

Yale Internal Medicine

EXCELLENCE • SAFETY • EQUITY • RESPECT

Annual Report 2018–2019



MESSAGE FROM THE CHAIR

I am delighted that you are reading our annual report and believe you will discover a department that is both inspired by the richness of its traditions and determined to meet the extraordinary opportunities afforded to the modern Department of Medicine.

Here we aim to further medical research, deliver world-class clinical care, and educate medicine's future leaders. As importantly, we commit to fostering an inclusive, respectful, and collaborative culture. And this commitment to excellence, diversity, fairness, and transparency guides our daily thoughts, decisions, and actions.

We are among the nation's premier departments, bringing together an elite cadre of clinicians, investigators, and educators in one of the world's top medical schools. We have approximately 1200 faculty, 350 residents and fellows and a staff of 400. Among the faculty are members of the Institute of Medicine, the Association of American Physicians, and the American Society for Clinical Investigation. We are embedded in a remarkable basic science environment that affords extraordinary opportunities for interdisciplinary and translational research.

Our recent work on diversity, equity, and inclusion has become a cornerstone of the department. And we are extremely proud that over the past four years, 55% of faculty appointed or promoted to the rank of professor in our department were women and/or members of minority groups underrepresented in medicine.

We also know that what is highlighted in this report in no way fully captures the richness of our culture, all we have accomplished together, and certainly does not do justice to all who have contributed. But I hope this book will provide insight into our values, our passions, what gives us joy, and what we strive to accomplish. And I also hope they will inspire us to aim higher, and will motivate you to get to know us better.

I would love to hear from you. Please contact me with any suggestions and questions.

Gary Desir, MD

Paul B. Beeson Professor of Medicine

Chair, Internal Medicine, Yale School of Medicine

1	4	7
2	5	8
3	6	9

COVER PHOTOGRAPHY

1. Aba Black, MD, evaluates a patient with back pain in the Yale New Haven Hospital (YNHH) Primary Care Clinic.
2. The lab of Silvia Vilarinho, MD, PhD, uses whole-exome sequencing to look for causes of liver disease.
3. Whitney Besse, MD, and Xin Tran partner on projects while working in the lab of Stefan Somlo, MD.
4. Karl Insogna, MD, evaluates patient Robert DeRemer Jr. with X-Linked Hypophosphatemia at YNHH.
5. Harriet Kluger, MD, and Mario Sznol, MD, work as part of the Yale SPORC in Skin Cancer (YSPORC-SC).
6. Anne Eichmann, MSc, PhD, aims to uncover the cellular mechanisms and molecular factors that regulate cell behavior.
7. Abhijeet Danve, MBBS, MD, FACP, evaluates a patient with ankylosing spondylitis in the Spine Center at YNHH.
8. Researchers Farida Ahangari, MD, and Norihito Omote, MD, PhD, work in the lab of Naftali Kaminski, MD, where they study chronic lung diseases.
9. Postdoc Omkar Chaudhary, PhD, and Brinda Emu, MD, work to understand immune system deficits in individuals with HIV infection despite antiretroviral therapy.

CONTENTS

Message from the Chair

Yale New Haven Hospital on National Honor Roll as One of Top 20 U.S. Hospitals | 2

Department of Internal Medicine Vital Stats | 3

Diversity, Equity, & Inclusion | 4

Overview from Vice Chairs | 6

Clinical Affairs

Education & Academic Affairs

Faculty Affairs

Research

Veterans Affairs

Update from Section Chiefs | 16

Cardiovascular Medicine

Digestive Diseases

Endocrinology & Metabolism

General Internal Medicine

Geriatrics

Hematology

Infectious Diseases

Medical Oncology

Nephrology

Pulmonary, Critical Care & Sleep Medicine

Rheumatology, Allergy & Immunology

Other Programs | 38

Philanthropy | 42

A Gift to the Place Their Daughter Loved

Kapo is Named to an Endowed Academic Position

Department Leadership | 45

Acknowledgments | 48



**YALE NEW HAVEN HOSPITAL ON NATIONAL HONOR ROLL
AS ONE OF TOP 20 U.S. HOSPITALS**

YNHH continues to rank among the best U.S. hospitals with its placement among the top 20 hospitals in the nation on this year's *U.S. News & World Report's* national Honor Roll. Of the nearly 5,000 hospitals surveyed in the magazine's annual "America's Best Hospitals" rankings, YNHH ranks nationally in 12 of 16 specialties.

Among the YNHH specialties ranked in the top 50 by the magazine, seven areas are in Internal Medicine. Geriatrics is ranked at #16; Pulmonology & Lung Surgery at #16; Kidney Disorders at #20; Diabetes & Endocrinology at #24; Gastroenterology & GI Surgery at #45; Cancer at #45; and Heart & Heart Surgery at #48.

This achievement would not have been possible without the work of many researchers and clinicians. Thanks to the following Internal Medicine faculty members for their contributions to quality and improvement work at YNHH:

- Kerin Adelson, MD (*Medical Oncology*)
- Ursula Brewster, MD (*Nephrology*)
- Jeptha Curtis, MD (*Cardiovascular Medicine*)
- Silvio Inzucchi, MD (*Endocrinology & Metabolism*)
- Richard Marottoli, MD, MPH (*Geriatrics*)
- Aldo Peixoto, MD (*Nephrology*)
- Michael Schilsky, MD (*Digestive Diseases*)
- Jonathan Siner, MD (*Pulmonary, Critical Care & Sleep Medicine*)

According to *U.S. News & World Report*, hard numbers (death rates, patient safety, procedure volume, and other objective data) support the rankings in most specialties. The full national listing is available online at www.usnews.com/best-hospitals.

As gratifying as it is to receive public recognition of the department's work, we are most proud of our dedication and commitment to providing excellent care to our patients.

DEPARTMENT OF INTERNAL MEDICINE VITAL STATS

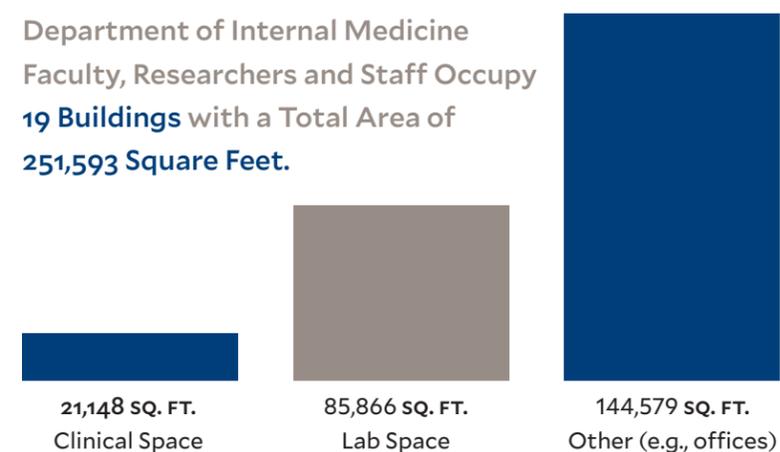


1,240 TOTAL FACULTY



* Staff for medical oncology and hematology are employed by Yale Cancer Center. PA program staff members are employed by the Office of Medical Education.

Department of Internal Medicine Faculty, Researchers and Staff Occupy 19 Buildings with a Total Area of 251,593 Square Feet.



CREATED A COMMUNICATIONS TEAM

Launched *D[IM]ensions* and *Events* newsletters, LinkedIn and Twitter accounts.

- /school/yale-intmed
- @YaleIMed

DIVERSITY, EQUITY, & INCLUSION



INGINIA GENAO, MD
Associate Chair, Diversity,
Equity, & Inclusion

Three years ago, Inginia Genao, MD, was appointed as Associate Chair for Diversity, Equity, & Inclusion for the department. Many steps have been taken since then to create a unique and inviting environment rich in diversity and inclusivity. Initiatives were undertaken to further the department's diversity efforts during the 2018–2019 academic year.

Recruitment

The 62-member diversity committee was restructured to include an executive committee. The group comprises department faculty, trainees, and staff who focus on faculty pipeline programs through recruitment efforts on trainees. Committee members visit historically black colleges and universities across the United States each year to encourage medical students to learn more about Yale through receptions and fairs. During this academic year, the group visited Meharry Medical College in September; Morehouse College in January; and Howard University in February.

Committee members also attended the Student National Medical Association's national conference in April to expand recruitment efforts. Almost 230 students expressed interest in YSM as a whole, and 40 asked for more information about internal medicine specialties.

Carmen Canales, staff member of the Diversity Committee, is leading the Early Pipeline Subcommittee and plans to concentrate on New Haven public schools in collaboration with the New Haven State Affairs.

The department has approved a budget to cover the costs of physician coverage for current residents who wish to attend recruitment events. This funding will be in place in September.

Training

In the fall, faculty and staff at the VA Connecticut Healthcare System

participated in a two-day retreat at which Genao led workshops on diversity, equity, and inclusion. Genao will host a diversity retreat for the Section of General Internal Medicine this upcoming November.

Program Administration

The program was awarded a Yale Center for Clinical Investigation (YCCI) grant to conduct teaching across the department on unconscious bias and health disparities. In addition, the Department of Internal Medicine provided a supplemental grant for the effort. We are in the process of finalizing phase 1 of the report.

Diversity resources for residents and faculty were added to the department website, with additional changes planned for the fall.



The Diversity Committee meets on a monthly basis to discuss recruitment initiatives within the Department of Internal Medicine.



Darin Latimore, MD, (center) chief diversity officer and associate professor (general medicine) meets with medical students in Sterling Hall of Medicine. Photo credit: Robert Lisak.



Aba Black, MD, facilitates implicit bias workshops and lectures on health disparities within the department.

Yale Visiting Program for Students Underrepresented in Medicine Program

The Yale Visiting Program for Students Underrepresented in Medicine (YVP-SUM) offers URiM medical students the opportunity for immersion in a four-week medicine elective at YNHH. The program also exposes students to clinical and research faculty, medical students, residents, and leadership across the medical school. For the upcoming academic year, the program has been expanded to grant participating students financial assistance for housing in addition to a stipend.

In addition to the program, an annual dinner is held each January, in conjunction with the Office of Graduate Medical Education. Sixty-six students attended the dinner, of which 10 were our program applicants: five matched in the Primary Care Residency Program; one in Med/Peds, and four in the Traditional Residency Program. A total of 10 URiM residents join the department this fall.

To learn more about the Department of Internal Medicine's diversity, equity, and inclusion efforts, visit medicine.yale.edu/intmed/diversity/.

Over the past four years, 55% of faculty appointed or promoted to the rank of professor in our department were women and/or underrepresented in medicine.

CLINICAL AFFAIRS



LYNN TANOUE, MD, MBA
Vice Chair, Clinical Affairs

Within clinical affairs, efforts have been under way to increase faculty support through a new orientation strategy, and to assist physicians by creating new tools and strategies to use with electronic medical records (EMR).

Orientation

The department started its own onboarding process over seven years ago, but orientation was enhanced during the 2018–2019 academic year. Originally a shorter seminar, orientation has grown into a robust two-day Resiliency, Innovation, and Sustainable Excellence (RISE) at Yale program with interactive workshops on emotional skills, unconscious bias, disclosure, and critical conversations. Faculty leaders from many of the department's 11 sections facilitated the workshops, which new faculty attendees called inspiring, helpful, and motivating. The new format lends itself well to interaction among new faculty and senior leadership in a more casual environment. Sixty new faculty members attended the RISE at Yale initiative in 2018, which intended to launch them



ALDO PEIXOTO, MD
Vice Chair, Quality & Safety

with some tools for resiliency to stave off burnout, increase retention, and enhance ways to help them recognize professional satisfaction.

EMR Enhancements & Support

When Epic was adopted as our EMR over five years ago, some of the new workflows caused difficulties for physicians. Along with teams at Yale Medicine (YM) and Yale New Haven Health (YNHHS), efforts have been made to have physicians spend less time typing and more time caring. Mobile

Heartbeat allows care team members to communicate securely on a mobile device, streamlining communications and minimizing interruptions. Tap and Go allows for a single sign-in once in 24 hours, with subsequent badge swipes, expediting log in, saving time and clicks.

In addition, physicians can now write a note in Epic using any of several processes: physically typing it into Epic, dictation with a transcription service, mModal voice-to-text software; or with a virtual scribe (a certified medical transcriber who documents a patient's visit from an off-site location). Use of these services have reduced EMR workload.

In addition, the department ramped up its business team with a dedicated Epic support person to help faculty with enhancement of templates, updates on billing codes, and optimization of workflows.

Ambulatory Support

Year over year, the department has grown between 8–14% on average in the ambulatory space. Each year, Yale



As part of the Metabolic Health & Weight Loss Program, Artur Viana, MD, demonstrates a medication that can help with weight loss.

Year over year, the department has grown between 8–14% on average in the ambulatory space.

Clinical Optimization Services (YCOS) conducts comprehensive reviews of YM's operations to identify opportunities for improvement, and implements a variety of recommendations from workflow changes to physical renovations. The team's work has resulted in measurable improvements in many areas, including higher patient satisfaction scores, improved patient access, and decreased costs.

Telehealth

Telehealth programs are being developed that will include video visits between patients and physicians, eConsults between providers, and remote device monitoring. Telehealth services will be expanded over the next few years. In 2018, an executive committee with YM and YNHHS representatives outlined strategic priorities, along with business and funding plans, to support the initiative for the next few years.

Population Health

In 2018, YM joined the Association of American Medical Colleges (AAMC) Project CORE (Coordinating Optimal Referral Experience) program. The program seeks to reduce unnecessary specialist referrals through the use of eConsults and enhanced referrals.



James Freeman, MD, (center) poses with the Yale New Haven Hospital Heart and Vascular Center Atrial Fibrillation Program team.



Jeanette Tetrault, MD, FACP, FASAM, talks to a colleague about administrative support for the Addiction Recovery Clinic at YNH's Saint Raphael Campus.

EDUCATION & ACADEMIC AFFAIRS



VINCENT QUAGLIARELLO, MD
Vice Chair, Education &
Academic Affairs

The department made several innovative changes in its educational programs during the 2018–2019 academic year.

Medical Grand Rounds

Medical Grand Rounds continues to be a strong training forum for faculty, residents, fellows, and medical students. The weekly event draws very strong attendance and is often standing room only. This year, the department transformed select Medical Grand Rounds, including the annual Philip K. Bondy Lectureship and the annual Jack A. Elias Advances in Biomedical Sciences Lectureship, to highlight the world-renowned section chiefs and physician-scientists at YSM within the Department of Internal Medicine.

Another new initiative is the awarding of maintenance of certification (MOC) credits for select Medical Grand Rounds. Attendees answer a survey highlighting the lecture's main points to receive credit.

Access to grand rounds was also increased. These events are now



DANA DUNNE, MD
Associate Chair, Education &
Academic Affairs

streamed to Yale New Haven Hospital's (YNHH) Saint Raphael Campus, the VA Connecticut Healthcare System, and Yale Health to accommodate those faculty members not located on the main YSM campus.

To wrap up the academic year, the department held its third annual "Stories of Yale Internal Medicine," a special grand rounds centered on sharing stories. Storytelling is fundamental to being a physician, including writing/presenting a history of present illness; guiding the goals of patient care; writing research grants and manuscripts; and mentoring colleagues. This year, six persons from the department were selected to read their submissions. Of the six presenters, five were women, five were underrepresented in medicine, and four were immigrants.

Additional new innovations to Medical Grand Rounds will be forthcoming this upcoming academic year.

Research in Residency Day

In April, the department held its 17th annual Research in Residency Day,

established to increase the exposure of YSM residents to department investigators through the creation of dedicated time for research and mentorship to refine their skills in clinical judgment at the bedside.

In previous years, poster presentations were held throughout the day. A new format was adopted for this year to give residents a larger audience and to better accommodate faculty schedules. Three residents were chosen to showcase their work during the department's Thursday morning Medical Grand Rounds. In addition, all residents participated in an afternoon poster presentation.

Firms

Another critical change last year was the new financial support for the attending physicians from YNHH on the hospital's inpatient firms. Previously, such support was given only to select faculty members. This financial commitment is a win for physician engagement and faculty support that strengthens the relationship between YSM and YNHH, the school's primary teaching hospital.

Clinical Teaching Skills

The Office of Education expanded to include a robust offering for faculty to improve their clinical teaching skills and ability to produce scholarship from educational activities. Six seven-week clinical teaching courses with such topics as setting an optimal learning climate; identification and communication of goals; assessment and feedback; and teaching content were implemented. To date, over 200 department faculty and hospital residents have completed

Medical Grand Rounds continues to be a strong training forum for faculty, residents, fellows, and medical students.

this training. In addition to the live training, a website update is under way to include topics and faculty available to assist those who wish to improve their teaching skills. There is a close connection with the YSM Teaching and Learning Center, which in addition to sponsoring some of the aforementioned sessions, offers a one-year medical education fellowship and a two-year master's degree in health science with a concentration in medical education.

Educational Scholarship

In July, the department launched the Advancement of Clinician-Educator Scholarship (ACES) Faculty Development Program to foster the career development of junior clinician-educators in educational scholarship. Five junior faculty members were named to this one-year program, which aims to enhance knowledge and skills in educational scholarship; provide resources to aid in the success of education scholarship; and provide mentorship to foster success in clinician-educators.



The "Stories of Yale Internal Medicine" Grand Rounds is one of the most popular grand rounds each year.



Anna Reisman, MD, and Lisa Sanders, MD, FACP, offered guidance to selected authors for the "Stories of Yale Internal Medicine" Medical Grand Rounds. The duo also run the Yale Internal Medicine Residency Writers' Workshop.

FACULTY AFFAIRS



LAWRENCE YOUNG, MD
Vice Chair, Faculty Affairs

During the 2018–2019 academic year, Department of Medicine Faculty Affairs expanded the department mentorship program; streamlined the review process for faculty reappointments and promotions; and introduced the School of Medicine's new faculty clinical track.

Faculty Mentorship Program

The Department of Internal Medicine Faculty Mentorship Program was created to facilitate mentorship of junior faculty in their academic progress and career development. Senior faculty members within the department serve as mentors to help junior faculty set research, clinical, and educational goals with reasonable timelines, while also providing them with relevant feedback and guidance. Every section within the department has now implemented the mentorship program.

Associate Professor Reappointments

Referee letters are no longer required for associate professor reappointments for the Appointments & Promotions review process. Going forward, a department senior faculty vote on reappointment is required



Clinical Track Assistant Professor Ryan Steele, DO, MSc, leads the Contact Dermatitis Program.

only at the end of the second associate professor term. These changes have streamlined the review process and improved the turnaround time for approvals.

Track Declarations

Effective July 1, 2019, declaration of a specific academic track is required for all assistant professors. Previously, tracks were not declared until the end of the second assistant professor term. Defining a track for junior faculty members better enables their section chiefs and mentors to provide appropriate career guidance. At any point during the assistant professor rank, faculty have the flexibility to request a change of track as their interests and focus are refined.

New Clinical Track

The new YSM Clinical Track was announced and introduced to the department in April. This track

provides a career path for clinically focused physicians on the full-time faculty as well as the opportunity to contribute to the mission of the department. To be eligible for this new track, physicians are required to be predominantly patient care-focused; have high-level clinical expertise and a visible commitment to clinical education; support the clinical investigative mission of the department; and serve as role models for trainees.

- 505** Ladder Track Faculty
- 132** Research Faculty
- 60** Instructors
- 33** Lecturers
- 510** 'Other' Faculty



Clinician-educator Shyoko Honiden, MD, MS, directs the Pulmonary, Critical Care & Sleep Medicine fellowship program.



Associate Professor E. Jennifer Edelman, MD, MHS, is one of the participants of the Faculty Mentorship Program. Photo by Robert Lisak.



Professor Saad Omer, MBBS, MPH, PhD, joined the infectious disease faculty in July.

RESEARCH



LLOYD CANTLEY, MD
Vice Chair, Basic Research

The research efforts of the Department of Internal Medicine have grown significantly during the 2018–2019 academic year. More than two-thirds of our faculty are actively involved in research, spanning the spectrum from clinical outcomes and epidemiologic studies to translational and basic science investigations. These research efforts are supported by \$587 million dollars from the National Institutes of Health (NIH), U.S. Department of Health and Human Services (HHS), State of Connecticut, foundation, and foreign grants as well as \$33 million dollars in industry funding for the drug development and clinical trials.

To build upon this flourishing record of research achievements and assure a prosperous enterprise for the future of our department, leaders identified key infrastructure concerns. The leadership maintained that any future construct will more likely endure with input from those who have previously contributed to our success.

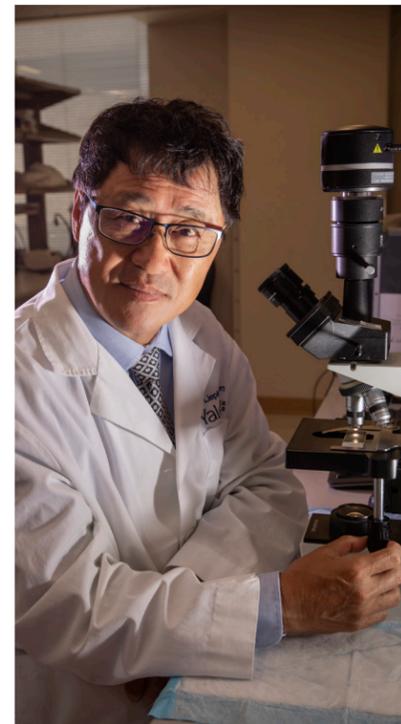


ROBERT SOUFER, MD
Vice Chair, Clinical Research

Accordingly, advisory groups of faculty from the various research domains and ranks were formed, and met to identify and strategize on key concerns to address the present research workflow. These groups are interactive and form a community unified in purpose and values through a process of inclusion. A survey with structured questions to internal medicine faculty with nearly 100 attendant detailed narrative responses was completed. The reorganization of informatics and biostatistics accounted for 75% of the concerns of the internal medicine faculty.

Department Chair Gary Desir, MD, presented the findings to the National Clinical and Translational Science Awards (CTSA) Program PIs. He received feedback on successful strategies for improvements and reorganization of informatics and biostatistics based upon the experiences of Program CTSA PI's with successful implementation of such infrastructure.

More than 2/3 of our faculty are actively involved in research, spanning the spectrum from clinical outcomes and epidemiologic studies to translational and basic science investigations.



Lieping Chen, MD, PhD, and his team discovered Siglec-15 as a potential novel target for cancer therapy.

The other issues identified by the survey were: non-NIH contract process; system-wide biobanking & DNA effort; clinical genomic core; and mentoring. The central campus was lobbied in regard to the non-NIH contract approval time frames. Findings resulted in additional hires to shorten approval time frames and design a process to index time-sensitive proposals and/or outstanding approvals for expedited review. Space constraints are critical for extant recruitments and long-term planning. Discussions concerning present and future needs for research space across diverse biomedical research methodologies has been initiated with YSM. As space becomes available, our department has anticipated, lobbied, and prepared to justify occupancy on the basis of prospective planning. We are in the process of organizing appropriate information from department leaders, and meetings with YSM leadership will follow.

Accordingly, the department is addressing infrastructure vulnerabilities to enhance accessibility and to support Investigators who employ a spectrum of quantitative and/or qualitative tools. We believe that such support will provide a broader availability of these in-demand services for researchers across all our sections, and thus ensure our continued leadership in promoting human health.



Postdoc Lisa Wang studies vector-borne diseases in the lab of Erol Fikrig, MD.



John Wysolmerski, MD, reviews data with Pedi-Endo Fellow Lisa Cruz-Aviles, MD, in his lab.

VETERANS AFFAIRS



MICHAEL KOZAL, MD
Chief of Medicine

The VA Connecticut Healthcare System (VACHS) serves as one of the teaching hospitals for YSM faculty. Its inpatient facilities and Ambulatory Care Center are based in West Haven, with another Ambulatory Care Center located in Newington. The system boasts six other primary care outpatient clinics across the state of Connecticut.

The Department of Medicine at VACHS has twelve subspecialty sections along with primary care. Considered a national leader by the Veterans Health Administration (VHA), VACHS hosts over 300 credentialed internal medicine physicians. In addition, nearly 80 residents and fellows train onsite in West Haven. YSM students also rotate at the VA. VACHS-based Yale ladder track faculty hold important leadership roles at YSM in student and resident education, training, advising, and research.

Patient Care

Last year, VA Medicine subspecialists saw 32,447 patients and had 169,729

clinical encounters. Primary Care treated over 50,000 veterans and generated over 200,000 clinical encounters across 72 patient-aligned care teams involving more than 70 trainees.

During the 2018–2019 academic year, VACHS began using a video consult service. The medicine department completed over 5,000 eConsults and had telemedicine clinics in nephrology, cardiology, sleep, rheumatology, primary care, and GI/liver, reaching patients throughout the Northeast.

The Primary Care service line of VACHS, led by Christopher Ruser, MD, also rolled out a new platform called VA Video Connect or VVC. VVC allows primary care clinicians to have video visits with veterans at any location relying simply on a smartphone, tablet, or camera-enabled laptop. By the end of the fiscal year, the goal is to have every VA primary care physician complete at least one video visit. Ultimately, trainees will be part of this innovation.

Faculty

Many faculty members at YSM work at both the VA and YSM. Anna Reisman, MD, is one such physician. She is based clinically in West Haven, and directs the Program for Humanities in Medicine at YSM in New Haven. She led a writer's op-ed workshop that led to many published pieces by VA faculty. The op-ed by Juliette Spelman, MD, on medical marijuana for chronic pain was published in various news sources, including the *Hartford Courant*.

David Rosenthal, MD, is the medical director of VA Connecticut's Homeless Patient Aligned Care Team (H-PACT). Rosenthal's H-PACT team has repeatedly been named the top performing program out of 65 in the country. In March, Rosenthal and his team in New Haven launched a free smartphone app, BUP Home Induction, which walks patients through the first three days of taking buprenorphine. Buprenorphine relieves opioid withdrawal symptoms and helps patients stay off unprescribed or street opiate drugs. The app has been adopted at VACHS with plans to incorporate it into research.

VA Connecticut Healthcare System Center of Excellence in Primary Care Education

The VACHS Center of Excellence in Primary Care Education (CoEPCE/COE) is an innovative team-based primary care clinic that trains internal medicine residents from the Yale Primary Care and Traditional Residency Programs alongside nurse practitioners,



Led by Steve Pfau, MD, the new cardiac catheterization lab opened in May 2019.



Sarah Lipkin, APRN; Rebecca Slotkin, MD; Rosalia Casorla, LPN; and David Rosenthal, MD, care for veterans as part of the VA Connecticut's H-PACT team.

pharmacy, health psychology, physical therapy, and social work trainees.

The CoEPCE was started in 2011 as one of five grant-funded sites nationwide. During this time, the program has received both local and national recognition for educational innovations, impact on patient care, quality improvement, and resolution of systems issues. As of summer 2019, the VACHS CoE has published over 45 peer-reviewed publications; has made over 100 presentations at local and national meetings; and completed over 50 quality improvement projects. One of the flagship educational and interprofessional education innovations is a clinic that was developed to reduce polypharmacy in elderly veterans. As part of efforts to disseminate this innovation, the program has also developed a website open to the public to provide the tools

to develop similar clinics at training sites within and outside the VA.

Directed by Rebecca Brienza, MD, MPH, the CoEPCE/CoE teams are led by interprofessional faculty, and supported by registered nurses and licensed practical nurses who work collaboratively with residents within the patient-centered medical home model. This year, the CoE leadership was successful in securing sustainability funding to continue the program in perpetuity when grant funding ends in 2019.

New Catheterization Lab

Led by Steve Pfau, MD, director, the VACHS introduced its new state-of-the-art catheterization lab in May. The 1000-sq-ft space is a notable upgrade from its former lab built in 1997, and complements the existing lab installed in 2007. The new lab

provides the highest quality vascular imaging with the lowest possible level of radiation exposure to the patient and physicians. The new facility expands available services to include diagnostic and interventional peripheral vascular and carotid procedures; biventricular pacemakers and ICDs; and capability for general anesthesia. The lab strengthens the position of West Haven as a regional cardiology referral center, serving patients from New York, Massachusetts, and Rhode Island as well as the rest of Connecticut.

The VACHS Medicine Service has one of the strongest research programs within the VHA nationwide. The service has grant funding from various sources, including the NIH, the Department of Veterans Affairs, the Department of Defense, and numerous foundations and companies within the industry. The team conducts numerous clinical trials in West Haven, and in turn produces hundreds of publications annually. In addition, VA faculty members are invited to make presentations and are recognized nationally and internationally.

The VACHS medicine service is considered preeminent in VISN 1, receiving awards for an engaged work force, an outstanding work environment, and excellent clinical outcomes. VACHS is a 1a (MCG) High Complexity Medical Center, which received a five-star rating for quality last year.

For more information on VACHS, visit www.connecticut.va.gov/.

CARDIOVASCULAR MEDICINE



ERIC VELAZQUEZ, MD
Section Chief

Cardiovascular disease care and research grapples with some of the most complex medical challenges of our time. Innovations in care delivery are under development to assure that Yale cardiovascular specialists are poised to lead the field forward. Moreover, in an age of personalized medicine, concerns about privacy and the appropriate use of data raise challenging questions while opportunities abound to leverage the potential of “big data” to improve cardiovascular health for the overall population.

Although the field is changing rapidly, our goal at Yale Cardiovascular Medicine (YCM) remains the same: to provide the right care for the right patient at the right time. Under the extraordinary leadership of Eric J. Velazquez, MD, the section chief of cardiovascular medicine, we remain optimistic about our ability to provide care to individuals across the spectrum of cardiovascular disease.

Research

With ongoing advances in treatment and preventive therapies, we have seen a two-decade low in heart attack mortality rates across the United States. Today, Yale researchers are including more women and minorities as subjects in cardiovascular research. One example is a study published in the *International Journal of Cardiology* that shows how a sex-specific classification system can provide a more precise guide for the treatment and diagnosis of heart attacks in women.

Section Expansion

In the previous academic year, YCM added 15 new physicians and additional staff, and expanded many of our clinical programs and services. Examples include the Comprehensive Heart Failure program and the 400th heart transplant performed by the Yale New Haven Hospital Heart and Vascular Center (HVC) in May 2019 — making us a top-performing heart transplant center in the country.

Likewise, we’ve also made tremendous strides in strategic genetic testing so that patients with hereditary cardiovascular diseases have access to more treatment options. This year YCM physicians became the first in Connecticut to offer a new treatment for a fatal hereditary cardiovascular disease.

We also saw a wider application of interventional cardiology. YCM became the first center in Connecticut to perform a transcatheter mitral valve repair (TMVR) procedure. This



The Section of Cardiovascular Medicine is the largest within the Department of Internal Medicine, with over 190 faculty, in addition to researchers, fellows, residents, and staff.

is the first procedure of its kind designed specifically to treat severe mitral regurgitation, a condition that causes blood to flow backward within the heart. We are the first and only program in Connecticut to offer this procedure and the second in New England to have performed it.

Education

Our alliance between YSM, YNHHS, and YNHHS streamlines the application of new technology from the research lab to the patient bedside. Moreover, these critical findings are also

We’ve made tremendous strides in strategic genetic testing so that patients with hereditary cardiovascular diseases have access to more treatment options.

shared in the classroom. The Yale Cardiovascular Medicine fellowship program provides an academically and clinically rigorous environment for fellows to obtain the necessary skills to become outstanding specialists in cardiovascular diseases. This year we welcomed 46 fellows; almost half the general cardiology fellows are women.

As we look to the future, we anticipate advances in personalized medicine to improve the patient experience. Digital health records have made it possible to better evaluate a patient’s health and mitigate the progression

of disease. Cardiovascular imaging research can also provide a more accurate guide for treatment and diagnosis. Yale physicians were the first in Connecticut and among the first in New England to offer an advanced cardiac test that can analyze blood flow to the heart and reduce the number of unnecessary cardiac catheterizations — thereby reducing complications, providing value, and accelerating diagnosis.

To learn more about the Section of Cardiovascular Medicine, visit medicine.yale.edu/intmed/cardio/.

DIGESTIVE DISEASES



LOREN LAINE, MD
Section Chief (Interim)

Since forming one of the nation's first sections of hepatology and then gastroenterology over 50 years ago, the Section of Digestive Diseases has had an enduring impact on research and clinical care in gastrointestinal and liver disorders.

Genetic Testing

Researchers led by Silvia Vilarinho, MD, PhD, are using whole-exome sequencing to look for the cause of chronic liver disease. For almost 30% of these patients, the cause is considered idiopathic, or unknown. In a May study published in the *Journal of Hepatology*, 19 adults with unexplained liver disease underwent an unrevealing workup by a hepatologist followed by whole-exome sequencing. Five of the participants received a diagnosis and treatment for their disease; one participant had suffered for nearly 20 years with their condition. The section will continue this research and seek answers for other individuals whose diagnosis remains elusive.

Obesity & Liver Health

In the fall of 2018, Wajahat Mehal, MD, discussed obesity and patient

Deborah D. Proctor, MD, AGAF, and Fred S. Gorelick, MD, won 2019 American Gastroenterological Association Recognition Awards, given in honor of outstanding contributions and achievements in gastroenterology.

care in a story on National Public Radio. He shared statistics regarding weight loss and how even moderate weight loss can affect diabetes and other diseases. People with diabetes, obesity, high blood pressure, and high lipids are at risk of fatty liver disease. The Yale Fatty Liver Disease Program can diagnose the presence of fatty liver and then determine strategies to improve this condition. In July, Albert Do, MD, MPH, was named clinical director of the program. Do completed his fellowship training at YSM, where he trained under Mehal.

In addition to the Fatty Liver Disease Program, the Metabolic Health & Weight Loss Program helps patients with obesity lose weight using a variety of therapies, including nutritional counseling, a meal replacement program, medications, and such endoscopic therapies as intragastric balloon placement. Artur Viana, MD, former digestive diseases fellow, was named clinical director of the program in June.

Gastrointestinal Cancers

As part of National Colorectal Cancer Awareness Month in March, Xavier Llor, MD, PhD, discussed colon cancer



Rosemarie Fisher, MD, and Guadalupe Garcia-Tsao, MD, were honored with annual lectureships in the fall of 2018.

risk factors, screening, and prevention to highlight the work of the Colorectal Cancer Program at YCC.

Research by Llor and by Rosa Munoz Xicola, PhD, on familial and hereditary GI cancers is now supported by a recent gift by C. Richard Boland, MD (YSM '73). Inspired by an intense curiosity about his family's long history of colon and other cancers, and a desire to help his and other families with similar cancer histories, Boland has devoted his entire medical career to finding the causes of hereditary colorectal cancer. Llor and Munoz Xicola will seek to discover additional cancer-causing genes; the ways in which colorectal cancers develop in families; the underlying mechanisms of cancer disparities; and the role environmental factors play in cancer development. Boland and section researchers hope this work will lead to better and more personalized prevention and treatment strategies that will save lives and make the term "cancer family" obsolete.

The section is also participating in a landmark study to determine whether colonoscopy or a simple stool test for



occult bleeding (FIT) is preferable in screening for colorectal cancer. This 50,000-person study is a nationwide VA Cooperative Study, with Petr Protiva, MD, MPH, serving as the local principal investigator at the Yale-affiliated VACHS.

Recognition

In February, Deborah D. Proctor, MD, AGAF, and Fred S. Gorelick, MD, won 2019 American Gastroenterological Association Recognition Awards, given in honor of outstanding contributions and achievements in gastroenterology. Proctor won the Distinguished Educator Award, which recognizes an individual who has made outstanding contributions throughout their career as an educator in gastroenterology on the local and national level. Gorelick was honored with the Distinguished Mentor Award, which recognizes someone who has made a lifelong effort dedicated to the mentoring of trainees in the field of gastroenterology and for achievements as an outstanding mentor throughout their career.

In October, the section established annual lectureships to honor two excep-

tional mentors: Rosemarie Fisher, MD, and Guadalupe Garcia-Tsao, MD. The Dr. Rosemarie Fisher Lectureship was held in the fall, and the Dr. Guadalupe Garcia-Tsao Lectureship was hosted in the spring. The speakers, chosen by Fisher and Garcia-Tsao, will be in various stages of their academic careers to reflect the diversity of career paths in digestive diseases.

Clinical Updates

Digestive Diseases is among the earliest groups incorporating an integrated care model to provide uniform high-quality evidence-based care across the health system via a model developed for screening and surveillance colonoscopies. GI hospitalists were added at YNHHS to expand inpatient gastroenterological care; they are full-time section faculty and will teach digestive diseases fellows and residents as part of this new role. Clinical services were also expanded into North Haven with the opening of an outpatient endoscopy unit at North Haven Medical Center.

Future Outlook

Planning has just begun for the establishment of a Digestive Health Institute within YNHHS. We anticipate significant clinical growth for the section due to this new initiative, with the development of multidisciplinary programs designed to offer patients the full range of options needed to maintain their digestive health and manage their digestive disorders.

To learn more about the Section of Digestive Diseases, visit medicine.yale.edu/intmed/digestivediseases/.



Albert Do, MD, reviews nutrition information with members of his Fatty Liver Program team.

ENDOCRINOLOGY & METABOLISM



JOHN WYSOLMERSKI, MD
Section Chief (Interim)

The Section of Endocrinology & Metabolism works to improve the health of individuals with endocrine and metabolic diseases by advancing scientific knowledge; applying new information to patient care; and training the next generation of physicians and scientists to become leaders in the field.

Section faculty focus on type 1 diabetes and complications of hypoglycemia; type 2 diabetes and insulin resistance/obesity; and metabolic bone disease and calcium metabolism.

Type 1 Diabetes and Complications of Hypoglycemia

In a groundbreaking NIH-funded Diabetes TrialNet study led by Kevan Herold, MD, investigators showed that immunotherapy in people at high risk of developing the disease can delay the onset of type 1 diabetes by two+ years. This randomized placebo-controlled trial was conducted at 14 TrialNet sites testing teplizumab's disruption the immune system's destruction of pancreatic beta cells.

The study was published in *The New England Journal of Medicine* (NEMJ) and presented in June at the American Diabetes Association's 79th Scientific Sessions. To add to the excitement, some participants haven't developed diabetes and are being followed to determine the duration of teplizumab's benefits.

Teplizumab was granted Breakthrough Therapy Designation by the U.S. Food and Drug Administration (FDA) for the prevention or delay of clinical type 1 diabetes in high-risk individuals on the strength of Herold's work.

Insulin is a life-saving medicine and an essential component of diabetes management, yet in the past decade, out-of-pocket costs for insulin doubled in the United States. Yale researchers led by Kasia Lipska, MD, MHS, reported that one-quarter of patients with type

1 or type 2 diabetes reported using less insulin than prescribed due to the high cost. Their report in *JAMA Internal Medicine* noted that over a third of patients experiencing cost-related underuse said they never discussed this problem with their provider. Patients that indicated any type of insulin underuse were also much more likely to have poor glycemic control.

Given her expertise in this area, Lipska testified in Washington before the House Committee on Energy & Commerce: Oversight and Investigations Subcommittee on the severe harm that the high price of insulin inflicts on patients.

Type 2 Diabetes and Insulin Resistance/Obesity

Yale researchers published research that revealed the basic biology of leptin, and how the endocrine system



Kevan Herold, MD, led a study testing teplizumab in patients with a high risk of developing type 1 diabetes.

mediates its effect to regulate food intake under conditions of starvation and poorly controlled diabetes. Their findings advance knowledge about leptin, which has been the focus of research on obesity and weight loss since its discovery in the 1990s, and also suggests a potential strategy for developing future weight loss treatments. Gerald Shulman, MD, PhD, was co-corresponding author.

Metabolic Bone Disease and Calcium Metabolism

The director of the Yale Bone Center, Karl Insogna, MD, FACP, teamed with Thomas Carpenter, MD, in pediatrics to investigate factors that lead to skeletal disease in patients with X-linked hypophosphatemic rickets (XLH). Yale has long been a leading referral and research center for patients with XLH. Insogna was the lead author on the *Journal of Bone and Mineral Research* report about the efficacy of burosumab for adults with XLH.

Elizabeth Jonas, MD, has had a long-standing interest in how intracellular calcium affects the efficiency of mitochondrial ATP production. Her studies have led to an improved fundamental understanding of the mitochondrial permeability transition pore. She has recently applied these fundamental insights into studies showing how mitochondria affect neuronal plasticity, neuronal cell death, insulin secretion, and energy metabolism.

Faculty Highlights

In May, Herold won the Donald F. Steiner Award for Outstanding Achievement in Diabetes Research. His research focus is the autoimmune causes of type 1 diabetes; his lab is identifying the immune cells responsible for attacking pancreatic islets as well as studying how beta cells respond to these attacks.

Richard Kibbey, MD, PhD, was inducted into the American Society for Clinical Investigation in April. Kibbey credited his nomination to his diabetes work. Kibbey and team identified a mechanism to explain how beta cells are responsible for blood glucose release in the body, developed a new technology to provide a greater understanding of metabolism, and designed a new possible target to treat diabetes in animal models. Kibbey and team are working with the NIH on approvals to start human clinical trials.

Rachel Perry, PhD, received the YCC Translational Science Research Prize for a July 2018 paper in *Cell Reports* that showed that both mitochondrial uncoupling with a controlled-release mitochondrial protonophore and

glucose lowering with metformin slowed obesity-associated tumor growth in two mouse models of colon cancer in an insulin-dependent manner.

Clinical Care

In addition to caring for patients with all endocrine and metabolic diseases through YM and YNHH, section faculty provide outpatient and inpatient care at the VACHS through numerous multidisciplinary clinics, including the Clinical Diabetes Center, the Bone Center, and the Multidisciplinary Neoplasia Clinic.

Silvio Inzucchi, MD, is the clinical director of the section. He is a master clinician whose research focuses on prevention of vascular complications of type 2 diabetes and metabolic syndrome. In addition, he is widely recognized as a national expert in the role of SGLT2 inhibitors in the prevention of cardiovascular disease in diabetes.

Elizabeth Holt, MD, PhD, heads the thyroid and endocrine tumor service at YCC. She is widely recognized as an outstanding endocrinologist within YNHHS. She has served as president of the CT Endocrine Society and on the Board of Governors of YM. She also oversees the endocrine curriculum for Yale medical students. In recognition of her outstanding clinical service and teaching ability, she was recently named firm chief of the Fitkin Inpatient Medical Service at YNHH.

To learn more about the Section of Endocrinology & Metabolism, visit medicine.yale.edu/intmed/endocrin/.



Kasia Lipska, MD, MHS, testified before the House Committee on Energy & Commerce: Oversight and Investigations Subcommittee about insulin pricing.

GENERAL INTERNAL MEDICINE



PATRICK O'CONNOR, MD, MPH, FACP
Section Chief

The 140+ full-time faculty members within Yale General Internal Medicine (GIM) are committed to the core missions of patient care, research, education, and community health from the “generalist” perspective.

Patient Care

GIM faculty oversee patient-centered care in five primary care clinics, three hospital general medical services, and within focused practice settings utilizing faculty expertise in areas such as occupational medicine, addiction medicine, and refugee health. Several GIM faculty have been recognized nationally as “Best Doctors” including Peter Ellis, MD, MPH; Matthew Ellman, MD; David Fiellin, MD; Robert Fogerty, MD, MPH, SFHM; Walter Kernan, MD; John Moriarty, MD, FACP; Patrick O'Connor, MD, MPH, FACP; Carrie Redlich, MD, MPH; and Daniel Tobin, MD, FACP, BS.

Research

Research in GIM focuses on core issues in the field including the clinical epidemiology of chronic diseases, health equity and diversity, health policy, and medical humanities.

Chronic Epidemiology of Chronic Diseases

YSM has led in addiction research and the training of caregivers in the care of those with substance use disorders. With the addition of Melissa Weimer, DO, Yale Addiction Medicine Consult Service (YAMCS) was established. YAMCS treats patients suffering from various substance use disorders when admitted to the hospital for a medical condition related to substance use, or are found to have a substance use disorder during their evaluation. Weimer joins the nationally recognized group of faculty in the Yale GIM's Program on Addiction Medicine, led by David Fiellin, MD. Other advances include new grants focused on treatment and training in primary care, the latter is overseen by Jeanette Tetrault, MD, along with Kenneth Morford, MD, recruited to the faculty in July 2019. In a related project, David Rosenthal, MD, and his team launched a free smartphone app, called BUP Home Induction, which has been adopted at the VACHS.

Cancer is another focus of the section through the Cancer Outcomes, Public Policy and Effectiveness Research (COPPER) Center. Much of the work by Cary Gross, MD, Ilana Richman, MD, and others study cancer prevention and treatment. Major focuses included equity in care, cancer drug approvals, alternative cancer treatments, and use of 3D mammography. A June 2019 study, published in the *Journal of Clinical Oncology*, showed that racial disparities in timely cancer treatment

disappeared in states that expanded Medicaid under the Affordable Care Act.

Health Equity and Diversity

The section promotes diversity within YSM through research and training, along with its Equity Research and Innovation Center (ERIC) program led by Marcella Nunez-Smith, MD, MHS. In “Minority Resident Physicians’ Views on the Role of Race/Ethnicity in Their Training Experiences in the Workplace,” lead author, Aba Black, MD, and team concluded that minority residents face extra workplace burdens such as bias, meriting further attention from educators, institutions, and accreditation bodies.

Led by Nunez-Smith, the new Pozen-Commonwealth Fund Fellowship in Minority Health Leadership at Yale funds three fellows per year



The work of Jennifer Miller, PhD, and Joseph Ross, MD, MHS, focuses on health policy. They teamed to create a scorecard to promote sharing of clinical trial data.

to complete the MBA for Executives degree program with a focus on health care, while receiving training and mentoring from experts in health care disparities across Yale and beyond.

GIM faculty care for thousands of individuals recently released from prison within the Transitions Clinic Network (TCN), 41 community health centers nationwide who care for and employ individuals with a history of incarceration as community health workers. A study led by Emily Wang, MD, in *BMJ Open* found that former prisoners who received health care in TCN sites were less likely to be reincarcerated.

Katherine C. McKenzie, MD, FACP, director of the Yale Center for Asylum Medicine, highlighted the plight of migrants seeking asylum and the condition of U.S. jails with a plea to provide improved medical care to prisoners in “Policymakers, provide adequate health care in prisons and detention centers,” an op-ed on *CNN*.

In addition to the programs above, work continues to increase diversity across all levels of the medical community. Section faculty who lead these efforts include Nunez-Smith, Inginia Genao, MD, and Darin Latimore, MD.

Health Policy

In November, the Yale University–Mayo Clinic FDA Center of Excellence in Regulatory Science and Innovation (CERSI), led by Joseph Ross, MD, MHS, won FDA grant renewal of up to \$20 million to continue their work ranging from opioid use to generic drug efficacy.

Many of the faculty within the section also work at the VACHS; please refer to pages 14-15 for more information on their work.

The work of bioethics in medicine expert Jennifer Miller, PhD, remains critically important to physicians and patients alike. Additionally, Miller, Ross and others developed a scorecard to promote better sharing and increase transparency of clinical trial data and improve pharmaceutical company practices as outlined in *The BMJ*.

Medical Humanities

In January, an all-women cadre of YSM residents from various departments presented their essays to faculty, residents, staff, and medical students as part of the 15th annual Yale Internal Medicine Residency Writers’ Workshop. The brainchild of Anna Reisman, MD, and Lisa Sanders, MD, FACP, the workshop began in 2003 to give residents the opportunity to enhance their powers of observation and to learn how to write essays and stories. In conjunction with the workshop, the department held its 16th annual Writing and Medicine Grand Rounds on narrative medicine. Reisman directs the YSM Program for Humanities in Medicine. Sanders writes the “Diagnosis” column in *The New York Times*.

Education

GIM faculty oversee educational programs for trainees at all levels. For

example, this year, Tetrault led an effort to create a new addiction thread throughout the YSM curriculum. Both the Yale Primary Care Internal Medicine Residency Program led by John Moriarty, MD, FACP, and the Yale Combined Medicine Pediatrics Program led by Ben Doolittle, MD, MA Div, are training the next generation of generalist physician leaders. Along with the Addiction Medicine Fellowship mentioned above, the section has three additional outstanding fellowship programs—the National Clinician Scholars Program (NCSP), led by Cary Gross, MD; the Occupational and Environmental Fellowship led by Carrie Redlich, MD; and the Medical Education Fellowship, led by Donna Windish, MD. The Medical Education Fellowship graduated their first class this year, each of who will undoubtedly have a substantial impact on their fields in the future.

Many of the faculty within the section also work at the VACHS; please refer to pages 14-15 for more information on their work.

To learn more about the Section of General Internal Medicine, visit medicine.yale.edu/intmed/genmed/.

GERIATRICS



MARY TINETTI, MD
Section Chief

Yale Geriatrics is devoted to the health and health care of older adults. Our faculty members provide clinical care informed by cutting-edge discoveries in aging, and we are home to one of the largest and most productive aging research programs in the world. We have a deep and longstanding commitment to training leaders in medical practice, education, and clinical investigation. Embedded throughout our work is the recognition that older adults differ widely in their health conditions, life contexts, and priorities. Embracing and understanding this heterogeneity is essential to ensuring that these elders receive high-quality care.

Medication Safety and Optimal Medical Therapy

By some estimates, more than two-thirds of older adults (aged 65 and older) take at least five medications per day for multiple medical conditions. Polypharmacy has been a major focus of our work in the 2018–2019 academic year. In an article published in June in the *Journal of the*

American Geriatrics Society, Marcia Mecca, MD, and Terri Fried, MD, point out that the benefits of a medication are attenuated when it is added to an already complex regimen, while the potential harms increase. They offer clinicians a new model for evaluating medication appropriateness in older adults. Medication prescribing and deprescribing is also the main area of interest for Gregory Ouellet, MD, who was recently awarded NIH funding to study anticoagulation use in adults with dementia and atrial fibrillation.

Building a Geriatric Workforce and Focusing on What Matters Most

Our faculty members continue to be leaders in two large-scale efforts to improve the health care delivered to older patients. Richard Marottoli, MD, MPH, is the director of the Connecticut Older Adult Collaboration for Health, or COACH 4M. Building upon partnerships between Yale University, YNHHS, and other organizations in greater New Haven, COACH 4M is working to increase the number of health care professionals with expertise in the principles of geriatric care. Its goal is to build and retain a diverse multidisciplinary geriatrics workforce. COACH 4M is supported through a grant from the U.S. Health Resources and Services Administration; funding was renewed for a second cycle in the 2018–2019 academic year.

Momentum has also continued to build for Patient Priorities Care, a project led by Mary Tinetti, MD, section chief of geriatrics. This approach to care helps patients and clinicians make health care decisions aligned with what matters most to the



Andrew Cohen, MD, DPhil, evaluates a patient's balance.

patient. A new free online training curriculum for health care professionals developed by the Patient Priorities Care team in partnership with the American College of Physicians was disseminated nationwide in May.

New Investigation into Multifactorial Geriatric Conditions

Yale Claude D. Pepper Older Americans Independence Center, directed by Thomas Gill, MD, provides intellectual leadership and innovation for aging research that is directed at enhancing the independence of older persons. In the 2018–2019 academic year, the Pepper Center was funded for another term by the National Institute on Aging and has now been continuously funded for more than 25 years. In addition to providing support to dozens of aging-related projects, a core mission of the

Embedded throughout our work is the recognition that older adults differ widely in their health conditions, life contexts, and priorities.

Pepper Center is to encourage junior faculty members to pursue research that benefits older adults. This year, career development grants were awarded to two outstanding young investigators. Brienne Miner, MD, MHS, is conducting work to understand insomnia in older patients; and Maor Sauler, MD, is studying the response to DNA damage in the aging lung and in patients with chronic obstructive pulmonary disease.

Future of Yale Geriatrics

We hope to expand the clinical, education, and research areas of Yale Geriatrics, increasing the number of faculty in all three areas. We continue expanding our scope through collaboration across the department, school, university, the greater New Haven community, and other institutions.

To learn more about the Section of Geriatrics, visit medicine.yale.edu/intmed/geriatrics/.



James Lai, MD, meets with 104-year-old Frances Goering at her residence as part of the section's Home Visit program.

HEMATOLOGY



STEPHANIE HALENE, MD, PHD
Section Chief (Interim)

The Section of Hematology has a long tradition of excellence in clinical care, research, and training with its nationally and internationally renowned faculty. The section's faculty is committed to advancing the science and practice of hematology by understanding the molecular basis of disease, and by translating basic discoveries from the lab to the clinic.

The DeLuca Center for Innovation in Hematology Research

In April, Yale Cancer Center (YCC) and Smilow Cancer Hospital (SCH) announced a five-year grant awarded by the Frederick A. DeLuca Foundation to establish the DeLuca Center for Innovation in Hematology Research. The gift will help translate groundbreaking research discoveries into practice-changing improvements in clinical care for patients with blood cancers and nonmalignant blood disorders at YCC and SCH. It will ensure detailed genetic characterization of each patient's cancer and advance the next generation of treatments for such hematologic malignancies as leukemia,

lymphoma, multiple myeloma, and related cancers. The gift will advance the understanding of clotting and bleeding disorders; foster research into precursor states for blood diseases; and expedite treatments for sickle cell disease.

The new center will facilitate recruitment of new faculty and provide grants to young scientists eager to develop promising ideas. It will also foster collaborations between clinicians and basic scientists to develop and test new therapies. A major focus of the center will be a biospecimen bank of samples taken from patients with all blood disorders.

Prior to the creation of the DeLuca Center for Innovation in Hematology Research, the foundation supported the work of Stephanie Halene, MD, PhD; Nikolai Podoltsev, MD, PhD; and Stuart Seropian, MD. The scientific advances made possible by the generosity of the foundation demonstrates how important philanthropic support can be.

Podoltsev's research and medical practice addresses not only acute myeloid leukemia (AML) but also such lesser-known blood malignancies as myelodysplastic syndromes (MDS) and myeloproliferative neoplasms (MPNs). One of the papers supported by the foundation's grant was published in October 2018 in *Blood Advances*. In this article, Podoltsev, along with other section researchers and faculty from the Yale School of Public Health, reaffirmed the treatment recommendations for polycythemia vera (PV) made by the National Comprehensive

Yale Cancer Center and Smilow Cancer Hospital announced a five-year grant awarded by the Frederick A. DeLuca Foundation to establish the DeLuca Center for Innovation in Hematology Research.

Cancer Network (NCCN). Although the NCCN recommends hydroxyurea (HU) as a first-line therapy for older PV patients, some physicians won't prescribe it because of doubts about its efficacy or misplaced fears that it can lead to acute leukemia.

Halene's research interests are the mechanisms that lead to MDS and AML, which are difficult to study because blood stem cells don't grow well in cultures and there are only a few cell lines that model a patient's primary disease. Partnering with faculty in immunobiology, Halene's lab works with genetically modified MISTRG mice with a human immune system that won't reject human cell grafts.

In a January 2019 paper published in *Nature Communications*, Halene and her co-authors described how they successfully engrafted human MDS cells into MISTRG mice developed in the Flavell Laboratory at Yale. As a result, they were able to reproduce

the clonal complexity of those cells and follow the progression of the disease. This work translates to studying human cells and how mutations can occur and alter the production of blood.

Halene is also working with other scientists to test PARP inhibitors in combination with other drugs against mutations of a common enzyme in MDS called isocitrate dehydrogenase (IDH). With Thomas Prebet, MD, PhD, associate director of the Myeloid Malignancies Program, they hope to bring their research to a clinical trial by this fall. New therapies for MDS are needed. Currently the only cure is a bone marrow transplant, which isn't possible for everyone.

Finally, we are pleased to announce that in addition to all of Halene's research achievements, she was recently named interim section chief for

the Section of Hematology. We look forward to further transformative research programs under her leadership.

Chimeric Antigen Receptor T-cell Therapy

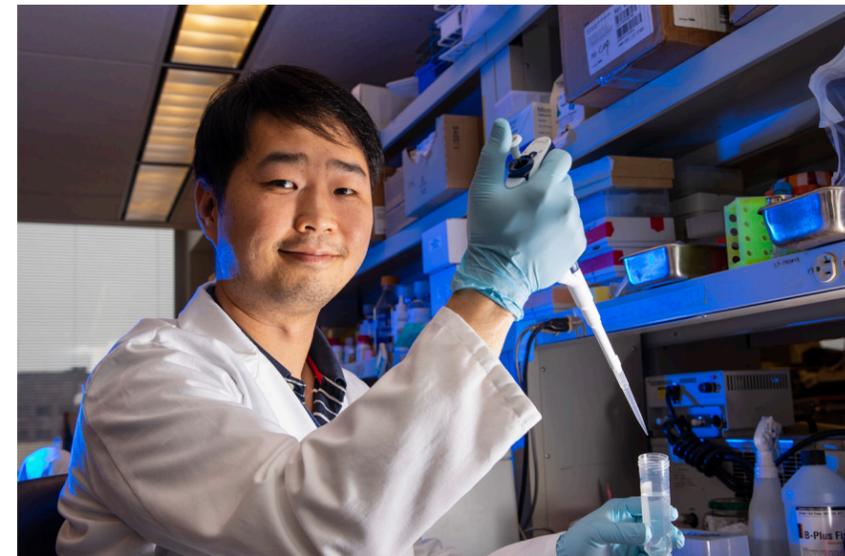
In March, YCC announced that chimeric antigen receptor (CAR) T-cell therapy is available for patients at the hospital. A promising new therapy, CAR T is a groundbreaking immunotherapy that can cure patients with certain blood cancers who have exhausted other treatment options.

CAR T therapy works by reprogramming a patient's own T-cells to target tumor antigens. It has shown complete remission rates of 80 to 90% in children with B-cell acute lymphoblastic leukemia and 40 to 50% in adults with aggressive B-cell non-Hodgkin's lymphomas who have failed other avenues of treatment.

Stuart Seropian, MD, and Iris Isufi, MD, co-direct the CAR T-Cell Therapy Program.

At this time, the therapy is approved by the Food and Drug Administration only for patients with childhood (up to age 25) acute lymphoblastic leukemia, the most common cancer in children, or for patients with adult B-cell non-Hodgkin's lymphoma. However, physicians at YCC are conducting clinical trials to test new CAR T-cell therapies against other cancers, including mantle cell lymphoma and multiple myeloma. Seropian and Isufi expect CAR T-cell therapies to be approved for a wider array of lymphomas and leukemias and expanded to include all age groups in the future.

To learn more about the Section of Hematology, visit medicine.yale.edu/intmed/hematology/.

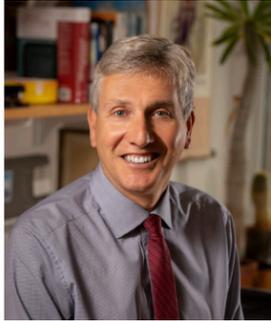


Yuanbin Song, MD, works in the lab of Stephanie Halene, MD, PhD, which studies myeloid malignancies and hematopoiesis.



Stuart Seropian, MD, and Iris Isufi, MD, co-direct the Chimeric Antigen Receptor (CAR) T-cell program, a therapy which reprograms a patient's own T-cells to target tumor antigens.

INFECTIOUS DISEASES



EROL FIKRIG, MD
Section Chief

Throughout the 2018–2019 school year, the work of the Section of Infectious Diseases has been featured on many platforms, ranging from “NBC Nightly News” to *The New England Journal of Medicine*. In addition, various faculty members were honored within Yale School of Medicine and nationally for their work in the field.

Research

The research throughout the section ranges from work in HIV/AIDS to tickborne illnesses to mosquito-transmitted diseases and the immunology of aging.

\$40 million in grants was awarded in March to study medication treatment for veterans with opioid addiction. Faculty within the section will lead the research, which is supported by the Veterans Affairs (VA) Cooperative Study. Their work will compare the effectiveness of two forms of buprenorphine, an FDA-approved medication to treat opioid use disorder.

An important finding as part of the section’s HIV/AIDS research was pub-

lished in August in *The New England Journal of Medicine*. The study, “Phase 3 Study of Ibalizumab for Multi-drug-Resistant HIV-1,” concluded that in patients with MDR HIV-1 infection who had advanced disease and limited treatment options, ibalizumab had significant antiviral activity during a 25-week period.

In addition to its national efforts, the section works across the globe and worldwide patient populations to improve treatments for and reduce the transmission of HIV. One study published in October in *PLOS Medicine*, “Retention in HIV care during the 3 years following release from incarceration: A cohort study,” focused on HIV treatment after prison release. The researchers concluded that supporting community-based efforts and reducing recidivism are key to improving treatment in this population.

Other threats to global health include infections transmitted by mosquitoes, including West Nile virus, Zika, and malaria. In a March study published in *Nature Microbiology*, section researchers demonstrated that blocking a protein (AgBR1) found in the saliva of mosquitoes and transmitted to hosts could reduce Zika infection. For the July report in *NPJ Vaccines*, they tested the same theory in mice exposed to West Nile by the same mosquito, *Aedes aegypti*, and found that an AgBR1 antiserum delayed the appearance of West Nile virus infection in mice. This work provides further evidence to support the targeting of AgBR1 to protect against West Nile virus and other mosquito-borne threats. Another section study highlighted in *The Lancet* showed a reduction of

childhood malaria with the use of ivermectin. In September, “NBC Nightly News” showcased the section’s efforts to develop a new type of vaccine for Lyme disease.

In a study published in November, section researchers created the first-ever continuous in vitro system of *Babesia duncani*, allowing them to examine the parasite in human red blood cells over time and study its biology. Noted as a tipping point on *Babesia duncani*, this invention allows researchers to design new diagnostic tests to search for more effective therapies. In conjunction with this work, YSM hosted the 2nd International Babesiosis Meeting in April to foster scientific collaboration in babesiosis.

Clinical Care

Infectious diseases faculty treat patients at both YNHH campuses and the VACHS in West Haven. Since



Barbara Kazmierczak, MD, PhD, was honored with an endowed professorship, the Gustavus and Louise Pfeiffer Research Foundation MD-PhD Program Director, in December.



Postgrad Syim Salahuddin, BS, MS, works in the lab of Brinda Emu, MD, and studies the intersection of chronic viral infection and oncology, with a focus on HIV-associated malignancies.

YNHH draws patients from across New England, the section can treat patients with rare diseases. One such case was highlighted in a November *The New York Times* story, “A Rash on Her Palms and the Bottoms of Her Feet Was the Clue That Turned the Case.” Section faculty diagnosed and treated a case of rat bite fever.

Faculty Highlights

Vaccine expert Saad B. Omer, MBBS, MPH, PhD, joined the section and is the inaugural director of the Yale Institute for Global Health (YIGH). He holds a joint appointment with the Yale School of Public Health. Omer will leverage Yale’s preeminence in research, teaching, and clinical care for solving major global health problems

to develop signature programs in partnership with colleagues around the world that improve health and reduce preventable deaths.

In December, Barbara Kazmierczak, MD, PhD, was named the Gustavus and Louise Pfeiffer Research Foundation MD-PhD Program Director, a position she will hold while she serves in that directorship.

Recognized for her kindness and dedication, Dana Dunne, MD, was awarded the Charles W. Bohmfalk Prize for teaching in the clinical sciences at the May YSM commencement.

Philanthropy

Yale College graduate Dr. G. Alexander (Sandy) Carden recently established

the Dr. George A. Carden Jr. Fellowship in memory of his father to support YSM undergraduate and graduate student scientists or current fellows pursuing several months of work in biological science or clinical research areas of investigation related to infectious diseases. Carden was an accomplished internist who was a leader of the Malaria Research Team of the Office of Scientific Research and Development (subsequently the National Institutes of Health) during World War II and performed important research in the vital area of malaria prevention and treatment. The gift builds on the tradition of supporting the education of young medical scientists and will help provide vital research experiences and learning opportunities for future leaders in the field of infectious diseases.

Future Outlook

Section faculty will continue their emphasis on understanding and preventing such vector-borne diseases as those transmitted by mosquitoes and other insects through their research programs. Within education, the team will focus on the global impact of infectious disease when teaching medical students, fellows, and residents. Section physicians will provide clinical care for patients with HIV and other infectious disease issues associated with organ transplantation and cancer.

To learn more about the Section of Infectious Diseases, visit medicine.yale.edu/intmed/infdis/.

MEDICAL ONCOLOGY



ROY S. HERBST, MD, PHD
Section Chief

Consisting of nearly 100 faculty members, the Section of Medical Oncology is renowned for its groundbreaking clinical and translational cancer research; excellence in training and education of the next generation of clinicians and clinician-scientists; and exceptional clinical care.

Yale Cancer Center (YCC), Smilow Cancer Hospital (SCH), and Satellite Care Centers

YCC has been a National Cancer Institute (NCI)-designated comprehensive cancer center for over 45 years and is Connecticut's only such facility. SCH treats nearly half the 20,000 patients diagnosed with cancer in the state each year. Through the recent integration of 13 satellite care centers, YCC and SCH are able to care for more patients and offer them possible enrollment in one of 300+ open clinical trials of novel therapies and therapeutic approaches.

Specialized Programs of Research Excellence (SPORE)

NCI-funded SPOREs are large five-year program grants focused on specific organ sites. They promote

collaborative interdisciplinary translational cancer research within and among institutions. These prestigious awards are extremely selective and highly coveted; Yale has two SPORE programs in lung and skin cancers led in part by section members (Roy Herbst, MD, PhD, and Harriet Kluger, MD, respectively). Each project within the SPORE focused on advanced disease is co-led by a section clinical and/or translational principal investigator and a team of clinicians and clinician-scientists. The research in progress within this funding modality is truly innovative and has the potential to make a significant impact on the prevention and treatment of lung cancer and melanoma.

Siglec-15

As part of the SPORE in lung cancer, Lieping Chen, MD, PhD, and his team discovered the immune cell transmembrane protein Siglec-15 as a potential novel target for cancer therapy. This work builds on the earlier findings of Chen and his colleagues related to the use of immunotherapy targeting the PD-1/PD-L1 checkpoint pathway in cancer, findings that helped lead to the FDA's approval of anti-PD-L1 therapies that are the standard of care today for multiple advanced cancer types. Through partnership with NextCure, Inc. (founded by Chen), an anti-Siglec-15 antibody, NC318, was developed and is now in a Phase I/II clinical trial in five hospitals, with YCC as the lead investigational site. Patricia LoRusso, DO, and other section faculty serve as the principal and co-investigators, and David Rimm, MD, PhD, is analyzing

the tumor microenvironment from trial biospecimens. Scott Gettinger, MD, and Herbst have developed an investigator-initiated study as part of our SPORE efforts. This trial promises to improve the standard of care in advanced cancers, providing a much-needed treatment option for patients who may not respond to or stop responding to current immunotherapies.

CD40

Mario Sznol, MD, (a SPORE in skin cancer project principal investigator) was a lead investigator on clinical trials of the PD-1 inhibitor nivolumab in metastatic melanoma, leading to its FDA approval. Like Chen, Sznol, and section members Kluger and Sarah Weiss, MD, among others, understand the critical need for new immunotherapeutic options for the nearly 80% of cancer patients who don't respond to current immunotherapies. They've identified CD40, a co-stimulatory receptor, as a potential candidate treatment target and are evaluating the anti-CD40 antibody APX005M through clinical trials in combination with nivolumab for the treatment of metastatic melanoma and non-small-cell lung cancer (NSCLC). Preliminary results were presented by Weiss at the American Association for Cancer Research annual meeting, showing that the novel combination triggers an immune response in those individuals who didn't achieve long-term benefit from anti-PD-1/PD-L1 therapies.

Center for Immuno-Oncology at Yale

The Yale Center for Immuno-Oncology was established in 2018 to build on YCC's international leadership in



Michael DiGiovanna, MD, PhD, is presented the 2019 Alvan R. Feinstein Award by Dean Robert Alpern, MD.

immunology, immunobiology, and the development of innovative cancer immunotherapies. Led by Herbst, the Center is a partnership between YCC and the Department of Immunobiology at YSM.

Faculty Recognition

Michael DiGiovanna, MD, PhD, won the 2019 Alvan R. Feinstein Award in recognition of outstanding teaching of clinical skills, awarded at Commencement in May. This honor was based on his 20+ years of service at YSM. He led the development of the new medical school curriculum in 2015. Since then, DiGiovanna has served as curriculum director in addition to his roles as co-director of all pre-clerkship courses, the pharmacology thread leader, and course co-leader/lecturer for the Genes & Development Master Course.

A team of YCC investigators led by Herbst has been awarded the



Patricia LoRusso, DO, discusses a clinical trial with a patient in the Phase I Program office at Yale Cancer Center.

2018 Team Science Award from the Association for Clinical and Translational Science for its pioneering work in advancing understanding of immunotherapy. Herbst has also been named to the board of directors for the International Association for the Study of Lung Cancer (IASLC). His four-year term began at the IASLC 2019 World Conference on Lung Cancer in Barcelona in September.

LoRusso was elected to the nominating committee of the American Association for Cancer Research (AACR), whose members select candidates for the offices of president-elect, the board of directors, and the nominating committee. She has served the AACR for a number of years, perhaps most notably as president of Women in Cancer Research (WICR; 2015–2016) and a member of the AACR Board of Directors (2015–2018).

Other recognition includes Sznol's being named president of the Society for Immunotherapy of Cancer. Lajos Pusztai, MD, DPhil, became chair of the breast committee of the SWOG Cancer Research Network.

Training Opportunities

Two training grants have been awarded to the section in the past two years, one to fund continued research training for fourth-year fellows and one for junior faculty. These grants provide protected time and research support to advance the careers of clinician-scientists. Administration of the training programs is supported by Edward Kaftan, PhD, and Meina Wang, PhD, from the Office of Translational Research.

For more information on the Section of Medical Oncology, visit medicine.yale.edu/intmed/medonc/.

NEPHROLOGY



STEFAN SOMLO, MD
Section Chief

Almost 100 years after John Peters, MD, founded the metabolism section at YSM, the Section of Nephrology continues to thrive and grow. Focused on excellence in patient care, research, and education, the section's faculty members are national and international leaders in the field.

Research

A research team led by former fellow and assistant professor Dennis Moledina, MBBS, PhD, found biomarkers that could assist with a diagnosis of acute interstitial nephritis (AIN). As outlined in the study published in *JCI Insight*, patients who were diagnosed with AIN had higher levels of urinary TNF-alpha and interleukin-9. AIN can lead to permanent kidney damage if not diagnosed and treated in a timely fashion, so testing for these markers may lead to improved clinical care as well as quicker diagnosis and treatment.

Shuta Ishibe, MD, led research into histone deacetylase 1 (HDAC 1) and HDAC 2, identified as contributors to the development of proteinuric

kidney diseases. In the study published in the *Journal of Clinical Investigation*, the team found that restricting HDAC 1 and HDAC 2 could slow the progression of disease through the regulation of podocyte early growth response 1, and, in collaboration with F. Perry Wilson, MD, provided evidence that inhibition of HDACs may also be effective in patients.

In March, Robert Safirstein, MD, and team reported that the progression of acute kidney injury (AKI) to chronic kidney disease caused by chemotherapy drug cisplatin was due to unresolved injury and sustained activation of regulated necrosis pathways rather than fibrosis.

In *JCI Insight*, Nikhil Singh, MD, PhD, a fellow mentored by Lloyd Cantley, MD, used imaging mass cytometry to create an atlas of the human kidney. The team identified cell types present in normal and abnormal kidneys and showed how application of this technology can lead to greater understanding of the mechanisms of kidney disease.

Whitney Besse, MD, led a project looking at patients with genetically unresolved diagnosis of autosomal dominant polycystic liver disease (ADPLD). Published in August in the *Journal of the American Society of Nephrology*, section researchers used whole-exome sequencing to identify *ALG9* as a candidate gene causing ADPLD. They validated and extended their findings using a novel "genotype first" approach to show 88% of individuals with *ALG9* mutations have kidney cysts on abdominal imaging, adding *ALG9* to the list of genes underlying polycystic kidney disease

(PKD), an inherited kidney disorder that leads to cyst development in the kidneys and liver as well.

Clinical Care

Neera Dahl, MD, PhD, teamed with Stefan Somlo, MD, to build patient care and research around PKD. They created a program encompassing diagnosis, treatment, and risk assessment. Dahl leads a clinical trial looking at the use of tesevatinib, an experimental drug, in the treatment of autosomal dominant polycystic kidney disease (ADPKD). The trial runs through 2020.

Other current studies run by the section's physician/scientists investigate the genetics of polycystic livers, hyperoxaluria and hyperoxalemia, IgA nephropathy, C3 glomerulopathy, diabetic nephropathy, resistant hypertension, and neurogenic orthostatic hypotension.

Jeffrey Turner, MD, cares for patients with a wide variety of kidney-related ailments, including nephrotic syndromes, glomerulonephritis, kidney disease in the setting of heart failure, diabetic nephropathy, and hypertension-associated kidney disease. Turner co-leads two trials that evaluate the safety and effectiveness of investigational devices to treat resistant hypertension.

In addition to new programs in New Haven, plans to add a new practice in Greenwich, Connecticut, are under way.

Education

Ursula Brewster, MD, leads the nephrology fellowship program. In April, Brewster traveled to Kampala, Uganda, to expand the fellowship



Anushree Shirali, MD, performs a general examination of a patient with impaired kidney function.

through YSM's partnership with Makerere University. Although Uganda's population is over 40 million, there are currently only seven nephrologists in the entire country. Access to kidney care is very limited. YSM nephrology fellows with an interest in global health will rotate at Makerere University, working on the nephrology unit and in the clinics. Fellows will be active in the educational conferences there and participate in teaching students, interns, and residents. The partnership is made possible by teaming with the department's Office of Global Health and the Yale/Stanford Johnson & Johnson Global Health Scholars program. This new collaboration will continue to expand in the future.

Recent program graduates Besse and Moledina recently received career development awards from the NIH. Ravi Kodali, MD, joined the faculty in August.

Faculty

Section faculty won numerous awards throughout the 2018–2019 academic

year. Peter Aronson, MD, received the 2019 Walter B. Cannon Award Lecture-ship from the American Physiological Society in April 2019. Aronson has a joint appointment in nephrology and cellular and molecular physiology.

Namrata Krishnan, MD, teamed with Gowthaman Gunabushanam, MD, in radiology and biomedical imaging to win the 2018 American Society of Nephrology's Innovations in Kidney Education Contest for their interactive teaching module on hemodialysis access. The duo was one of the three winning teams in the fourth annual Innovations in Kidney Education Contest recognized at ASN's Kidney Week.

Margaret J. Bia, MD, won a lifetime achievement award from the National Kidney Foundation Serving Connecticut and Western Massachusetts in the fall.

The George M. O'Brien Kidney Center at Yale School of Medicine

In August, the George M. O'Brien Kidney Center at YSM received renewed funding from the National



Ursula Brewster, MD, and Randy Luciano, MD, PhD, lead the nephrology fellowship program.

Institute of Diabetes and Digestive and Kidney Diseases of the NIH for \$6 million for the five-year period from 2018–2023. The center, which is directed by Aronson, facilitates basic, translational, and clinical research that will advance the prevention and treatment of kidney diseases.

A critically important benefit of the center is to provide renal investigators both at YSM and across the country with access to highly specialized services not otherwise routinely available, and to support their research through its three research service cores: Animal Physiology and Phenotyping; Disease Models and Mechanisms; and Human Genetics and Clinical Research. In addition, the center supports pilot grants for junior investigators and summer research fellowships for undergraduate and medical students.

To learn more about the Section of Nephrology, visit medicine.yale.edu/intmed/nephrol/.

PULMONARY, CRITICAL CARE & SLEEP MEDICINE



NAFTALI KAMINSKI, MD
Section Chief

The Section of Pulmonary, Critical Care & Sleep Medicine (Yale-PCCSM) is a rapidly growing, dynamic academic section with a strong commitment to outstanding patient care, cutting-edge research, and education, with a special focus on well-being and work climate. The number of our faculty has increased significantly in the last few years. Of the 55 faculty, 50% are women and 10% identify as members of underrepresented in medicine (URiM).

Clinical

Section faculty members carry out the clinical mission on the floors, units, and clinics at the York Street and Saint Raphael campuses of YNHH; the VACHS in West Haven; and North Haven Medical Center. Inpatient services include the 60-bed medical intensive care unit (MICU) with a 30-bed step-down unit; the 100-bed tele-ICU unit that covers many hospitals statewide, the Consult Service, and the Thoracic Interventional Program, which performs thousands of complex procedures annually. The section's

ambulatory services include the Yale Sleep Centers, the Yale ILD Center of Excellence, the Yale Center for Asthma and Airways Disease (YCAAD), the Yale Pulmonary Vascular Disease Center, the Yale Adult CF Center, the Yale COPD program, the Thoracic Oncology Program, and the Comprehensive Pulmonary Program. Over 10,000 patients are seen at Yale-PCCSM outpatient facilities — a number which will continue to grow after the completion of additional outpatient facilities. The team was recently ranked 16th on the *U.S. News & World Report* "America's Best Hospitals" list.

Education

In recent years, the size and depth of the section's educational mission has significantly increased. This year, Yale-PCCSM has 26 fellows, including 17 traditional pulmonary/critical care medicine fellows; four critical care medicine fellows; four sleep medicine fellows; and one interventional pulmonary fellow. Research training,

Over 10,000 patients are seen at Yale-PCCSM outpatient facilities — a number which will continue to grow after the completion of additional outpatient facilities.



The Section of Pulmonary, Critical Care & Sleep Medicine boasts 82 full time faculty members, along with researchers, fellows, residents, and staff.

an integral part of the traditional pulmonary/critical care medicine fellowship, is usually supported through an NIH-NHLBI T32 grant. In the past decade, 85% of Yale-PCCSM fellowship graduates have gone on to academic careers, including 13 who have joined the faculty at Yale. In addition to the fellows, multiple postdoctoral, predoctoral, and postbaccalaureate research trainees receive their training at Yale-PCCSM laboratories and research programs. Continued education of faculty is considered an integral part of the education mission of Yale-PCCSM. All faculty participate in individual career development mentoring programs,

and faculty retreats, regardless if they are researchers, educators or clinicians.

Research

Yale-PCCSM has a strong tradition of research excellence that has been augmented in recent years. In addition to the clinical centers and programs, two research centers, the Center for Precision Pulmonary Medicine (P2MED) and the Center for Pulmonary Infection Research and Treatment (CPIRT), were added in the last five years. Yale-PCCSM boasts a well-rounded research portfolio with NIH-funded researchers in most areas of lung research, including the pathogenesis, progression and outcomes of asthma, COPD, cystic fibrosis, acute lung injury,

pulmonary vascular disease, sleep disordered breathing, and pulmonary fibrosis. The disciplines included range from bench research and translational and clinical research to genomics, informatics, and big data.

Research at Yale-PCCSM has undergone unprecedented growth in recent years. NIH funding per year increased more than twofold, from \$6,167,642 in fiscal year 2013 to \$12,647,936 in fiscal year 2018. The funding increase was accompanied by a threefold increase in productivity. Publications authored and co-authored by members of Yale-PCCSM increased from 42 in 2013 to 121 in 2018, including publications in

such top biomedical journals as *The New England Journal of Medicine*, *Nature Medicine*, *Science Translational Medicine*, *Lancet Respiratory Medicine*, *e-Life*, *JAMA Internal Medicine*, *American Journal of Respiratory and Critical Care Medicine*, and *European Respiratory Journal*. Importantly, the increase in productivity has not been limited to federally funded researchers, but has included members in all areas of the section.

For more information on Yale-PCCSM, visit medicine.yale.edu/intmed/pulmonary/ or on Facebook ([facebook.com/yalepccsm](https://www.facebook.com/yalepccsm)), and Twitter (twitter.com/YalePCCSM).

RHEUMATOLOGY, ALLERGY & IMMUNOLOGY



RICHARD BUCALA, MD, PHD
Section Chief

The Section of Rheumatology, Allergy & Immunology is dedicated to providing state-of-the-art and evidence-based clinical care for patients with rheumatic, allergic, and immunologic disorders; educating future leaders in these fields; and conducting cutting-edge research into fundamental questions of autoimmunity and immunology.

Faculty

Last year, the section brought in new faculty members and launched several initiatives to expand its footprint in clinical care, research, and education.

Richard Bucala, MD, PhD, was appointed chief in May 2019. A graduate of Yale College, he joined YSM faculty in 2002 and has appointments in internal medicine, pathology, and epidemiology & public health. He studies immune system regulation with a focus on protective responses that can lead to immunopathology and disease. He is credited with cloning macrophage migration inhibitory factor (MIF), the first cytokine to be described, and with defining its genetic contribution to autoimmunity, as well as the

discovery of the fibrocyte, a blood-borne connective tissue cell that contributes to pathologic fibrosis. Bucala was named the Waldemar Von Zedtwitz Professor of Medicine, Pathology, and Epidemiology and Public Health in July 2019.

Insoo Kang, MD, served as interim chief during the prior year and played a central role in integrating the department's former Allergy & Clinical Immunology division into a new and unified section. Vaidehi Chowdhary, MD, became the new clinical chief of the section in June. Chowdhary joined YSM from the Mayo Clinic in Rochester, Minnesota, where she was assistant professor of medicine and chair of the Connective Tissue Disease Subspecialty Group and faculty development. She has significant experience in both clinical research and postgraduate education, and will lead the section's integration of these activities as it expands the scope of its clinical care.

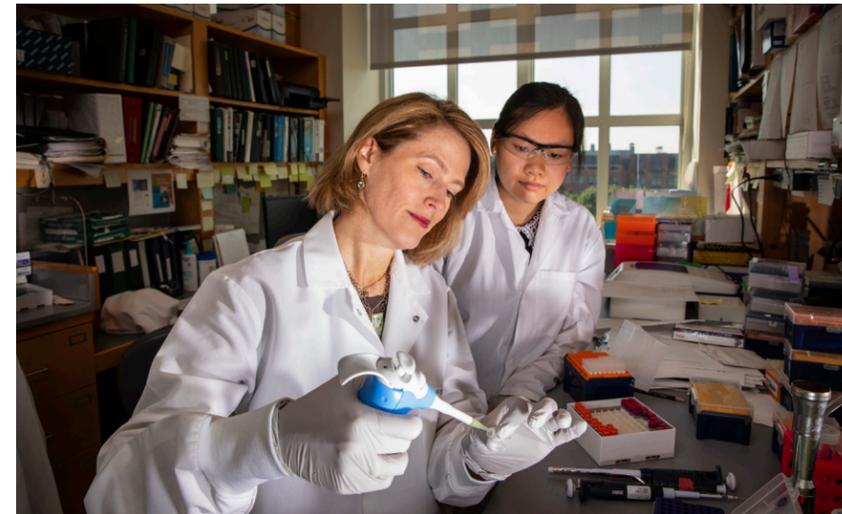
Monique Hinchcliff, MD, MS, was named director of the newly founded Yale Scleroderma Program in July. She leads a multidisciplinary team of physician-scientists with an interest and expertise in systemic sclerosis and its multiorgan complications, which accounts for the highest case fatality rate of all rheumatologic diseases. The team provides coordinated, multidisciplinary care for patients with a wide array of clinical manifestations of scleroderma — including skin, lung, heart, renal, and gastrointestinal involvement — while addressing functional, nutritional, psychological, gynecological, urological, and/or sexual health challenges as well.

The YM Lupus Program, led by Fotios Koumpouras, MD, continues to grow; it now serves over 150 patients. The program affords patients participation in clinical trials and research studies.

Evelyn Hsieh Donroe, MD, MPH, who has conducted extensive collaborative work in China on bone health, became the chief of rheumatology at the VACHS. As examples of the excellence of the Rheumatology, Allergy & Immunology fellowship program, Betty Hsiao, MD, and Mei Xue Dong, MD, PhD, joined the faculty in July after completing their training. Dong is investigating the role that novel serum autoantibodies play in rheumatic diseases. Hsiao is developing a new instrument to assist patients with rheumatoid arthritis and their doctors in sharing medical decision making to select appropriate therapies. The section also welcomed Jason Kwah, MD, as its fourth dedicated faculty member in allergy and immunology.

Research

In May, Andrew Wang, MD, PhD, and Aaron Ring, MD, PhD, both in immunobiology, won an award for their work in sepsis from the Blavatnik Fund for Innovation at Yale, whose



Led by Monique Hinchcliff, MD, MS, the Scleroderma program will bridge outstanding clinical and basic science research from YSM with patient care through YNHHS.

goal is to bolster translational research and move the work of investigators closer to clinical application. Wang was appointed to the faculty of YSM in August 2017 after completing his rheumatology fellowship at Yale. In February, Wang and colleagues published their work about a deadly complication of sepsis known as macrophage activation syndrome, associated with lethal levels of inflammation. This work allowed them to study the condition in an animal model for the first time and led to a potential new strategy for treatment.

Clinical Initiatives

Abhijeet Danve, MBBS, MD, FACP, launched a program at the Spine Center at YNHHS dedicated to patients with ankylosing spondylitis, an inflammatory condition that causes back pain. He and Hinchcliff are working with YCCI information technology specialists to develop a

system enabling patients to use iPads to complete the EMR validated health questionnaires for real-time shared medical decision-making, quality improvement, and clinical research.

Ryan Steele, DO, MSc, joined the faculty in November of 2018 to establish YM's Allergy & Immunology Contact Dermatitis Program. Steele is a board-certified allergist-immunologist and internist, and treats a full range of allergic and immunologic diseases at North Haven Medical Center.

In late 2018, Christina Price, MD, launched a program with colleagues at YCC in preventive rheumatology/immuno-oncology focused on immune wellness. This program identifies patients at high risk of developing autoimmunity during cancer treatment in order to provide therapeutic interventions as early as possible.

The YM Lupus Program, led by Fotios Koumpouras, MD, continues to grow;

it now serves over 150 patients. The program affords patients participation in clinical trials and research studies. One study recently launched will determine the therapeutic effects of BMS-986165, an oral tyrosine kinase 2 (TYK2) inhibitor. BMS-986165 has the potential to treat subjects diagnosed with systemic lupus erythematosus (SLE) safely and effectively. Another trial, which targets daily pain related to systemic lupus, aims to evaluate the efficacy, safety, and tolerability of JBT-101, synthetic endocannabinoid receptor type 2 (CB2) agonist and an activator of the body's normal processes to resolve innate immune responses without immunosuppression.

The section continues to expand in other directions. In rheumatology, recruitment is in progress to hire a new basic science faculty member and two clinician-scientists who will build and lead multidisciplinary specialty care centers in specific rheumatic diseases. In allergy and immunology, programs directed at food allergy, patch testing, and screening for antibiotic allergy are in development with plans to increase all services to patients in New Haven and the surrounding region.

Education

Koumpouras and F. Ida Hsu, MD, direct the Rheumatology and Allergy and Immunology Fellowship programs, respectively. The programs trained three rheumatology and two allergy and immunology fellows during the last academic year.

To learn more about the Section of Rheumatology, Allergy & Immunology, visit medicine.yale.edu/intmed/raci/.

OTHER PROGRAMS

Office of Global Health

The Department of Internal Medicine's Office of Global Health continues to focus on bilateral capacity-building and applied research, with the goal of improving the care of patients in resource-limited communities both in the United States and abroad through its numerous programs.

Yale/Stanford Johnson & Johnson (J&J) Global Health Scholars Program

This program provides career-changing experiences for medical residents and faculty who want to participate in patient care while seeking to expand their own understanding of human health and disease by experiencing the practice of medicine and medical education in resource-limited environments. This year, the program sponsored a total of 52 scholars selected nationally (19 from Yale) at the following sites: 15 in Uganda, 16 in South Africa, 16 in Rwanda, and five in Colombia. Forty of these scholars received a stipend from J&J.

Training Initiatives

Global Health sponsored 10 visiting faculty/chief residents for further training at YNHH. These included six physicians from Uganda (neurology, emergency medicine, and Ob/Gyn); three physicians from Rwanda (a nephrologist who trained for 18 months and two chief residents); and one chief resident from Liberia (internal medicine).

In addition, four medical students from the Makerere University School of Medicine in Uganda were hosted as part of an ongoing exchange program.

The seven-year Human Resources for Health project in Rwanda that involved eight medical schools, including YSM, concluded in June 2019. The project included physicians in internal medicine, pediatrics, Ob/Gyn, and public health, and resulted in triple the number of enrolled medical students and the development of nine additional residency programs.

New Projects/Programs

Development of Domestic Global Health Collaborations

The office is developing rural health collaborations in Grundy County, Tennessee, and at an Indian Health Service (IHS) Clinic in Chinle, Arizona. To support the Grundy collaboration, Nick Pumilia, MD, was recruited to spend six months at this site working with local health care leaders to develop a partnership that would better respond to the

need of the community. This site, as well as the Chinle site, are now available for Yale residents to undertake clinical rotations.

International Alliances

The work in Liberia is funded by the World Bank, the U.S. Health Resources and Services Administration, and the National Academy of Science. Highlights of the program include the restructuring of the A.M. Dogliotti School of Medicine curriculum, led by Kristina Talbert-Slagle, PhD, with support of YSM's Center for Teaching and Learning. The school is located in Monrovia. This new model of training will be implemented for the entering 2020 class. In collaboration with the University of Liberia College of Health Sciences, a certificate program in health management was inaugurated, which trained 20 mid-level managers this past year. In addition, a program to train specialists in infectious diseases headed by Onyema Ogbuagu, MBBCh, FACP, in collaboration with the University of Jos School of Medicine in central Nigeria, was inaugurated in the past year.

In collaboration with the YNHH Office of Graduate Medical Education as well as the Hospitalist Program, chief residency positions were created in Global Health. These individuals worked clinically for the hospitalist service for six months of the year in addition to serving in New Haven-based teaching roles within the residency programs. They then spent six months at a Global Health partner site as clinicians and



A group of former trainees from Uganda meet with current U.S.-based J&J Scholars; Rabin (far right); MUYU administrators; Pericles Lewis, vice president and vice provost for Global Strategy (center); and Eddie Mandhry from the Office of International Affairs (fifth from the right).

teachers. These slots were filled by two graduates: Pumilia, who worked in Tennessee; and Kevin O'Laughlin, MD, who worked in Uganda. This model is under evaluation.

The Global Health and Equity Distinction Pathway (GHEDP), one of four distinction pathways in the department, is led by Tracy Rabin, MD, MS. It had a successful year with 26 residents from our three training programs participating.

The office hosted the Ninth Annual Global Health Day in March, exploring the role of academic institutions in global health with representation from the Schools of Medicine, Public Health, and Nursing, and the newly formed YIGH. The fourth annual Continuing Education in Refugee Health program ("Physical and Mental Health of Refugees: Supporting Families") concluded the day.

The Center for Outcomes Research & Evaluation

The Center for Outcomes Research & Evaluation (CORE) is a world-renowned outcomes research center that improves health and health care through targeted research and evaluation projects that combine scholarship and service to have positive effects on policy and people's lives. CORE is involved in projects with government agencies, including the Centers for Medicare and Medicaid Services and the Food and Drug Administration, health systems, insurers, industry and patient groups.

In June 2019, among other accomplishments, CORE, with the Cold Spring Harbor Laboratory and the *BMJ* launched a preprint server to foster collaboration and improve research transparency. For decades the medical community has struggled to disseminate new information. medRxiv [pronounced "med-archival"] enables authors to share research findings and receive feedback on their work before submitting it to a journal. Joseph Ross, MD, MHS, medRxiv co-founder and a professor of medicine and of public health, is a leader on this project together with Harlan Krumholz, MD, the Harold H. Hines, Jr. Professor of Medicine (Cardiology), the Director of CORE. In its first months, the server received hundreds of manuscripts from researchers across the world.



Many of the projects run by PATR focus on kidney disease and injury.

The Program of Applied Translational Research (PATR)

The Program of Applied Translational Research (PATR) applies the discoveries generated in the lab and preclinical experiments to the creation of clinical studies and the design of clinical trials. Current work by PATR encompasses various kidney diseases and injuries ranging from biomarker discovery and validation to interventional data science and analytics. One large project the PATR team is currently working on is a six-center randomized trial to improve outcomes for patients with acute kidney injury (AKI). AKI affects 15% of hospitalized patients and is associated with a 10-fold increase in the risk of mortality. Through the Electronic Alerts for Acute Kidney Injury Amelioration (ELAIA-1) study, the team is analyzing whether an electronic AKI alert can improve outcomes. To date, more than 5000 patients have been enrolled in what is the largest study of this type ever conducted. Another PATR project is highlighted in the Section of Nephrology update on pages 32-33. The team comprises physicians and scientists; it has been led by F. Perry Wilson, MD, since July 2018.

OTHER PROGRAMS

In addition to the programs detailed above, Department of Internal Medicine faculty are involved in the following programs:

Education & Training

- Addiction Medicine Fellowship Program
- Advanced Cardiac Imaging Fellowship
- Advanced Endoscopy Fellowship
- Advanced Heart Failure Fellowship
- Advanced Transplant Hepatology Fellowship
- Allergy & Immunology Fellowship
- Biopsychosocial Approach to Health Clerkship
- Cardiovascular Research Training
- Echocardiography Fellowship
- Endocrinology Fellowship
- Electrophysiology Fellowship
- General Cardiology Fellowship
- Geriatric Medicine Fellowship
- Geriatric Research Fellowship
- Global Health Scholars Program
- Hospice and Palliative Medicine Fellowship
- Infectious Diseases Fellowship
- Internal Medicine Subspecialty Critical Care Fellowship
- Interventional Pulmonary Fellowship Program
- Investigative Medicine Training Program
- Investigational Training Program in Gastroenterology
- Investigational Training Program in Hepatology
- Leadership in Internal Medicine Fellowship
- Medical Education Fellowship Program
- Medical Oncology-Hematology Fellowship
- National Clinician Scholars Program (NCSP)
- Nuclear Cardiology Fellowship
- Palliative Care and End of Life Curriculum
- Program for Humanities in Medicine
- Pulmonary and Critical Care Medicine Fellowship
- Rheumatology Fellowship
- Skills Curriculum
- Sleep Medicine Fellowship Program
- Wednesday Evening Clinic
- Yale Office-Based Medicine Curriculum
- Yale Internal Medicine/Pediatrics Residency Program
- Yale Investigative Medicine PhD Program

- Yale Occupational and Environmental Medicine Fellowship Program
- Yale Physician Assistant Online program (Yale PA Online)
- Yale Physician Assistant program
- Yale Primary Care Internal Medicine Residency Program
- Yale Traditional Medicine Residency Program

Research

- Aging Conferences
- Atopic Dermatitis, Pattern Recognition TLR and NOD-Like Receptors & Lyme Disease
- Cancer Outcomes, Public Policy, and Effectiveness Research (COPPER) Center at Yale
- Clinical Epidemiology Research Center
- Comprehensive Evaluation of Risk Factors in Older Patients with AMI (SILVER-AMI)
- Developmental Therapeutics Research Program
- Diabetes Research Center (DRC)
- Immune Profiling
- Inflammation and Innate Immunity
- Inflammatory Bowel Disease Program
- Insulin Resistance Intervention after Stroke Trial (IRIS)
- Inter-cellular Communication by Nanovesicle Exosomes
- In Vivo Imaging Facility
- Lyme Disease
- Microbiome Research in Systemic Autoimmune Diseases
- Pain Research, Informatics, Multi-morbidities and Education (PRIME) Center
- play2Prevent (p2P) Lab
- Research in Addiction Medicine Scholars (RAMS) Program
- STRIDE Study
- The George M. O'Brien Kidney Center at Yale
- Transitions Clinic Network
- Translational Research Office (Yale Cancer Center)
- Veterans Aging Cohort Study (VACS)
- Yale Academic Hospitalist Program
- Yale Cancer Center Research Programs
- Yale Cardiovascular Clinical Research (YCVRG)
- Yale Cardiovascular Research Center (YCVRC)
- Yale Center for Clinical Investigation
- Yale Center for Disability and Disabling Disorders
- Yale Center for Healthcare Innovation, Redesign and Learning (CHIRAL)
- Yale Center for Immuno-Oncology (YCIO)

- Yale Center for the Study of Polycystic Kidney Disease
- Yale Center for X-Linked Hypophosphatemia (YCX-LH)
- Yale Core Center for Musculoskeletal Disorders (YCCMD)
- Yale Drug Use, Addiction, and HIV Research Scholars (DAHRS) Program
- Yale Equity Research and Innovation Center (ERIC)
- Yale Liver Center
- Yale Lupus Program
- Yale Mouse Metabolic Phenotyping Center (YMMPC)
- Yale Occupational and Environmental Health Program
- Yale Claude D. Pepper Older Americans Independence Center (OAIC)
- Yale Program in Addiction Medicine
- Yale Program for Biomedical Ethics
- Yale Program for Medicine, Spirituality, & Religion
- Yale Rheumatic Diseases Research Core Center
- Yale Translational Imaging Research Center (YTRIC)
- Yale University-Mayo Clinic Center of Excellence in Regulatory Science and Innovation

Patient Care

- Acute Kidney Injury Program
- Adult Congenital Heart Program
- Advanced Heart Failure Program
- AIDS Care Program
- Antiphospholipid Antibody Syndrome
- Aspirin Desensitization Program
- Autoimmune Diseases Related to Cancer Immunotherapy
- Cardio-Oncology Program
- Cardiovascular Genetics Program
- Chronic Kidney Disease Program
- Colon Cancer Program
- COPD Program
- CV Imaging Program
- Dorothy Adler Geriatric Assessment Center
- Echocardiography
- Electrophysiology
- Fatty Liver Disease Program
- Gastrointestinal Motility Program
- Glomerular Diseases/Glomerulonephritis Program
- Inflammatory Bowel Disease Program
- Inherited Cardiovascular Disease
- Interventional Cardiology Service
- Interventional Endoscopy Program

- Lupus Program
- Lysosomal Disease Program
- Medical Intensive Care Unit
- Metabolic Health & Weight Loss Program
- Myositis Program
- Neurobehavioral Cardiovascular Service
- Northeast Medical Group Yale New Haven Geriatric Services
- Nuclear Cardiac Imaging program
- Occupational and Environmental Lung Diseases
- Pancreas Disease Program
- Peripheral Vascular Cardiac Program
- Pulmonary Function Lab
- Pulmonary Vascular Disease Program
- Refugee Health Program
- Rheumatoid and Inflammatory Arthritis
- Scleroderma Program
- Thoracic Interventional Program (TIP)
- Thoracic Oncology Program
- Transition Program for Young Adults
- Tuberculosis (TB) Clinic
- VA Connecticut Healthcare System Primary Care
- VA Connecticut Healthcare System Inpatient and Outpatient Geriatric Consultation
- Viral Hepatitis Program
- Winchester Chest Clinic
- Yale Adult Cystic Fibrosis Center
- Yale Autoimmune and Cholestatic Liver Disease Program
- Yale Bone Center
- Yale Center for Asthma and Airway Disease
- Yale Center for Asylum Medicine
- Yale Center for Restorative Care (CRC)
- Yale Center in Sleep
- Yale Diabetes Center
- Yale Endocrine Neoplasia Clinic
- Yale-ILD Center
- Yale Infectious Disease Clinic
- Yale Internal Medicine Associates
- Yale Multidisciplinary Thyroid Clinic
- Yale Primary Care Center–York Street Campus
- Yale Medicine/Pediatrics Clinic
- Yale Medicine Cardiology

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

A Gift to the Place Their Daughter Loved



(l-r): Dean Robert J. Alpern welcomes Dragana and Predrag Dostanic, who have pledged to leave their full estate to the medical school in memory of their daughter Iva Dostanic, who succumbed to cancer at age 35 while a resident and research fellow.

Facing the final stages of ovarian cancer at just 35 years of age, Iva Dostanic asked her mother what the happiest day of her life had been. Without hesitation, Dragana Dostanic answered, “The day you were born.”

Dragana asked her daughter the same question. “Match Day 2011 — the day I matched at Yale,” Iva replied.

“At the end of her life, that’s what Iva thought about,” says Dragana. “It shows how much she loved her work and being part of the Yale community.”

Brilliant young scientist Iva Dostanic, MD, PhD, was a resident and research fellow at the School of Medicine when she succumbed to cancer in December 2011. Her parents have sought ways since then to celebrate her legacy.

“She was our only child,” says her father, Predrag Dostanic. “We want her to be remembered for her exceptional talents and the joy she found in her work. Together we had the idea to make a gift to Yale, a place she loved, that would benefit young scientists.”

To that end, Dragana and Predrag Dostanic have pledged their entire estate to Yale School of Medicine to endow the Iva Dostanic, MD, PhD, Physician-Scientist Fund. The income will support physician-scientist career development, and will continue to fund the annual Iva Dostanic, MD, PhD, Physician-Scientist Trainee Award and Lecture, which the Department of Internal Medicine initiated in 2011, and the Dostanics began supporting financially in 2015.

“It is very moving that Iva formed such a deep commitment to Yale in her short time with us,” says Robert J. Alpern, MD, dean and Ensign Professor of Medicine. “We are most appreciative that her parents have honored us with this generous gift in her memory.”

Born in Belgrade, in what then was Yugoslavia, Iva grew up in a family that prized education. Her mother is a pulmonologist; her father, an engineer and business executive. As a child Iva often accompanied Dragana to the hospital. “Watching her mother at work in her white coat, Iva was inspired to become a physician too,” Predrag recalls.

The family relocated first to Vienna, then to Athens, where Iva thrived in American international schools and decided to attend college in the United States. She earned her undergraduate degree with high honors from Manhattanville College, then pursued a PhD at the University of Cincinnati College of Medicine, where she did pioneering work using what were then new methods of gene manipulation to examine hypertension. She co-authored 12 papers, five as a lead author with more than 100 citations each — an outstanding achievement for any researcher, let alone a graduate student.

Iva earned her PhD in molecular genetics, microbiology, and genetics, then pursued her dream of becoming a physician. Her parents relocated to the U.S. to be closer to her. Iva graduated from the Cleveland Lerner College of Medicine of Case Western Reserve in

“We want her to be remembered for her exceptional talents and the joy she found in her work. Together we had the idea to make a gift to Yale, a place she loved, that would benefit young scientists.”

— Predrag Dostanic

2011. This five-year program combines medicine with a year of research.

Highly recruited, with many residency options on the table, she was accepted to Yale’s Physician-Scientist Pathway, with a fellowship in pulmonary and critical care medicine. Overseeing this track was Peter S. Aronson, MD, C.N.H. Long Professor of Medicine (Nephrology) and professor of cellular and molecular physiology.

“Beyond Iva’s considerable intellectual gifts, she had wonderful personal qualities. She was charismatic, positive, and enthusiastic,” says Aronson. “As an already fully formed scientist with a strong track record, she could have gone straight to a faculty position, but she wanted to be a physician.”

Iva was diagnosed with cancer in May 2011 and deferred her residency to undergo surgery and chemotherapy. After her treatment she came to New Haven to begin her research training. “Every day she woke up early, caught up on her reading, ran a few miles, then

spent hours in the lab,” notes Dragana. “This was the life she wanted.”

Unfortunately, Iva’s cancer returned and her condition deteriorated. Less than a week before she died, she received the very first Iva Dostanic, MD, PhD, Physician-Scientist Trainee Award in a ceremony held in her room at Yale New Haven Hospital.

“We conceived of this award in Iva’s name to celebrate her intelligence, creativity, work ethic, and passion,” explains Aronson. “These qualities personify the ideals of the physician-scientist. Her parents’ gift will have a tremendous impact, allowing us to follow through on a key mission: training physician-scientists and enabling them to flourish as faculty.”

“Iva chose Yale for its academic excellence and sense of community,” says Predrag. “She is remembered and celebrated here and became part of the Yale family. And through her, we became part of that family too. We are very grateful.”

PHILANTHROPY

Kapo is Named to an Endowed Academic Position



Jennifer M. Kapo, MD

Jennifer M. Kapo, MD, associate professor of medicine (geriatrics) and chief of palliative medicine at YNHH, has been named the Sherwin B. Nuland and Michael K. Vlock Associate Professor of Palliative Medicine, in April.

Kapo, who joined the Yale faculty in 2012, received her MD degree from the University of Pennsylvania in 1997. Her work includes providing clinical palliative medicine to patients at Smilow Cancer Hospital; conducting research in palliative medicine; and expanding teaching opportunities for existing Yale faculty, staff, fellows, residents, and medical students.

She is recognized for her leadership as the inaugural chief of the Yale Palliative Care Program and YNHH Palliative Care Service, which includes an interdisciplinary team of more than 20 people, including two social workers and two chaplains, and other professionals including an art therapist. The program has achieved substantial growth in its first six years, both in clinical services provided and in patients/families served. The size and expertise of the palliative care faculty and interdisciplinary team have expanded rapidly with a resulting increase in clinical and scholarly collaborations across Yale. Kapo also has supported the development of the hospice and palliative medicine physician fellowship.

Kapo has promoted excellence in the quality of care for patients and their families while husbanding resources toward further program building to serve a wider community. These efforts are balanced by her championing of resilience practice and core values so that the palliative care team can continue to thrive. She is a nationally recognized leader in palliative care as a clinical program chief, clinician, educator, mentor, and scholar.



Giving to the Department of Internal Medicine

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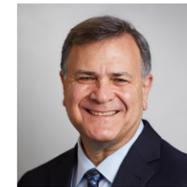
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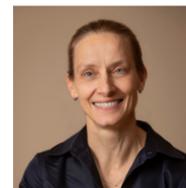
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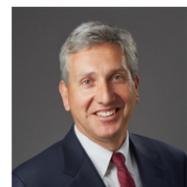
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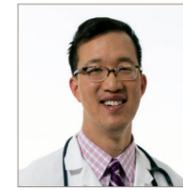
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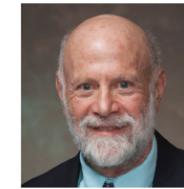


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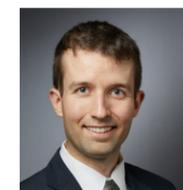
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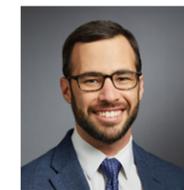
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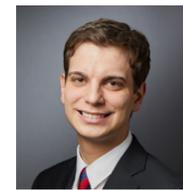
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The Department of Internal Medicine's 2018–2019 Annual Report is published by DIM Communications. Correspondence may be sent to 2018–2019 Annual Report, The Anylan Center, 300 Cedar St. S255, New Haven, CT 06520, or internalmedicine@yale.edu.

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Special thanks to Nancy Kravitz, Jill Max, Denise Acampora, Allaire Bartel, Teretha Brooks, Carol Brown, Jennifer Caprio, Richard Carr, Lisa DeLizio, Jill Ely, Lynn Gambardella, Stacy Giangrande, Krista Gibbs, Laurene Goode, Philip Grover, Drew Kristofik, Catherine Marganski, Christine Marien, Reese McLeod, Cherice McNeil, Anne Prodoti, Jessica Santore, Stephanie Santore, Catherine Severino, Erin Shreve, Ann Souza, and Laura Whitley for their support of this project.

PHOTOGRAPHY: Harold Shapiro

GRAPHIC DESIGN: Lynne M. Reichentahl, Yale Printing & Publishing Services

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Shelli Farhadian, MD, PhD, was named the 2019 Iva Dostanic, MD, PhD, Physician-Scientist Trainee Award honoree. (l-r) Predrag and Dragana Dostanic, Farhadian, Vincent Quagliarello, MD, and Peter Aronson, MD.