for the VA New England Healthcare System (VISN 1) clinical trials network and the SWOG cancer research network storefront.

VACHS is a hub site for the Lung Precision Oncology Program, a partnership between the National Oncology Program Office and the Office of Research and Development to optimize lung cancer care. The primary co-investigators are Hilary Cain, MD, and Rose. This grant has enabled the lung cancer clinical trials portfolio to expand, and has allowed the Section of Hematology/Oncology to mentor other New England VAs as they build their own clinical trials program.

Over the past year, hematology/oncology faculty were recognized for their excellence. Herta Chao, MD, PhD, is the PI on three federal grants: NAVIGATE (NCI and VA Interagency Group to Accelerate Trials Enrollment); a VA Merit award; and an R01 to study the impact of androgen deprivation therapy on cognitive function in men with prostate cancer. Edward Perry Jr., MD, gave the keynote address at the Association of VA Hematologists/Oncologists annual meeting. In addition, Perry was accepted into the Yale Master of Health Science-Medical Education Pathway degree program. He received a Department of Internal Medicine education grant to support his project developing a novel opioid pain management

curriculum for oncology fellows. Alexander Pine, MD, PhD, was awarded a Frederick A. DeLuca pilot grant to study proteins and cytokines in patients with antiphospholipid syndrome. Talib Dosani, MD, was appointed to the national VA guidelines committee for hematologic malignancies.

Hospital Medicine

This team has grown to 11 hospitalists who cover 100 percent of the inpatient medicine service as of 2021, and is led by Chief Craig Gunderson, MD. Most of the team spends over six months of the year with learners through teaching courses like the Medical Coach Educator course; as clerkship directors for YSM Internal Medicine or PA student rotations; or as mentors for the VA Chief Resident in Quality and Safety (CRQS) program. New educational roles have been added this year: Benjamin Cherry, MD, became clerkship director for the YSM subinternship rotations; Shaili Gupta, MBBS, was named associate program director (APD) for diversity, equity, and inclusion; and Benjamin Rodwin, MD, is the new associate program director for preliminary residents.

During the past year, members of the Hospital Medicine team published 20 articles, five as senior authors and 10 original research manuscripts. Gupta, Gunderson, and Naseema Merchant, MBBS, were each invited to give poster or oral presentations and/or talks at national conferences.

Gunderson and Jurgen Holleck, MD, were principal investigators on large clinical trials that concluded in September 2022. Gunderson is the PI on the "Variation in Management of Hospitalized Patients with Alcohol Withdrawal:



Lauren Cohn, MD

Overviews FROM THE VICE CHAIRS

A Multicenter Retrospective Cohort Study.” Holleck’s trial, “Risk of Serious Adverse Gastrointestinal Events Associated with Use of Potassium Binders,” was run through the VA HSR&D SWIFT review.

Gunderson was named the new associate chief of staff, Hospital Operations, for VACHS for 2021-2022.

Infectious Diseases

The section is led by Chief Richard Sutton, MD/PhD, who has been on medical leave; Louise-Marie Demby, MD, MS, MBA, has served as acting chief in his absence. The ID team has eight physician members: Rupak Datta, MD/PhD, MPH; Demby; Brinda Emu, MD; Ann Fisher, MD; Sheela Shenoi, MD, MPH; Sandra Springer, MD; Sutton; and Joseph Vinetz, MD. In addition, the section has one full-time physician assistant (PA) and several adjunct physicians.

The team runs the inpatient ID consultation service on the VACHS West Haven campus, along with two outpatient consultation clinics per week and two HIV clinics (which include one ID fellow HIV continuity clinic). There is one combined ID/HIV clinic per week at the VACHS Newington campus staffed by Springer, and an additional Newington HIV clinic staffed by the HIV PA. Moreover, the consultation service fulfills all the e-consults for the West Haven facility, and occasionally other sites within VISN1 that don’t have an ID consultant. The consultation service and clinics serve as a training site for Yale ID fellows; they provide an opportunity for the fellows to maintain care continuity between inpatient and outpatient settings, and treat infectious diseases in unique veteran populations (e.g., Community Living Center, residential mental health).

The VACHS Hospital Epidemiology/Infection Prevention and Antimicrobial Stewardship programs are directed and run by section physicians. Demby is chief of Hospital Epidemiology/Infection Prevention; Fisher is the associate hospital epidemiologist; and Datta is the part-time assistant hospital epidemiologist. The Infection Prevention Program covers inpatient and outpatient services (including community-based outpatient clinics across Connecticut), the Community Living Center, and other residential programs. Fisher and Datta direct the VACHS Antimicrobial Stewardship program. Both programs offer training and

research opportunities for ID fellows in their second and third fellowship years.

Sutton, Vinetz, Springer, Emu, and Shenoi have basic, translational, and clinical science laboratories at Yale School of Medicine in which they investigate various aspects of infectious diseases. Some of these laboratories are at least partly VA-funded.

Two section faculty were awarded honors related to their VA work this year. Springer received the Avant-Garde Award for HIV/AIDS and substance use disorder research, a focus of her VA-based research. Datta was awarded the Society for Healthcare Epidemiology of America (SHEA) Epi Project Competition grant to study antibiotic stewardship within VA home-based primary care.

Kidney Medicine

Led by Susan T. Crowley, MD, MBA, the Kidney Medicine section has nine clinicians who provide consultations for inpatients around the clock at the West Haven facility, and maintain clinics for patients who received kidney transplants, have hypertension, or require dialysis in an outpatient setting. In addition, the clinicians train patients and their caregivers on peritoneal dialysis.

The team runs clinics in person or via telemedicine in both West Haven and Newington. In conjunction with VA Boston HCS, Justin Belcher, MD, PhD; Robert Safirstein, MD; and John Chang, MD, operate three national telenephrology clinics currently serving underserved veterans across New Hampshire, Oklahoma, and eastern Colorado. Patients in Montana and Wyoming will be added later this year. The section also completes hundreds of clinical e-consults annually in addition to a dedicated e-consult clinic for nephrology-restricted medication renewals.

To continue the advancement of health equity, the section, pathology, and lab medicine were leaders in the early adoption and implementation of the race-free CKD-EPI 2021 eGFR equation across the VHA, which was enacted in January 2022. Namrata Krishnan, MBBS, serves as the section’s vice chief of diversity, equity, and inclusion, and cares for patients at the VA.

The section has earned national attention, with Crowley receiving the 2022 David M. Hume Award, the highest award from the National Kidney Foundation; and Mark Perazella, MD,



Namrata Krishnan, MBBS

receiving the 2022 Robert G. Narins Award from the American Society of Nephrology for education in October 2022. Crowley serves as executive director of the Veterans Health Administration Kidney Medicine (Nephrology) Program. David Geller, MD/PhD, is the medical director of both the VA New England Dialysis and the VA CT Dialysis Programs.

Members of the section are presently conducting two large clinical trials. The National Institute of Diabetes and Digestive and Kidney Diseases-funded HOPE Study is a trial of innovative nonpharmacologic and pharmacologic treatment of chronic pain in people who require maintenance hemodialysis. Crowley is the VA Consortium co-PI, and Belcher is the site PI. The Incremental Hemodialysis for Veterans with incident ESRD (InchVets) Study tests the efficacy of patient-centered hemodialysis initiation strategy through a multisite trial. Geller and Crowley are co-site PIs.

Occupational Medicine

The Occupational Environmental Medicine section is led by Chief Brian Linde, MD, MPH, and has three physician members: Efa James, MD, MPH; Richard Smith, MD; and Linde. In addition, the section has one full-time physician associate (PA) and one registered nurse.

The team runs the Employee Occupational Health service as well as the Occupational and Environmental Medicine consultation service. The Employee Occupational Health service is responsible for the management of all administrative medical exams (including new employee onboarding), medical surveillance, and work injuries. In addition, the service continues to work very closely with Hospital Epidemiology/Infection Prevention on COVID-19 response.

The Occupational and Environmental Medicine consultation service, which addresses clinical questions related to health effects of military/occupational/environmental exposures, is preparing to expand the service following passage and signature into law of the Honoring Our Promise to Address Comprehensive Toxics (PACT) Act in August 2022. The PACT Act addresses health care, presumption of service connection, research, resources, and other matters related to veterans who were exposed to toxic substances during military service.



Christina Price, MD

Treating veterans with histories of toxic exposures is now one of the six top-level VHA priorities.

Linde recently served on the National Academies of Science, Engineering, and Medicine’s Committee on Guidance on PFAS Testing and Health Outcomes. PFAS testing refers to analyzing drinking water for contaminants known as per- and polyfluoroalkyl substances. The committee’s report is available on the National Academies website. Linde is also the associate program director for the Yale Occupational and Environmental Medicine fellowship training program.

James serves as lead physician of Employee Occupational Health for VISN1 (the New England Region of VHA) and the lead environmental health physician for VA Connecticut. She is also a member of the National VHA Change Advisory Board for Employee Occupational Health, and serves as a delegate to the New England College of Occupational and Environmental Medicine within the American College of Occupational and Environmental Medicine’s legislative branch. James has delivered many exciting education initiatives, teaching medical, physician associate, and nursing students on clinical rotations; she most recently collaborated with Addiction Medicine on the highly successful Pain, Opioids, and Worker Wellness CME Workshop.

The service was also pleased to recruit Richard Smith, MD, this fall. Smith completed his residency training with the Yale Internal Medicine Primary Care Residency Program and his fellowship training with the Yale Occupational and Environmental Medicine Program. During his fellowship training, Smith worked with the Connecticut Department of Public Health on its campaign to raise awareness about contaminants in well water. He also collaborated with the Post-COVID Recovery Program at the Winchester Center for Lung Disease studying patients’ return to work following COVID infection. He has also been a critical partner with the Yale Occupational and Environmental Medicine Program in immunological surveillance of worker populations throughout the COVID-19 pandemic.

Pulmonary, Critical Care and Sleep Medicine

Section Chief Hilary Cain, MD, continues to serve as co-lead PI for the Lung Precision Oncology Program (LPOP) with Michal Rose, MD (hematology/oncology VA chief). The VA’s goal is to become a model of excellence for precision oncology. Priorities include increasing access to lung cancer screening, clinical trials, and biomarker testing. The award was a joint application between pulmonology and oncology (PIs Cain and Rose) and provides support for a clinical core (clinical coordinator, Kathryn Lerz, APRN) and research core (research coordinator, technician) for up to five years.

Lauren Cohn, MD, directs the Biologics and Advanced Therapeutics in Airway Diseases in Pulmonary. All asthmatic veterans being considered for biologic therapy by a pulmonary provider are referred for evaluation using the e-consult process. Faculty and fellows are educated about severe asthma, therapeutic options, and the safety and monitoring of biologics for asthma; and this oversight ensures the appropriate use of therapies. Oversight of the asthma biologics program ensures that pulmonologists work closely with the clinical pharmacists and nursing staff to educate veterans about various therapeutic options and indications, and to review protocols for drug delivery and monitoring.

Charles Dela Cruz, MD, PhD, was recently awarded a VA Merit award for analyzing the role of innate immune mediated pathways in driving lung inflammation, injury, and fibrosis during smoking exposure; in viral influenza infection; and in patients with COPD. He also continues to be supported by the U.S. Department of Defense for his work on pulmonary infections.

Edward Manning, MD, PhD, received multiple honors, most recently a two-year VISN1 Career Development Award. Other awards include a three-year \$600,000 grant from the Additional Ventures Single Ventricle Research Fund mechanism; a National Institute on Aging Butler-Williams Scholar Award; Yale Pepper Center grant recipient and scholar; and the RCCN/AFAR Measuring Biologic Aging Workshop travel award.

Kathleen Akgün, MD, MS, VA Medical ICU director, continues as a core leader for emerging areas of health services research in the Pain

Research, Informatics, Multimorbidities, and Education (PRIME) Center. She also collaborates closely with Amy Justice, MD, PhD, (Section of General Medicine) and the Veterans Aging Cohort Study as well as with Shelli Feder, PhD, APRN (Yale School of Nursing.) Akgün is completing her final year as chair of the Ethics and Conflict of Interest Committee for the American Thoracic Society, and has mentored learners and strengthened relationships with clinical and research leaders to advocate for equitable and accessible pulmonary care.

Rheumatology

Over the past year, several of the rheumatology section faculty members have continued to work to expand clinical services for veterans and educational programs for trainees from Yale and the University of Connecticut (UConn). In particular, they continue to provide outstanding educational training for Yale and UConn rheumatology fellows in musculoskeletal ultrasound. Carmen Pagan, MD, obtained USSONAR Musculoskeletal Ultrasound certification in June 2022, and opened an ultrasound/procedures clinic in West Haven in the summer of 2022.

Section Chief Evelyn Hsieh, MD, PhD, and Lisa Suter, MD, have been recognized nationally to serve as chairpersons for committees and subcommittees of the American College of Rheumatology (ACR), Suter as co-chair of the Quality Measures subcommittee, and Hsieh as chair of the Global Engagement Special Committee and co-chair of the Strategic Planning Task Force. In addition, Suter is a member of the American Academy of Orthopedic Surgeons Patient-Reported Outcomes Task Force.

The section has continued to be productive in research both at the VA and beyond, with new NIH funding obtained within the past year for VA-related projects.

Hsieh, together with Julie Womack, PhD, from the Yale School of Nursing, obtained a R01 supplement for their project titled “Use of Optical Character Recognition (OCR) to Enable AI/ML-Readiness of Data from Dual-Energy X-ray Absorptiometry (DXA) Images.” Hsieh also received a supplement from CMB for “Creation of a Global Health Pre-Departure Orientation Program for CMB GHLDP Fellows.”



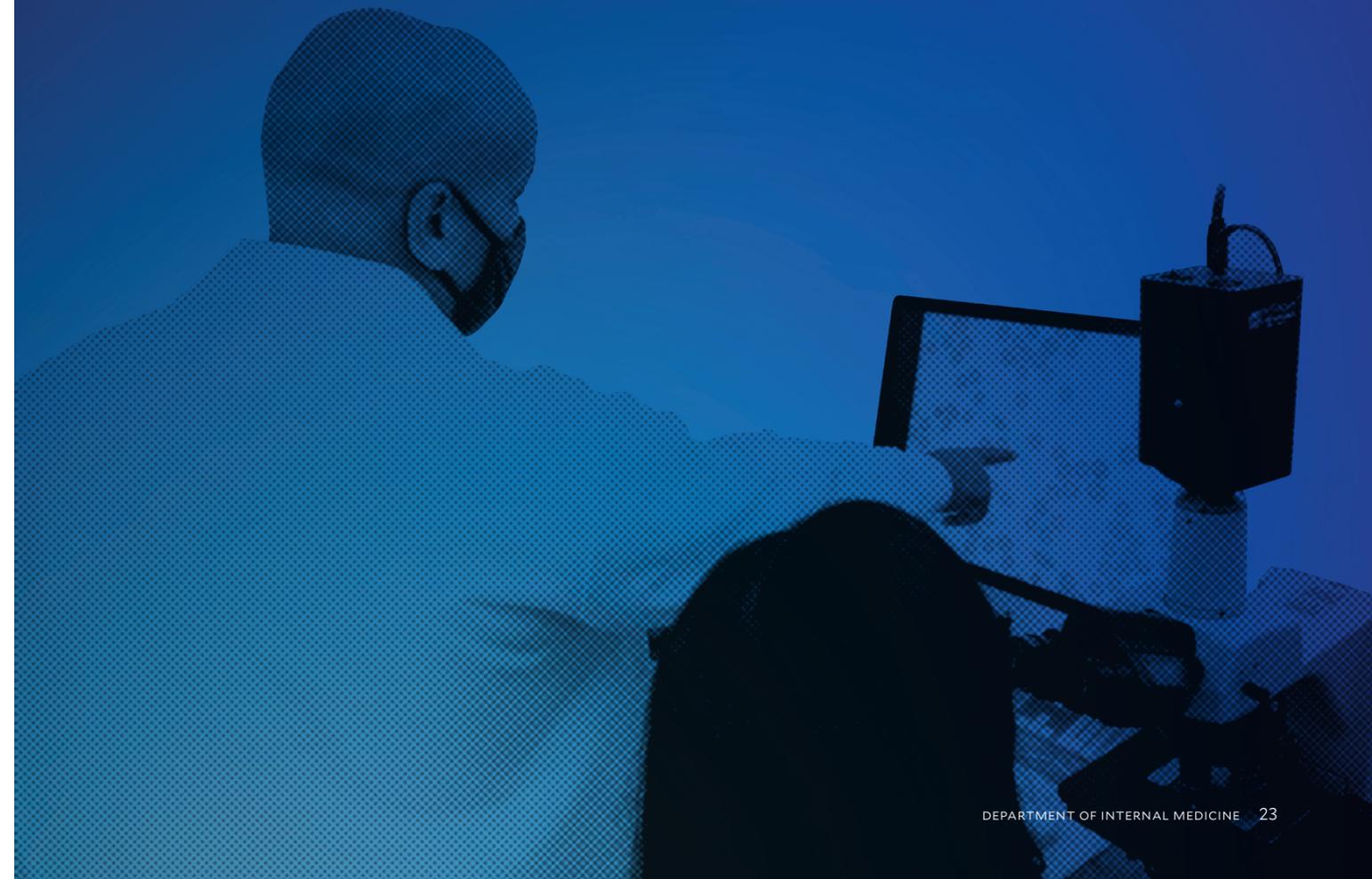
HONORING
Those we lost this year

Thomas Duffy, MD
Peter Harvey Maher, MD
Robert Sideleau, RN
Laura M. Whitman, MD
Barry L. Zaret, MD

Section

UPDATES

The Department of Internal Medicine consists of the Office of the Chair, a centralized business office, and 11 academic sections, each with its own administrative structure. Over the past five decades, these sections, through their clinical, educational and research activities, have gained national and international prominence.



Cardiovascular Medicine

ERIC J. VELAZQUEZ, MD SECTION CHIEF
NIHAR DESAI, MD, MPH CLINICAL CHIEF
DANIEL PRICE, MD CLINICAL CHIEF



Mariana Budge and Carlos Mena-Hurtado, MD

Research

The current research portfolio of Cardiovascular Medicine includes dozens of active grant awards supported by nearly \$200 million in total funding, including over \$8 million in new funding during the past year, from the National Heart, Lung, and Blood Institute, the National Institute of Diabetes and Digestive and Kidney Diseases, the Doris Duke Charitable Foundation, and the American Heart Association, among others. Michael Nanna, MD, MHS, is the principal investigator on the randomized trial, “A Trial Comparing the Effectiveness and Tolerability of Medications in Older Adults with STABLE Angina and Multiple Chronic Conditions: LIVE BETTER” which was selected for a \$7 million funding award by the Patient-Centered Outcomes Research Institute to study coronary artery disease in older adults with multiple chronic conditions.



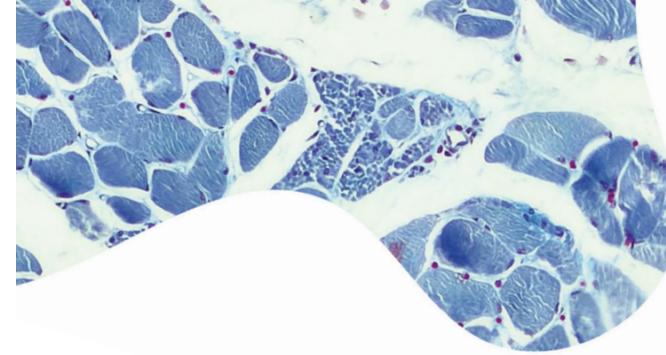
Norrisa Haynes, MD, MPH

Education

The Section of Cardiovascular Medicine offers training programs in general cardiovascular medicine, as well as subspecialty training in adult congenital heart disease, advanced heart failure and transplantation, cardiac imaging, electrophysiology, interventional cardiology, cardiology, and research fellowships. Several programs offer robust T-32 postdoctoral fellowship training programs in vascular outcomes research and multi-modality molecular and translational cardiovascular imaging, imaging technology, and image-guided therapeutic interventions to identify novel targets for future interventions. Several undergraduate researchers participated in a fellowship program funded by the American Heart Association, now in its second year. Veer Sangha '23 was recognized by the American Heart Association for his work on ECG Dx©, a promising research tool that uses AI to detect atrial fibrillation and other heart rhythm and conduction disorders.



Katherine Clark, MD, MBA



This year also saw the growth of core and advanced fellowship training programs, with 43 accomplished fellows who continue to shape the practice of medicine for future generations. Jiun-Ruey Hu, MD, MPH, and Jia Wei Tan, MD, were recognized by the American Heart Association for their interactive consultation tool called GDMT for Everyone. Two fellows, Ricardo Avendaño, MD, and Amarnath Annapureddy, MD, completed the Fellows as Medical Educators (FAME) certificate course. Five graduating fellows in the Section of Cardiovascular Medicine were also promoted to faculty status: Antonio A. Giaimo, MD; Attila Feher, MD, PhD; Jennifer M. Kwan, MD, PhD; Katherine Clark, MD, MBA; and Samuel W. Reinhardt, MD.



Parul Gandhi, MD, and Edward Miller, MD, PhD

Clinical Work

The section is committed to ensuring that the appropriate diagnostic technology, expertise, and preventive measures are available for patients. In the current digital era, guidelines have been established to ensure quality and equity for the telehealth program and other services.

Recent milestones include the launch of the Sports Cardiology Program, which offers a multidisciplinary approach to the identification and treatment of potentially life-threatening cardiac abnormalities in athletes. The Heart Failure Program, led by Tariq Ahmad, MD, MPH, celebrated the 500th heart transplant at Yale New Haven Hospital (YNHH) Heart and Vascular Center, and the introduction of donation after circulatory death (DCD) transplant—a U.S. Food and Drug Administration (FDA)-approved method of heart transplantation that greatly expands the number of viable donor hearts. In addition, the section launched a novel blood pressure screening program in collaboration with the American Heart Association. The YNHH Barbershop Blood Pressure Program in New Haven is directed by Erica Spatz, MD, MHS, and dedicated staff from the Preventive Cardiovascular Health Program. Last, the Structural Heart Program under the leadership of John K. Forrest, MD, received the Mitral Valve Repair Reference Center Award from the American Heart Association and the Mitral Foundation for excellence in mitral valve repair surgery.



Erica Spatz, MD, MHS

Diversity, Equity, and Inclusion

Lauren A. Baldassarre, MD, is the vice chief for Diversity, Equity, and Inclusion (DEI) in the Section of Cardiovascular Medicine. She works closely with the section chief to strengthen the recruitment of members of groups underrepresented in medicine and to bolster clinician well-being. In the past year alone, the section has welcomed over 30 new faculty who enrich the department and expand service to the greater community.



Michael Nanna, MD, MHS

Digestive Diseases

LOREN LAINE, MD SECTION CHIEF
JOSEPH LIM, MD CLINICAL CHIEF (LIVER)
HAMITA SACHAR, MD CLINICAL CHIEF (GASTROENTEROLOGY)



(l-r) Wajahat Mehal, MD, DPhil; James Boyer, MD; Guadalupe Garcia-Tsao, MD; Mario Strazzabosco, MD, PhD; Michael Nathanson, MD, PhD; and Yasuko Iwakiri, PhD

Celebrating 75 Years of Hepatology at Yale

The Yale Liver Center is one of the premier research centers for hepatology in the country, and one of only three such centers sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases. First supported by the NIH in 1984, the Yale Liver Center was recently funded for another five-year period. Yale celebrated “75 Years of Hepatology” in February 2022 with a day-long event featuring international leaders in the field. Among its many significant accomplishments, the Yale Liver Center has supported the development of a more effective technique for diagnosing spontaneous bacterial peritonitis, an infection of the abdominal fluid that affects many patients with cirrhosis; the discovery that the microbiome can affect the progression of fatty liver disease to nonalcoholic steatohepatitis; and devised a method for measuring the amount of pressure build-up in the liver due to portal hypertension that is now considered the gold standard. Yale Liver Center leadership is pictured above.



Michelle Hughes, MD

Gastroenterology Hospitalist Program

The new Gastroenterology Hospitalist Program has greatly improved inpatient care and fellowship training. Yale started introducing these physicians across Yale New Haven Health in 2019. As emerging leaders in this new field, Yale Digestive Diseases faculty members led the first national conference on inpatient gastroenterology in December 2021. Yale’s GI hospitalists provide increased efficiency in endoscopic operations, improve interdisciplinary care coordination, and bring specialized knowledge and expertise to the management of GI emergencies and complex gastrointestinal illnesses.

Honors and Awards

Tamar Taddei, MD, was named chief of Digestive Diseases at the Veterans Affairs Connecticut Healthcare System in 2022. Taddei also is the director of the Liver Cancer Program at VA Connecticut. Taddei’s research focuses on outcomes in liver diseases, specifically cirrhosis and liver cancer, both of which are prevalent in the VA population. She takes over from Guadalupe Garcia-Tsao, MD. Internationally recognized, Garcia-Tsao received the 2021 Distinguished Scientific Achievement Award from the American Liver Foundation.

Silvia Vilarinho, MD, PhD, has been appointed associate director of the Yale Internal Medicine Physician-Scientist Training Program. As a program leader, she will assist in the recruitment and training of the next generation of physician-scientists. Vilarinho uses genetics, genomics, and human samples to investigate the molecular basis of liver diseases of unknown etiology.

Michael Nathanson, MD, PhD, director of the Yale Liver Center, was honored for his sustained scientific contributions to the field of liver disease and the scientific foundations of hepatology by the American Association for the Study of Liver Diseases (AASLD) in November 2022. Nathanson, previously the section chief of Digestive Diseases at Yale for 15 years, received the AASLD’s Distinguished Service Award.



Anil Nagar, MD

Renaming the Klatskin/Boyer Lecture

For 32 years, the Section of Digestive Diseases and the Yale Liver Center have honored Gerald Klatskin, MD, who founded the Liver Study Unit at Yale School of Medicine in 1947, with a lectureship in his name. In 2022, the lectureship added the name of James L. Boyer, MD, who trained with Klatskin. Boyer is the founder and director emeritus of the Yale Liver Center and oversaw the national and international expansion of Yale Hepatology.



Tamar Taddei, MD

Growing the Section

The section has been dramatically expanding its gastroenterology programs with new positions in inflammatory bowel disease, weight-loss management, functional gastrointestinal (GI) disorders, motility, advanced endoscopy, GI cancer genetics, and general gastroenterology. The section has been expanding its faculty and programs, with 33 new ladder-track faculty hired in the past four years. The section continues to enhance its programs in hepatology, with new faculty who specialize in fatty liver disease, cholestatic liver disease, hepatocellular carcinoma, and transplantation.

New clinical sites have opened throughout Connecticut, New York, and Rhode Island—most recently a digestive diseases hub in North Haven designed for clinical care and to support clinical research, patient education, and even healthy nutrition with a state-of-the-art teaching kitchen.

The section continues to maintain its longstanding reputation for excellence in research, recruiting a number of young investigators to fill its research pipeline. In the last two years, Digestive Diseases has added seven junior faculty who have NIH K awards or other federally funded career development awards.

The section also is building a liver home to provide multidisciplinary care with all the necessary wraparound services to improve outcomes and reduce readmissions for patients with cirrhosis.

Endocrinology & Metabolism

JOHN WYSOLMERSKI, MD SECTION CHIEF
SILVIO INZUCCHI, MD CLINICAL CHIEF



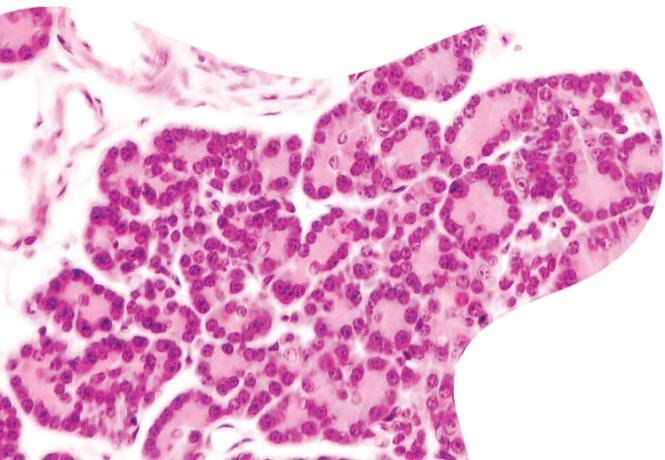
Kevan Herold, MD

Yale Bone Center Celebrates 35 Years of Progress

For 35 years, Karl Insogna, MD, built the Yale Bone Center into a thriving clinical practice that accounts for one-third of the section's outpatient encounters. In addition to clinical care, the Yale Bone Center is an important provider for bone density services and routine clinical measurements of calcitropic hormones for Yale New Haven Hospital. The center has also been a site of important clinical research into the pathophysiology of hypercalcemia of malignancy, hyperparathyroidism, rickets, and rare genetic disorders of phosphate and calcium metabolism.

Treating Obesity

Yale endocrinologists are at the center of the expanding field of obesity medicine, including the development of a new class of drugs that target the brain's system for regulating food intake. Ania Jastreboff, MD, PhD, an internationally recognized researcher and educator in obesity medicine, was the on-site principal investigator at Yale and lead author of SURMOUNT-1, a study that demonstrated that people with obesity treated with tirzepatide, a novel GIP/GLP-1 receptor agonist, lost on average 52 pounds with the highest dose of the medication. Jastreboff also leads an R01 study looking at the impact of the GLP-1 receptor agonist semaglutide on the desire to eat highly palatable foods. [Read more on page 15.](#)



Yale Diabetes Center's Tradition of Excellence

Led by Clinical Chief Silvio Inzucchi, MD, the internationally recognized Yale Diabetes Center has helped to establish standards of care for outpatient and inpatient care of diabetic patients. The robust nature of the clinical practice has allowed clinical and basic research in both type 1 and type 2 diabetes to flourish within the section.

Inzucchi presented new data from the DELIVER trial at the European Association for the Study of Diabetes in September 2022. The data examined the effectiveness of the SGLT2 inhibitor dapagliflozin on clinical outcomes in over 6,000 patients with heart failure and mildly reduced or preserved ejection fraction. Dapagliflozin, originally developed as a glucose-lowering agent for type 2 diabetes, appears to be equally effective in reducing the composite outcome of worsening heart failure and cardiovascular death in those with diabetes, prediabetes, and normoglycemia.

Kasia Lipska, MD, MHS, looked at catastrophic spending on insulin in a national U.S. sample in a paper in the journal *Health Affairs*. Lipska and colleagues provided data on people who use insulin, whether and how they are insured, and who is at highest risk of extreme financial burden. According to the team's findings, 14 percent of people who use insulin in the United States face catastrophic levels of spending on the drug.

In people with type 1 diabetes, the immune system attacks the cells that make insulin, which the body needs to process sugar. The drug teplizumab, a monoclonal antibody, is intended to prevent or delay diabetes by moderating the body's immune response. In a clinical trial led by Kevan Herold, MD, teplizumab prevented or extended the time preceding clinical diagnosis. Any delay in developing type 1 diabetes is significant; such a reprieve could mean, for example, attending primary school disease-free.



Karl Insogna, MD



Ania Jastreboff, MD, PhD

New Faculty

The section welcomed Priyadarshini Balasubramanian, MBBS, MD, and Brian Wojeck, MD, MPH, as assistant professors in July 2022. Both are former Yale endocrinology fellows.

Honors and Awards

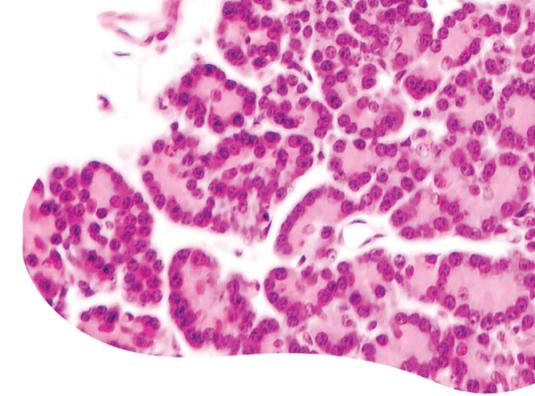
Gerald I. Shulman, MD, PhD, won the 2021 Manpei Suzuki International Prize for Diabetes Research in recognition of his extensive pioneering contributions over many years, leading to several paradigm shifts in the understanding of physiologic regulation of liver and muscle carbohydrate and fat metabolism in humans, and its dysregulation in type 2 diabetes. Shulman is co-director of the Yale Diabetes Research Center.

Elizabeth Jonas, MD, professor of medicine, was elected to the Association of American Physicians during the organization's annual meeting in April 2022. She is currently investigating a novel hypothesis for the way in which changes in mitochondrial ion channels occur during ischemic brain disease and developmental disease.

Inzucchi, the section's fellowship program director, received a Rosemarie L. Fisher, MD, Excellence in Graduate Medical Education Award for 2022.



Kasia Lipska, MD, MHS



Education

Clinical case conferences and endocrine grand rounds, both CME-accredited, bring the section together to learn from one another and from experts from around the world. The section's educational programs benefit from a fund established upon the retirement of Arthur Broadus, MD, PhD, which now serves as a tribute to his memory. If you would like to contribute to the Broadus Fund, please email John Wysolmerski, MD, (john.wysolmerski@yale.edu) for details.



Silvio Inzucchi, MD

General Internal Medicine

PATRICK G. O'CONNOR, MD, MPH SECTION CHIEF
MATTHEW ELLMAN, MD CLINICAL CHIEF



Daniel Sarpong, PhD

Yale General Internal Medicine (GIM) is committed to providing outstanding, compassionate, accessible, and equitable care; the development of new knowledge through rigorous clinical research; and educational training that fosters creativity and critical thinking. GIM also recognizes the profound effects of systemic inequities in health, and centers its work around equity and justice for historically marginalized people and communities.

Clinical Care

Patient care spans both inpatient and outpatient settings across several locations throughout Greater New Haven. There are six inpatient programs and firms, and five ambulatory programs.

Inpatient Care

A new care and educational initiative, the Hospital Medicine Firm at the York Street campus of Yale New Haven Hospital (YNHH), was launched in partnership with the Yale School of Medicine (YSM) and Northeast Medical Group (NEMG) in June 2022. Christopher Sankey, MD, co-manages the firm with NEMG's Anisha Advani, MD. The first of its kind, the new clinical rotation is based on hospital medicine; the research efforts in the Program in Hospital Medicine are led by Sarwat Chaudhry, MD. In addition to the Hospital Medicine and Generalist firms on the YNHH York Street Campus (YSC), faculty members also provide clinical care at the YNHH Saint Raphael Campus (SRC). One of the firms, SLA3, is a 24-bed general medical unit managed by co-chiefs André Sofair, MD, MPH, and Jeremy Schwartz, MD. It focuses on teaching clinical reasoning and point-of-care ultrasound.



Rosemarie Fisher, MD, and John Moriarty, MD

Outpatient Care

Yale Internal Medicine Associates (YIMA) has an obesity clinic embedded in its practice. Specialists Janelle Duah, MD, and Jorge Moreno, MD, are board-certified in obesity medicine; they care for patients who have obesity-related medical conditions or are trying to lose weight. Clinicians in the Yale Occupational and Environmental Medicine Program (YOEMP) began evaluating long COVID patients to address work-related issues. Both the New Haven Primary Care Consortium (NHPCC) and the VA Primary Care Practice continue to provide outstanding care and education in primary care.

Research

Research from GIM members has been published widely in such journals as the *Annals of Internal Medicine*, *JAMA*, the *Journal of General Internal Medicine*, *The Lancet*, and *The New England Journal of Medicine*. There were nearly 500 research papers published between September 2021 and September 2022. Some examples of GIM research programs include:



(l-r) Sarwat Chaudhry, MD; Christopher Sankey, MD; and Anisha Advani, MD

The Yale University-Mayo Clinic Center for Excellence in Regulatory Science and Innovation (CERSI)

Led by Joseph S. Ross, MD, MHS, CERSI is a joint effort between Yale University, the Mayo Clinic, and the U.S. Food and Drug Administration (FDA). To date, the center has received more than \$20 million to foster collaborative research to address key gaps in knowledge related to medical product regulation, and develop tools to support regulatory decision making.

Yale Program in Addiction Medicine

The Integrative Management of Chronic Pain and Opioid Use Disorder for Whole Recovery-Yale and Organizations United (IMPOWR-YOU) Research Center opened in November 2021. The principal investigators (PIs) of the grant are William Becker, MD; Declan Barry, PhD; and David Fiellin, MD. Read more about Yale GIM's Program in Addiction Medicine on page 46.



Jorge Moreno, MD and Janelle Duah, MD

Education

GIM is devoted to educating and training the next generation of diverse leaders and clinicians at all levels. In addition to the key leadership roles held by GIM faculty in Dean Nancy Brown's office, faculty members also provide leadership in such important student programs as the residency training programs, four fellowship programs, and the YSM Physician Associate Program. Below are some examples of GIM education programs:

Asylum Medicine

In 2021, the Society of Asylum Medicine was founded by Katherine McKenzie, MD. McKenzie directs the Yale Center for Asylum Medicine (YCAM), whose mission is to support the field by promoting collaboration; providing mentorship; and sharing resources with the New Haven community to help asylum seekers requiring medical evaluation.

Podcasts

Faculty members have engaged in new ways to deliver educational materials, including through podcasts. Primary Care Pearls is hosted by GIM's Katie Gielissen, MD, MHS, and YPC chief resident Joshua Onyango, MD, MEd. The Curbsiders Addiction Medicine miniseries was launched under the direction of Carolyn Chan, MD, in collaboration with Kenneth Morford, MD; Shawn Cohen, MD; and YPC Collaborative Behavioral Health and Addiction Medicine in Primary Care (CHAMP) trainees Zina Huxley-Reicher, MD, and Hannah Daneshvar, MD/MPH.

Interprofessional Teaching Program in Addiction Medicine

A new interprofessional training program, the Yale-University of Jordan Joint Training Program in Addiction Medicine, was developed by YSM and the Yale School of Public Health in partnership with the University of Jordan School of Pharmacy in Amman. The program is a bidirectional culturally competent addiction medicine program for health professions students.

Diversity, Equity, and Inclusion

The section is committed to cultivating an inclusive, collaborative, and professional culture that respects individual differences; recognizes and rewards diverse talents; and helps each person reach their full potential and individual goals. Rosana Gonzalez-Colaso, PharmD, MPH, was named deputy director for diversity, equity, and inclusion (DEI) for the Physician Associate Program. Darin Latimore, MD, YSM's deputy dean and chief diversity officer, launched an online training program to foster people's ability to build a supportive culture founded on diversity and inclusion. Aba Black, MD, MHS, Yale GIM's vice chief for Diversity, Equity and Inclusion, oversaw the second annual section-wide DEI retreat last year and will lead the third annual retreat in February 2023.

Awards, Recognitions, and Distinctions

- Auguste Fortin VI, MD, retired in June 2022 after 37 years in medicine.
- Cary Gross, MD, and Patrick G. O'Connor, MD, MHS, were elected to the Association of American Physicians (AAP).
- Amy Justice, MD, PhD, was honored with the Department of Veterans Affairs (VA) William S. Middleton Award.
- Jorge Moreno, MD, appeared on the Telemundo show, "Tu Salud Tu Familia-Cirugía Bariátrica," which received a 2022 Emmy Award.
- John Moriarty, MD, was awarded the 2022 Rosemarie L. Fisher, MD, Excellence in Graduate Medical Education Award.
- Marcella Nunez-Smith, MD, MHS, was elected to the American Society for Clinical Investigation (ASCI).
- Lisa Puglisi, MD, was honored with YSM's Leonard Tow Humanism in Medicine Award.
- Ilana Richman, MD, MHS, was honored with the Society of General Internal Medicine's SGIM Distinguished Professor of Women's Health Best Oral Abstract Award.
- Daniel F. Sarpong, PhD, joined GIM as a senior research scientist and executive director of the Office of Health Equity Research (OHER).
- Sarita Soares, MD, won YSM's Francis Gilman Blake Award for outstanding teaching of the medical sciences.
- Jonathan Weber, MA, PA-C, was recognized as a Distinguished Fellow of the American Academy of PAs (AAPA).
- Thilan Wijesekera, MD, MHS, was the recipient of YSM's 2022 Charles W. Bohmfalk Teaching Prize in Clinical Sciences.
- Donna Windish, MD, MPH, was named associate chair of Educational Scholarship for the Department of Internal Medicine.



(l-r) Lisa Puglisi, MD; Thilan Wijesekera, MD, MHS; and Sarita Soares, MD

Geriatrics

TERRI FRIED, MD SECTION CHIEF
JAMES LAI, MD CLINICAL CHIEF

With a year's experience as the Section Chief of Yale Geriatrics, Terri Fried, MD, remains focused on the Institute for Healthcare Improvement's '4Ms': *mentation, mobility, medications, and matters most* to promote the mission and values of the section. The section cares for some of the most vulnerable patients — older adults with multiple chronic medical conditions or living with such problems as cognitive impairment or physical disability. For these patients, the use of standard therapies may cause as much harm as good. Focusing clinical, educational, and research in geriatrics around the 4Ms addresses the challenges geriatricians face while weighing different approaches to care in the context of the patient's current health and goals.



Jennifer Ouellet, MD

Clinical: Geriatrics Programs and the 4Ms

One of the best ways to assess the 4Ms is right in the patient's home. Home-based primary care not only decreases the burden of health care for frail and disabled older persons, but also allows the clinician to understand how patients function in their own environments. At the VA, the Home-Based Primary Care service continues under the leadership of Maura Singh, MD. Through the interdisciplinary team at the VA, pharmacists review medications and provide recommendations, and physical therapists assess mobility and provide modifications to the patient's home. Ann Datunashvili, MD, and James Lai, MD, lead the Yale-based house call program, which is contributing to national quality improvement initiatives for homecare.

The Adler Geriatric Assessment Clinic, under the leadership of Richard Marottoli, MD, provides comprehensive care to persons living with dementia and their loved ones. Using a case management model, the Adler Center provides patients and caregivers with education, anticipatory guidance, symptom management, and connections to community services. The inpatient geriatrics service expanded this year from eight to 22 beds, increasing the opportunity for older persons to be cared for in a unit designed to promote mobility and prevent delirium. At VA Connecticut Healthcare System, the IMPROVE Clinic, directed by Marcia Mecca, MD, addresses polypharmacy and provides education to medical residents about deprescribing.



Richard Marottoli, MD, MPH



Chandrika Kumar, MD

Education: Interprofessional Educational Activities and the 4Ms

The section continues its educational activities that provide training in the 4Ms to an interdisciplinary group of clinicians at all stages of training. As director of the Interprofessional Longitudinal Clinical Experience, Barry Wu, MD, has incorporated the 4Ms into this course. Chandrika Kumar, MD, brings the 4Ms to one of the master courses, "Across the Lifespan," as its co-leader. Mecca and Jen Ouellet, MD, lead traditional and primary care resident education didactics. This year's series focuses on "Matters Most and Medication Management (Deprescribing) and Primary Care for the Older Adult."

The Connecticut Older Adult Collaboration for Health 4M or "COACH," under the leadership of Richard Marottoli, MD, MPH, supports the dissemination of educational and clinical activities into the community. With the support of COACH, the IMPROVE clinic has been pilot-tested at the New Haven Primary Care Consortium, involving internal medicine residents, pharmacists, nurses, and COACH 4M faculty. In a second initiative, COACH faculty worked with public health students on a pilot project deploying simple communication technology equipment in long-term care settings to enhance communication among patients, families, and staff.

The section's newest clinician-educator, Gregory Ouellet, MD, MHS, was accepted into the Department of Internal Medicine's Advancement of Clinician-Educator Scholarship Faculty Development Program. Ouellet will develop a curriculum focused on training residents in patient-centered decision making for persons with dementia. Alexandra M. Hajduk, PhD, MPH, became deputy director of Scientific Affairs at the Yale School of Medicine's Office of Student Research.

Research: Aging Research and the 4Ms

Under the direction of Thomas Gill, MD, the Yale Claude D. Pepper Older Americans Independence Center (OAIC), sponsored by the NIH, provides pilot and career development funding to investigators across a range of disciplines whose research is at the intersection of their own specialty and the 4Ms. Notably, Gill was awarded the 2022 Irving Wright Award of Distinction from the American Federation for Aging Research. The OAIC officially launched a new departmental research initiative, focusing on translational geroscience by soliciting letters of intent for its pilot grant program. The new program is designed to facilitate innovative and high-impact translational geroscience research and establish/strengthen cross-disciplinary collaborations.

The section focuses on innovating and testing models to improve treatment decision making for older persons, with a focus on the Matters Most of the 4Ms. Mary Tinetti, MD, continues to disseminate the Patient Priorities Care approach, which addresses the Matters Most 'M' of the 4Ms, along with Jennifer Ouellet, MD, and Marcia Mecca, MD, who designed and implemented a national Train-the-Trainer curriculum. Fried published the results of a randomized clinical trial demonstrating the efficacy of the STAMP program on increasing engagement in advance care planning in the *Annals of Internal Medicine*. Andrew Cohen, MD, authored an editorial on advance care planning for caregivers of persons with dementia in the *Journal of the American Geriatrics Society*.



Alexandra M. Hajduk, PhD, MPH

Hematology

STEPHANIE HALENE, MD, DR MED SECTION CHIEF



(l-r) Lisa Barbarotta, APRN; Amer Zeidan, MBBS, MHS; Erin Medoff, APRN; and Rose Mixon, RN

The Section of Hematology continues to grow and enlarge its scope to provide outstanding patient care in classical and malignant hematology, and to expand its research findings.

Clinical Care

Nikolai Podoltsev, MD, PhD, received an award for Excellence in Clinical Care during the annual Yale Cancer Center Conclave. The award is given annually to Yale Cancer Center physicians who best exemplify outstanding clinical care, including superb clinical skills; the use of a patient- and family-centered approach to care; and inclusion of a multidisciplinary care model.

Cecelia Calhoun, MD, MSPH, MBA, is streamlining care for patients with sickle cell disease (SCD). There are about 200 adults and 200 children being seen jointly through the adult and pediatric SCD programs. Inconsistent episodic care in the emergency department (ED) or hospital has been replaced with continuity in outpatient care provided by advanced practice professionals experienced in the care of patients with SCD and opioid use. ED visits and hospitalizations have been reduced dramatically. Both programs include access to social workers and a psychiatrist to help manage the social and psychological issues that can accompany SCD.

Research

The National Cancer Institute honored Markus Müschen, MD, PhD, with its Outstanding Investigator Award. Müschen's research program leverages negative selection mechanisms of the immune system for the treatment of drug-resistant leukemia and lymphoma—the most frequent types of cancer in children and young adults.

The National Institutes of Health (NIH) awarded a grant to fund cellular senescence research in lymphoid organs in October 2021. The five-year \$6.5 million grant will help generate multiscale molecular and cellular maps of cellular senescence in primary and secondary human lymphoid organs to improve understanding of cellular senescence in development, aging, and disease, including cancer. The research team is led by Rong Fan, PhD; Stephanie Halene, MD, Dr Med; Joseph Craft, MD; Yuval Kluger, PhD; and Mina Xu, MD.



Markus Müschen, MD, PhD

The following faculty presented their research findings at the 2021 American Society of Hematology's annual meeting:

- Amer Zeidan, MBBS, shared research showing that it is not cost effective to use the liposomal formulation of cytarabine and daunorubicin (previously known as CPX-351), compared to conventional cytarabine and daunorubicin to treat older patients with acute myeloid leukemia (AML).
- Rory Shallis, MD, shared his work demonstrating that less than a third of older patients with chronic myeloid leukemia had optimal laboratory monitoring, and that only two-thirds were adherent to tyrosine kinase inhibitor therapy during the first year after diagnosis.
- Natalia Neparidze, MD, discussed research showing that white patients had more telemedicine visits for hematologic care during the early months of the COVID-19 pandemic than Black patients. The observed disparities require further study into possible causes that include economic and social factors.

The Halene lab published research in *Molecular Cell* revealing that mutant U2AF1-induced aberrant splicing activity resulted in enhanced cellular stress granule formation—a possible mechanism of clonal outgrowth in myelodysplasia.

Alfred Lee, MD, PhD; George Goshua, MD, MSc; and Alexander B. Pine, MD, PhD, worked with colleagues in Cardiovascular Medicine on a report in *Blood Advances* that identified a series of biomarkers associated with white blood cell activation and obesity which can predict severe outcomes in COVID-19 patients.

Education

The Yale Cancer Center was selected by the American Society of Hematology (ASH) in June 2022 for the ASH Hematology-Focused Fellowship Training Program (HFFTP), an initiative that addresses the need to enlarge the hematology workforce. Yale will receive funding for five years to develop a robust hematology training experience for one fellow annually in order to produce 50 new academic hematologists by 2030. The first cohort will begin in July 2023. The Yale HFFTP aims to mentor classical hematology-focused fellows who will lead the field in both traditional and innovative scholarly pursuits, including basic and translational science; medical education; health equities research; and the promotion of diversity, equity, and inclusion.



Alfred Lee, MD, PhD

New Faculty Members

In July 2022, Goshua and Anna Kress, MD, were appointed as assistant professors of medicine (hematology). Both Goshua and Kress completed the Yale Hematology-Medical Oncology Fellowship Program in June. Goshua will see patients as part of the Smilow Classic Hematology Program and build the first research program in the country focused on decision-analytic modeling and health economics in classic hematology. Kress will care for patients as part of the Smilow Classic Hematology Program in North Haven and Trumbull.

Lourdes Mendez, MD, PhD, and Anish Sharda, MD, MPH, joined the department as assistant professors of medicine (hematology) in August 2022. Mendez will see patients with leukemia and develop a clonal hematopoiesis clinic in New Haven. Sharda's clinical and research interests are in bleeding, clotting, and platelet disorders. His research in vascular biology is funded by the NIH.

Recognitions

Halene was appointed the Arthur H. and Isabel Bunker Associate Professor of Medicine (Hematology) in December 2021.

In February 2022, Brian R. Smith, MD, professor of laboratory medicine, of biomedical engineering, of medicine (hematology) and of pediatrics was elected to the Connecticut Academy of Science and Engineering.

Alfred Lee, MD, PhD, was named full professor in July 2022, and was chosen as the keynote speaker at the White Coat Ceremony in August 2022.



Infectious Diseases

EROL FIKRIG, MD SECTION CHIEF
VINCENT QUAGLIARELLO, MD CLINICAL CHIEF



(l-r) Hargobinder Kaur, PhD; Reetika Chaurasia, PhD; and Joseph Vinetz, MD

Ad Hoc Treatment Team Develops COVID Guidelines

In March 2020, Maricar Malinis, MD, and colleagues were called to an emergency meeting. COVID-19 was on the horizon, and no one knew what to expect. The anxiety was palpable. The date itself was inauspicious: Friday the 13th. Faculty from infectious diseases and other disciplines, as well as nurses and pharmacists, came together in a series of meetings to formulate a treatment strategy for COVID. From these meetings, a multidisciplinary team took shape—a collaboration between the Yale School of Medicine and Yale New Haven Health. The team recognized the need to provide consistent treatment recommendations for COVID inpatients, as having a consistent pattern for COVID therapy would be critical in managing a rapidly rising number of cases. The team used data to create an algorithm that had been updated 25 times as of September 2022. As a result of these efforts, the Yale New Haven Hospital COVID-19 mortality rate between March 2020 and September 2022 was half the national average, with no differences in mortality between ethnicities and races.



Maricar Malinis, MD



Lauren Pischel, MD, MSc, and Marwan Azar, MD

Honors and Awards

Barbara Kazmierczak, MD, PhD, was named vice chair for basic research for the Department of Internal Medicine in 2022. According to Kazmierczak, the future of medicine depends on how effectively departments of medicine support discovery and the creation of knowledge. Focusing on clinical research and its implementation also has tremendous effects on patients' well-being.

Sandra A. Springer, MD, received the Avant-Garde Award from the National Institute on Drug Abuse for research on HIV prevention and treatment among individuals who use drugs. Springer's research plan is inspired by the U.S. Department of Health and Human Service's Ending the HIV Epidemic in the U.S., which aims to scale up key HIV prevention and treatment strategies to reduce new HIV infections by 90 percent by 2030. According to Springer, individuals often go without care due to poverty, housing instability, involvement with the justice system, racial stigmatization, and lack of transportation. Her plan will highlight substance use disorder, especially opioid use disorder. A mobile health clinic and pharmacy targeting people at risk of HIV infection and at high risk of overdosing are central to her plan.



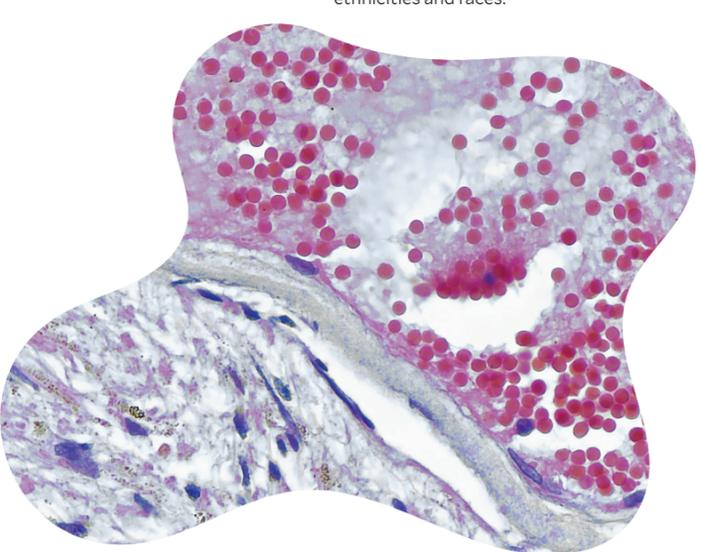
Barbara Kazmierczak, MD, PhD

Yale Team Develops Vaccine for Deadly Leptospirosis Bacteria

A Yale research team has developed a vaccine that prevents leptospirosis while nearly eliminating the deadly bacterium from the body. The team, led by Joseph Vinetz, MD, and Reetika Chaurasia, PhD, a postdoctoral associate, used the genome project to identify the *Leptospira*-secreted protein exotoxin as the leading candidate for the cause of death in leptospirosis. The research team then showed that vaccination with the toxin eliminated the disease, and an antibody neutralized the toxins in preclinical models. The development of a vaccine for leptospirosis would have major implications for global public health, said Vinetz, the paper's senior author, with the greatest benefit occurring in developing countries with a higher disease burden that is presently unmet.

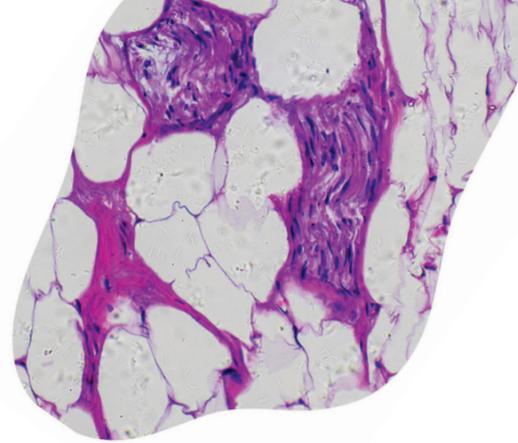
Fellowship Program

After being named fellowship director in October 2021, Marwan Azar, MD, and his team made several changes to address the stress trainees underwent during the COVID-19 pandemic. Azar was named fellowship director after his predecessor, Manisha Juthani, MD, took a leave of absence to serve as the commissioner of the Connecticut Department of Public Health. Among the changes Azar implemented was an "emergency week off" after the Omicron surge. With second-year fellows agreeing to take on additional shifts, Azar was also able to add additional days off to break up 12-day work schedules.



Medical Oncology

ROY S. HERBST, MD, PHD SECTION CHIEF



Jong Woo Lee, PhD

The Section of Medical Oncology has a long and rich tradition of excellence in clinical care, research, and training. Its 100+ faculty members are led by Section Chief Roy S. Herbst, MD, PhD.

Clinical Care

Daniel P. Petrylak, MD, partnered with Craig M. Crews, PhD, to formulate a new medication to treat prostate cancer—proteolysis-targeting chimeric molecules, or PROTACs.

Sarah Schellhorn, MD, presented an initiative to offer patients next-day access to oncologic consultations designed to improve care at Yale Cancer Center (YCC) at the National Comprehensive Cancer Network Annual Conference in May 2022.

The Phase I Clinical Trial Infusion Center at Smilow Cancer Hospital celebrated its sixth year in May 2022. Patricia LoRusso, DO, is director of the center, and Joseph Paul Eder, MD, directs the Phase I Clinical Trial Program. Stacey Stein, MD, and Neal Fischbach, MD, were named assistant medical directors of the Yale Cancer Center's Clinical Trials Office in October 2021.

In March, Barbara Burtness, MD, and Jong Woo Lee, PhD, presented their findings on mutations in the *KRAS* gene on chromosome 12, and describing two drugs that target *KRAS-G12C*. Two months later, the FDA approved one of these drugs, sotorasib, for use against these cancers; during the next month, the agency designated the other drug, adagrasib, as a “breakthrough therapy,” putting it on the fast track toward approval—which was granted on December 12, 2022.

The Smilow Hospitalist Program, which was launched in July 2021, expanded to 10 clinicians this year. The team has been able to shorten the patients' length of stay by 1.1 days so far.

Research

Herbst presented results from the Phase III ADAURA trial at the European Society for Medical Oncology Congress in September 2022. The trial revealed that osimertinib yielded a 5.5-year median disease-free survival in the postsurgical treatment of patients with EGFR-mutated lung cancer.

In June, medical oncologists presented their research at the American Society of Clinical Oncology (ASCO) conference: Herbst; Harriet Kluger, MD; Pamela L. Kunz, MD; Maryam Lustberg, MD, MPH; Lajos Pusztai, MD, DPhil; and Tara Sanft, MD.

In a study led by Pusztai that published in May 2022, researchers across various institutions developed a novel continuous residual cancer-based metric, the Treatment Efficacy Score, to compare the effectiveness of neoadjuvant chemotherapy between randomized trial arms in preoperative breast cancer trials.

An analysis by researchers led by Mariya Rozenblit, MD, identified accelerated genetic aging in breast tissue adjacent to breast cancer tumors and showed that adjacent breast tissue is “biologically older” than the chronologic age of the patient. This finding may explain why some women develop breast cancer at relatively young ages; it may become a future marker of breast cancer risk. The monoclonal antibody sotigalimab combined with the immunotherapy drug nivolumab resulted in tumor shrinkage in patients with advanced melanoma whose tumors had progressed with prior immunotherapy. Kluger and Mario Sznol, MD, participated in the research.



Daniel P. Petrylak, MD



Pamela Kunz, MD



Maryam Lustberg, MD, MPH

Education

Anna Kress, MD, and Benjamin Y. Lu, MD, created the first Diversity, Equity, and Inclusion curriculum as part of the Yale Medical Oncology/Hematology Fellowship Program in December 2021.

New Faculty

The section welcomed the following new faculty members:

- David Braun, MD, PhD
- Jacquelyne Gaddy, MD, MSc
- Michael Grant, MD
- Sharynn Hall, MD, PhD
- Christi Kim, MD
- So Yeon Kim, MD
- Ian Krop, MD, PhD
- Eric Winer, MD

Recognitions

- Kim Blenman, PhD, MS, received the 2022 Joint Breast Cancer Research Foundation-American Association for Cancer Research (AACR) Career Development Award.
- D. Barry Boyd, MD, MS, was awarded the inaugural Spirit of Excellence in Oncology Award from Gilda's Club of Westchester.
- David Braun, MD, PhD, received a Trailblazer Award from the Kidney Cancer Association.
- Burtness is co-director of the Fanconi Anemia Research Fund-Farrah Fawcett Foundation Head and Neck Cancer Research Team, as part of Stand Up to Cancer.
- Michael Cecchini, MD, earned a K08 grant, or a Mentored Clinical Scientist Research Career Development Award, from the National Cancer Institute to continue his clinical trial efforts for patients with colorectal cancer.
- Herbst won the 2022 Giants of Cancer Care award for lung cancer.

He was also honored by Friends of Cancer Research in 2022 as one of their 25 scientific and advocacy leaders who have been instrumental over the course of the last 25 years in making significant advancements for patients through their work and partnership.

Herbst was named chair of the AACR's Scientific Policy and Government Affairs Committee.

He was also honored by the International Association for the Study of Lung Cancer in recognition of his years of dedication and invaluable service to the organization and the lung cancer community.

Herbst was named the inaugural Deputy Director for Clinical Affairs at YCC and Smilow Cancer Hospital.

- Kluger was named vice chair of Collaborative Research for the Department of Internal Medicine, and appointed the Harvey and Kate Cushing Professor of Internal Medicine (Oncology) and Dermatology in July.

- Patricia LoRusso, DO, was named a Fellow of ASCO.

She also was awarded the 2022 Joseph H. Burchenal Award for Outstanding Achievement in Clinical Cancer Research from the AACR.

- Maryam Lustberg, MD, MPH, was named president of the Multinational Association of Supportive Care in Cancer (MASCC) in June 2022.

- Edward Perry Jr., MD, won an educational scholarship grant from the department for his project titled Development and Implementation of a Novel Opioid Pain Management Curriculum for Oncology Fellows.

- Winer was appointed professor of medicine (medical oncology); named the Alfred Gilman Professor of Pharmacology and Professor of Medicine (Medical Oncology); and started his term as president of the ASCO in June.



Eric Winer, MD

Nephrology

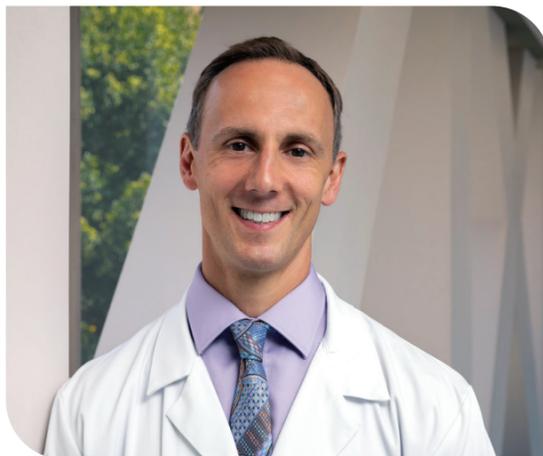
STEFAN SOMLO, MD SECTION CHIEF
ALDO PEIXOTO, MD CLINICAL CHIEF



(l-r) Andrew Donati, MD; Abinet Aklilu, MD, MPH; and Ursula Brewster, MD

Fellowships Offer Rich Learning Environment

The Section of Nephrology has extensive programs in patient care, research, and education. As national and international leaders in their field, Yale nephrologists are committed to educating the next generation of specialists through four robust clinical and research fellowships: a two-year clinical fellowship; a two-year combined nephrology-palliative care fellowship; a three-year research fellowship; and a three-year combined nephrology and critical care fellowship. Fellows care for patients at Yale New Haven Hospital and the VA Connecticut Healthcare System, making for a rich learning experience. The fellowship program is led by Ursula Brewster, MD, director; and Randy Luciano, MD, PhD, associate director.



Randy Luciano, MD, PhD

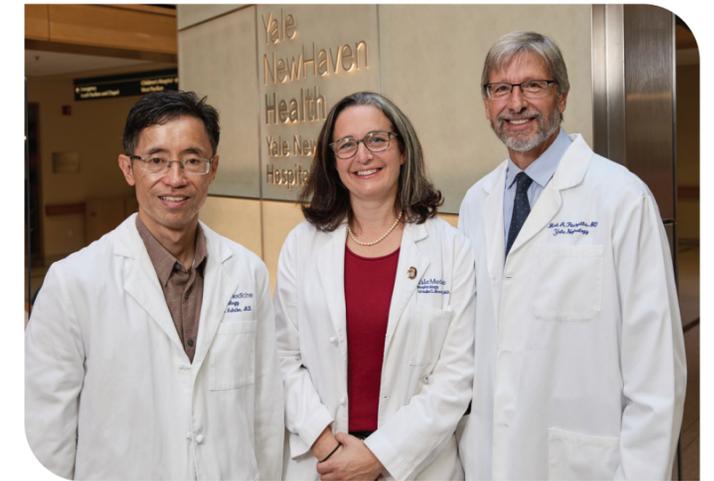
Yale SUMR Program Nurtures Undergraduate Learning

During the Yale Summer Undergraduate Medical Research (SUMR) program, students engage in hands-on research in laboratories and clinics; attend a variety of didactic teaching sessions led by faculty mentors; socialize; and present their work to faculty and peers at the end of the 10-week session. Yale is one of only eight institutions across the country to host the program, which is funded by a R25 NIH-NIDDK/KUH grant. Students from across the United States develop their knowledge of kidney, urology, and hematology research. Shuta Ishibe, MD, has been the program director since its inception at Yale in 2014.

Honors and Awards

In recognition of his commitment to the field of transplantation and outstanding service to the American Society of Transplantation (AST), William Asch, MD/PhD, director of the Transplant Nephrology Fellowship at Yale, was selected as an AST fellow in 2022. Asch is the founder of the Transplant Nephrology Fellowship, which is one of 62 programs in the United States accredited through the AST. The fellowship is an intensive year of advanced clinical training in transplant nephrology for applicants who have completed an Accreditation Council for Graduate Medical Education (ACGME)-certified fellowship in nephrology.

Susan Crowley, MD, MBA, was awarded the National Kidney Foundation's highest honor, the David M. Hume Memorial Award, in 2022. This award is given to the scientist-clinician whose work in kidney and urologic diseases exemplifies the highest ideals of both scholarship and humanism. Crowley, who served in the U.S. Navy, is the Veterans Health Administration Executive Director for Kidney Medicine Program, leading the development of clinical programs and policies in nephrology for the largest integrated health care system in the United States. She is chairperson of the VHA Kidney Health Committee, where she collaborates with a diverse group of health care specialists to shape evidence-based policies on dialysis services and preventive measures to maintain kidney health. She also is the Veteran Affairs Connecticut Healthcare System's kidney medicine section chief.



(l-r) Shuta Ishibe, MD; Ursula Brewster, MD; and Mark Perazella, MD

Richard N. Formica, MD, received the Lifetime Achievement Award from the National Kidney Foundation Serving Connecticut in 2022. Formica is director of transplant medicine for the Department of Internal Medicine and of the outpatient transplantation service, and the medical director of adult kidney transplantation at the Yale New Haven Transplantation Center. He was honored for improving the lives of patients with kidney disease while advancing research and treatment. The nationwide waitlist for kidney transplantation is almost 100,000 people as of 2022. Formica was elected president of the American Society of Transplantation in 2020 and serves on the board of directors of the Organ Procurement and Transplantation Network (OPTN).

Mark Perazella, MD, has achieved a national and international reputation as an educator in the field of nephrology during his 30-year career at Yale. He has also developed a vigorous educational component for Yale Nephrology. In November 2022, Perazella was honored for his lifetime achievements in education with the Robert G. Narins Award from the American Society of Nephrology—the society's highest honor. Perazella was a nephrology subspecialty board member and item writer for the American Board of Internal Medicine (ABIM). He was co-chair of the National Kidney Foundation Annual Spring Clinical Meeting in 2019 and chair in 2020. He has served on educational committees for the American Society of Nephrology since 2008 and will be the co-chair of the 2023 Kidney Week meeting in Philadelphia. He also was chair of the onco-nephrology forum, a committee of the American Society of Nephrology. He is the co-editor of the *Journal of Onco-Nephrology*. Perazella also has served as a co-medical director for the American Society of Nephrology's board review course and updates.



Richard N. Formica, MD

Pulmonary, Critical Care and Sleep Medicine

NAFTALI KAMINSKI, MD SECTION CHIEF
JONATHAN SINER, MD CLINICAL CHIEF



Maor Sauler, MD

Yale-PCCSM's mission is to deliver compassionate and effective patient care; perform cutting-edge clinical, translational and basic science research; and provide rigorous training of future leaders in academic pulmonary, critical care and sleep medicine. To fulfill this mission in the best possible setting, the section focuses on work-life balance, community, diversity, and engagement.

Last year was one of growth and recovery after two hard pandemic years. There have been record numbers of outpatient clinic visits; new clinical technologies implemented; research funding secured; and prestigious national and international awards received by faculty. The secret to Yale-PCCSM's success is its members: their unique talents, diverse backgrounds, and range of subspecialties, interests, and expertise. Of Yale-PCCSM's ladder faculty, 51 percent are women and 13 percent belong to groups underrepresented in medicine. Fifty-five percent of senior faculty members are women; and 48 percent of early-career faculty are Yale-PCCSM fellows. Recently seven new faculty members were hired, and nine faculty were promoted.

Clinical Successes & New Procedures

When the renovated Winchester Center for Lung Disease opened in 2021, an increase in patient visits was expected, but the numbers exceeded expectations. Overall outpatient visits increased by 44 percent, and new visits by 83 percent, compared to pre-pandemic years. Some subspecialties saw a doubling in the number of visits.

New technologies have been implemented that improve diagnostic and therapeutic options for patients, including "shape-sensing" robotic bronchoscopy for better guidance of biopsy procedures; endoscopic endobronchial valve placement for treatment of severe emphysema; and invasive cardiopulmonary exercise testing (iCPET) to identify the causes of unexplained shortness of breath. In collaboration with cardiothoracic surgery and interventional cardiology, access to pulmonary thrombo-endarterectomy and balloon pulmonary angioplasty is also offered.

Multidisciplinary Human Disease-Relevant Research

Yale-PCCSM published 237 papers; overall research funding came to more than \$12 million. There are five early-stage investigators who secured NIH R01 grants: Maurizio Chioccioli, MSc, PhD; Jose Gomez Villalobos, MD, MS; Melissa Knauert, MD, PhD; Maor Sauler, MD; and Xiting Yan, PhD.

Fellowship and Training

The section continues to offer six fellowship slots each year for pulmonary, critical care (overall 22 fellows), four for sleep, four for critical care medicine, and one for interventional pulmonary. There are also nine slots that support research training on the T32 grant.



Naftali Kaminski, MD



Vivian Asare, MD



Erica Herzog, MD, PhD



Lauren Ferrante, MD, MHS

Diversity, Equity, and Inclusion

The DEI committee, led by Vivian Asare, MD, organized educational and social activities, and offered a fellowship URIM Mentorship Program to residents at historically Black colleges and universities. Asare also received an American Academy of Sleep Medicine Foundation Community Sleep Health Grant to provide funding for the Yale Compassionate CPAP Service, which offers equipment and assistance to offset the costs of sleep apnea therapy to uninsured and underinsured patients.

Award-winning Team Members

- Naftali Kaminski, MD: American Thoracic Society (ATS) J. Burns Amberson Lecture Award.
- Erica Herzog, MD, PhD: ATS Recognition Award for Scientific Accomplishments.
- Lynn T. Tanoue, MD, MBA: ATS Thoracic Oncology Lifetime Achievement Award.
- Charles Dela Cruz, MD, PhD: Elected to membership in the American Society of Clinical Investigation (ASCI).
- Lauren Ferrante, MD, MHS: ASCI Young Physician-Scientist Award; ATS Assembly on Critical Care Early Career Achievement Award.
- John Huston, MD: Bear Cage Competition at the ATS 2022 International Conference.
- Snigdha Jain, MD, MHS: ASCI Emerging Generations Award; Claude D. Pepper Older Americans Independence Center Scholar Award.
- Susan Ardito, senior administrative assistant: Internal Medicine Service Excellence Award.

Christine Won, MD, MSc, medical director of the Yale Centers for Sleep Medicine and director of the Yale Women's Sleep Health program, began her term as president of the Society of Anesthesia and Sleep Medicine in October 2022. Won's interests include complex sleep-disordered breathing and sleep disorders in women.

Erica Herzog, MD, PhD, was appointed the John Slade Ely Professor of Medicine (Pulmonary) and professor of pathology. Herzog directs the Interstitial Lung Disease Center of Excellence and is an associate dean of medical student research.

Single-cell Analysis Technologies

The recent development of single-cell atlases is a highlight of Yale-PCCSM's recent work. By profiling all the cells in samples from patients with such advanced lung diseases as idiopathic pulmonary fibrosis and COPD, Yale-PCCSM's physician-scientists have discovered novel cell types, observed changes in the profiles of known cells, and highlighted interactions among different cell types. A team led by Maor Sauler, MD, and John McDonough, PhD, has compiled an unprecedented atlas of cells in the COPD-afflicted lung. Sauler and McDonough used single-cell RNA sequencing, a method that allows them to measure the gene activity within each individual cell of a tissue sample.



Jose Gomez Villalobos, MD, MS

Rheumatology, Allergy and Immunology

RICHARD BUCALA, MD, PHD SECTION CHIEF
CHRISTINA PRICE, MD CLINICAL CHIEF (ALLERGY & IMMUNOLOGY)
VAIDEHI CHOWDHARY, MBBS, MD CLINICAL CHIEF (RHEUMATOLOGY)



Deborah Dyett Desir, MD

Yale Rheumatology and the American College of Rheumatology

Deborah Dyett Desir, MD, was sworn in as the American College of Rheumatology's president-elect in November 2022. She is one of only a handful of women to hold that position and the first woman of color to hold it. Among the issues Desir plans to address as ACR president is the shortage of rheumatologists in the United States to care for both children and adults with rheumatic diseases. Desir plans to expand the ACR's efforts to develop innovative solutions for expanding the workforce, and to increase and diversify ACR membership so that the demographics of ACR's membership reflect those of the patient population.



Deborah Dyett Desir, MD

Evelyn Hsieh, MD, PhD, served as co-chair of the ACR's strategic planning task force. Hsieh and her colleagues introduced the ACR's 2022-2027 strategic plan in May 2022. The plan's three main areas of focus are: innovations in rheumatology; nurturing an inclusive culture; and expanding the rheumatology workforce.

Lisa Suter, MD, is co-chair of the ACR's Quality Measurement Subcommittee. Suter collaborated with the ACR in 2022 to improve patient care and advance the subspecialty of rheumatology by joining the ACR's Rheumatology Informatics System for Effectiveness (RISE) national registry. RISE is "the first and largest electronic-health-record-enabled rheumatology registry in the United States," helping clinicians and health care providers optimize patient outcomes and make significant research discoveries. Eugenia Chock, MD, MPH, assisted Suter.

Allergy and Immunology

Allergy and immunology successfully recruited new faculty members, including Elise Liu, MD, PhD, and Jake Kuster, MD, who have completed their clinical and research training in the section's fellowship program. Liu has investigated the immune mechanisms of food allergies using animal models and human samples. Kuster has a keen interest in studying genetics in primary immunodeficiencies.

In addition, Jason Kwah, MD, MSc, furthered his research program in drug allergies, which serves as an important educational and research platform for allergy and immunology fellows. Junghee Jenny Shin, MD, PhD, and Insoo Kang, MD, director of allergy and immunology, have reported clinical and immunological predictors of poor immune responses to COVID-19 mRNA vaccines in patients with primary antibody deficiency, in collaboration with other members of the section.

Hsiao Receives Rheumatology Research Foundation's Innovative Research Grant

Betty Hsiao, MD, received the national award for her proposal, "Overcoming Barriers to Treat-to-Target in Rheumatoid Arthritis Using Tailored Patient Videos." Hsiao plans to further her research into the discrepancies between how rheumatologists and their patients think about rheumatoid arthritis treatment, specifically "treat-to-target," which has low uptake in the United States. To address this hesitancy, Hsiao seeks to learn how to implement videos of people with rheumatoid arthritis sharing their treatment experiences with other patients who are unsure about initiating or escalating medication use. The videos were developed in a previous study.



Richard Bucala, MD, PhD, and Monique Hinchcliff, MD, MS



Lisa Suter, MD

Yale Rheumatology/Dermatology Clinic

Diversifying clinical trials for people with rheumatic and dermatologic diseases is a goal of the faculty leaders of Yale School of Medicine's rheumatology/dermatology clinic. Rheumatologist Fotios Koumpouras, MD, and dermatologist Sarika Ramachandran, MD, are the clinic's cofounders. Koumpouras is also the director of the Lupus Program at Yale School of Medicine, overseeing clinical and translational research. The clinic was the first of its kind in Connecticut when it began five years ago. Hundreds of patients have been treated for skin disease due to such systemic disorders as lupus, which selectively affects people of color.

Yale Scleroderma Program

Six clinical trials for people with scleroderma, a rare connective tissue disease also known as systemic sclerosis, are taking place at Yale. Monique Hinchcliff, MD, MS, a national scleroderma expert, is the director of Yale Medicine's scleroderma program. Yale was designated as a Scleroderma Center of Excellence by the Scleroderma Foundation in 2019.

Yale Rheumatology International State-of-the-Art Symposium

The 2023 symposium, "Do No Harm: Risk Mitigation in Rheumatic Disease Patients," is planned for April 28-29, 2023. The annual International State-of-the-Art Symposium, now in its third year, demonstrates Yale Rheumatology's leadership and commitment to improving the health of people with rheumatic diseases. The 2022 event, which focused on reactive arthritis—a disease that appeared with increasing frequency in patients diagnosed with COVID-19 during the pandemic—drew more than 200 attendees from around the world.

Program in Addiction Medicine

The Yale Program in Addiction Medicine, founded in 2017, seeks to extend and improve services for the prevention and treatment of substance use and substance use disorders. Constructed on four pillars—research, education, clinical practice, and policy—the program comprises an interprofessional faculty spanning several schools at Yale University, including the Yale School of Medicine (YSM); the Yale School of Public Health (YSPH); the Yale School of Nursing; and the Yale Law School. The program is aligned with the section of General Internal Medicine but has core faculty in other sections within the department, including Infectious Diseases, Digestive Diseases, and Pulmonary, Critical Care and Sleep Medicine, as well as faculty from the Department of Emergency Medicine.

The program has developed, researched, and disseminated innovations that shape the way in which addiction treatment is provided nationwide in primary care, emergency departments, hospitals, and HIV specialty settings, with ongoing research in obstetrical and hepatology settings. Educational initiatives train the next generation of generalists and addiction specialists. Faculty contributions to local, state, national, and international initiatives inform policy decisions related to the overdose epidemic, changes in cannabis and tobacco regulation, and other issues. Select achievements in the last year include expanded NIH HEAL Initiative funding; establishment of the IMPOWR-YOU Center; expansion of the YNHH Yale Addiction Medicine Consult Service; and extension of the program's Addiction Medicine Rounds to a global audience. In addition, the program launched new educational partnerships with the University of Jordan in which faculty from the university, including Mayyada Wazaify, PhD, Professor of Pharmacy Practice, University of Jordan, presented to YSM medical students (pictured below).



(l-r) Jeanette Tetrault, MD; Srinivas Muvvala, MD, MPH; and Kaveh Khoshnood, PhD, MPH

Yale Cardiovascular Research Center



Clockwise from top: Anne Eichmann, PhD; Stefania Nicoli, PhD; Kathleen Martin, PhD; Daniel Greif, MD

With 18 core laboratories, the Yale Cardiovascular Research Center (YCVRC) is dedicated to discoveries to advance the prevention and treatment of cardiovascular disease. Established in 2008, the YCVRC houses basic and translational scientists with primary appointments in Cardiovascular Medicine who work to improve our fundamental understanding of cellular and molecular mechanisms as well as the physiology of the heart and vasculature. Major areas of research include cell and developmental biology, signaling, genetics, epigenetics, and metabolism.

Co-directed by a unique leadership council (Anne Eichmann, PhD; Daniel Greif, MD; Kathleen Martin, PhD; and Stefania Nicoli, PhD), the YCVRC is a community of collaborative investigators that provides a supportive environment for nearly 100 trainees. The YCVRC infrastructure facilitates access to cutting-edge technologies, including high-resolution confocal microscopy; advanced DNA sequencing and bioinformatics; and artificial intelligence and machine learning, as well as induced human pluripotent stem cells and other sophisticated cardiovascular disease models.

Department Leadership

CHAIR



Gary V. Désir, MD
Chair, Internal Medicine

VICE CHAIRS



Barbara Kazmierczak, MD, PhD
Vice Chair, Basic Research



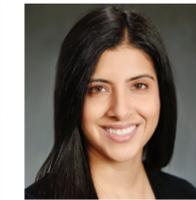
Lynn Tanoue, MD, MBA
Vice Chair, Clinical Affairs



Robert Soufer, MD
Vice Chair, Clinical Research



Harriet Kluger, MD
Vice Chair, Collaborative Research



Vandana Khungar, MD, MSc
Vice Chair, Diversity, Equity, and Inclusion (Interim)



Vincent Quagliarello, MD
Vice Chair, Education and Academic Affairs



Lawrence Young, MD
Vice Chair, Faculty Affairs



Mark Holter, CMPE, CPA
Vice Chair, Finance and Administration



Aldo Peixoto, MD
Vice Chair, Quality & Safety



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Donna Windish, MD, MPH
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Terri Fried, MD
Geriatrics



Stephanie Halens, MD, Dr Med
Hematology



Erol Fikrig, MD
Infectious Diseases



Roy S. Herbst, MD, PhD
Medical Oncology



Stefan Somlo, MD
Nephrology



Naftali Kaminski, MD
Pulmonary, Critical Care and Sleep Medicine



Richard Bucala, MD, PhD
Rheumatology, Allergy and Clinical Immunology

CLINICAL CHIEFS



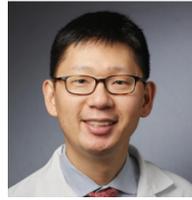
Christina Price, MD
Allergy & Immunology



Nihar Desai, MD, MPH
Cardiovascular Medicine



Daniel Price, MD
Cardiovascular Medicine



Joseph Lim, MD
Digestive Diseases (Liver)



Hamita Sachar, MD
Digestive Diseases
(Gastroenterology)



Silvio Inzucchi, MD
Endocrinology and Metabolism



Matthew Ellman, MD
General Medicine



James M. Lai, MD, MHS, MSc
Geriatrics



Vincent Quagliarello, MD
Infectious Diseases



Aldo Peixoto, MD
Nephrology



Jonathan Siner, MD
Pulmonary, Critical Care and
Sleep Medicine



Vaidehi Chowdhary, MBBS, MD
Rheumatology, Allergy and
Clinical Immunology

STAFF LEADERSHIP



Sarah Hagans
Associate Director,
Administration



Julie Jennings
Associate Director,
Research & Compliance



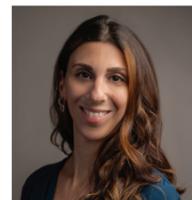
Nancy Kravitz
Manager, Office of the Chair



Jennifer Lacerda
Associate Director,
Clinical Affairs



Julie Parry
Associate Director,
Communications



Stephanie Santore
Associate Director, Academic &
Administrative Affairs



Joseph Velasco
Associate Director,
Finance



Michael Yonkers, MBA, MS
Associate Director, Finance
and Administration



Scan QR code to view
full list of leadership.

POST-GRADUATE EDUCATION & TRAINING PROGRAMS

Medicine–Pediatrics Residency Program



**Benjamin Doolittle, MD,
MA, MDiv**
Program Director



Jaideep Talwalkar, MD
Associate Program Director



MarySarah Thanas, MPH
Program Coordinator



Joanna Whitehead
Project Manager, Internal
Medicine Education

Primary Care Residency Program



John Moriarty, MD
Program Director



Aba Black, MD, MHS
Associate Program Director



Stephen Holt, MD, MS
Associate Program Director,
Ambulatory



Tracy Rabin, MD, SM
Associate Program Director



Sarita Soares, MD
Associate Program Director



Denise Brennan
Program Coordinator

Traditional Residency Program



Mark Siegel, MD
Program Director



Paul Bernstein, MD
Associate Program Director



Mahalia S. Desruisseaux, MD
Advisor to the Physician-
Scientists



Matthew Grant, MD
Associate Program Director



Cynthia Frary McNamara, MD
Associate Program Director



Benjamin Rodwin, MD
Associate Program Director



Christopher Sankey, MD
Associate Program Director



Brett Marks
Program Coordinator

Yale-Waterbury Residency Program



Ruth Weissberger, MD
Program Director



Silvio Inzucchi, MD
Program Director



Courtney Annunziata
Program Coordinator

Yale Affiliated Hospitals Program

INTERNAL MEDICINE CHIEF RESIDENTS 2021–2022



Kevin Barnum, MD, PhD
YNHH



Jemma Benson, MD
YNHH



Benjamin Brink, MD
YNHH



Madeleine Coleman, MD
VACHS



Arit Emem Esu, MD
Waterbury



Christine Hsueh, MD
YNHH



Warda Maqsood, MD
Waterbury



William McDonald, MD
YNHH



Aidan Milner, MD
YNHH



Jakob Park, MD
NHPC



Kate Penziner, MD
YNHH



Sumitha Raman, MD
YNHH



Avinainder Singh, MBBS
YNHH



Jenny Xiang, MD
VACHS

Department VITAL STATS



#10 NIH Funding in Internal Medicine

(per the Blue Ridge Institute for Medical Research)

\$6M+ increase from FY21 to FY22

1M+ Clinical RVUs

\$208M+

in Sponsored Funding
(10/1/21 - 9/30/22)

\$350M+

Total Operating Budget

129

faculty perform patient
care at VACHS

522

Ladder Track
Faculty

155

Research
Faculty

39

Instructors

18

Lecturers

213

Hospital
Residents

334

Postdoctoral
Associates / Fellows
Includes Clinical Fellows

96

Postgraduate
Associates / Fellows

436

Staff
*Medical Oncology, Hematology, and
PA Program staff not included*

570

Other
*Voluntary, Adjunct,
Visiting, Emeritus*

424

Voluntary

106

Adjunct

30

Emeritus

10

Visiting

Yale SCHOOL OF MEDICINE

Department of Internal Medicine

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BOARDMAN 110

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