

YAWKEY CENTER FOR



**Massachusetts General Hospital**  
**Department of Medicine**  
*A Community for Care*



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## A Letter from Dr. Armstrong



I am delighted to share this report of the activities of the Department of Medicine at the Massachusetts General Hospital with you.

There is much to celebrate in this report. The residency and fellowship programs are thriving. We are fortunate to attract a diverse group of outstanding young physicians who are dedicated to improving health and health care across the world. The clinical training on our medical services is unparalleled and the level of teamwork, dedication, and critical thinking upholds the standard that has created academic leaders for generations. Our medical services are busier than ever. Patients come to us in part for the remarkable innovations in treatment that are widespread across our services, but, perhaps even more importantly, because of the unsurpassed dedication and compassion that our medical

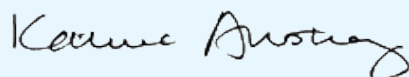
staff provides. Our activities in community health continue to grow, both deepening our commitment to the impact of the MGH community health centers in Charlestown, Chelsea, Everett and Revere, and widening our scope to create new partnerships across the city and the nation. Our research programs continue to surpass all expectations. In a climate of cut backs, our investigators have continued to make major discoveries in areas spanning from respiratory stem cells to tobacco cessation interventions. The list of high impact publications, prestigious awards and grants is long and diverse. The dedication to developing the next generation of investigators has never been stronger.

This report also provides some insight into the remarkable individuals who make up the Department of Medicine at the MGH. Two years after joining the department, I continue to be amazed by our faculty and staff. The depth and breadth of the department's talent is evident across our missions and activities as you will see. I am particularly appreciative of our outstanding leadership team including division and unit chiefs, residency and fellowship program directors, chairs of our clinical, research and education councils, directors of quality assurance and safety, quality improvement, and inpatient services, and our devoted administrative team led by Executive Director Elizabeth Geagan. While the department greatly benefits from the long-term commitment of these individuals, this year has also brought several new leaders to our team. Dr. Jatin Vyas has flourished in his new role as Internal Medicine Residency Program Director, taking over from Dr. Hasan Bazari who set a national standard leading the training program for the last 20 years and is now the Founding Director of the department's Morton N. Swartz, MD Initiative for humanism in medicine. Dr. Anthony Rosenzweig returned to MGH this January as the Chief of the Division of Cardiology, following in the remarkable tradition created by Paul Dudley White almost 100 years ago and exemplified most recently by Dr. G. William Dec who led the division to greatness for the past 13 years. Dr. Jose Florez was chosen to lead the Diabetes Unit, continually lauded as one of the top choices for diabetes care in the nation, after his mentor, Dr. Joseph Avruch, stepped down from the position after 36 years. Dr. Melissa Mattison, a recognized leader among hospitalists in clinical care and geriatrics, joined us as the new Hospital Medicine Unit Chief and Dr. Marcia Goldberg has accepted the position of Director of Research Program Development, promising to prioritize the collaboration and development of researchers across the department. In addition, innovative programs in new areas of opportunity are taking root within the department including the Fibrosis Research Center led by Dr. Andrew Tager, the Clinical and Translational Epidemiology Unit led by Dr. Andrew Chan, Dr. Dennis Ausiello's Center for Assessment Technology and Continuous Health, and the Disparities Research Unit led by a wonderful recent recruitment, Dr. Margarita Alegría.

## A Letter from Dr. Armstrong

Despite these accomplishments, it is clear that this is no time for the department to rest on its laurels. The challenges facing academic medicine are growing and felt at the MGH just as they are across the country. Financial pressures increasingly dominate conversations across all of our missions. Combined with the burden of administrative tasks, the need to work harder to generate revenue has left little time to spend with our patients, to build our community, and even to think. And yet, as we have assembled a narrative of the department's past accomplishments, it has become abundantly clear that this department has long risen to face its challenges – challenges that were often far greater than today's realities. The MGH Department of Medicine has a vibrant history of providing leadership at times of uncertainty whether that meant the creation of new subspecialties, investment in basic science in a general hospital, or the development of world-renowned training programs to invest in tomorrow's leaders in medicine. Over the last two years, we have been establishing a roadmap for the department, coming together in new ways to ensure that we are harnessing our talent and resources to have the largest impact and provide the greatest social good. These efforts are still growing but already include the creation of new multidisciplinary centers to pursue extraordinary scientific opportunities, the establishment of a philanthropically funded program to support our young faculty to think big and take risks, and an ambitious plan to foster and leverage diversity across the department. Advances in our understanding of human biology and our commitment to health care reform have created a time of tremendous opportunity for academic medicine. There is a lot to be done and I welcome your engagement.

Sincerely,



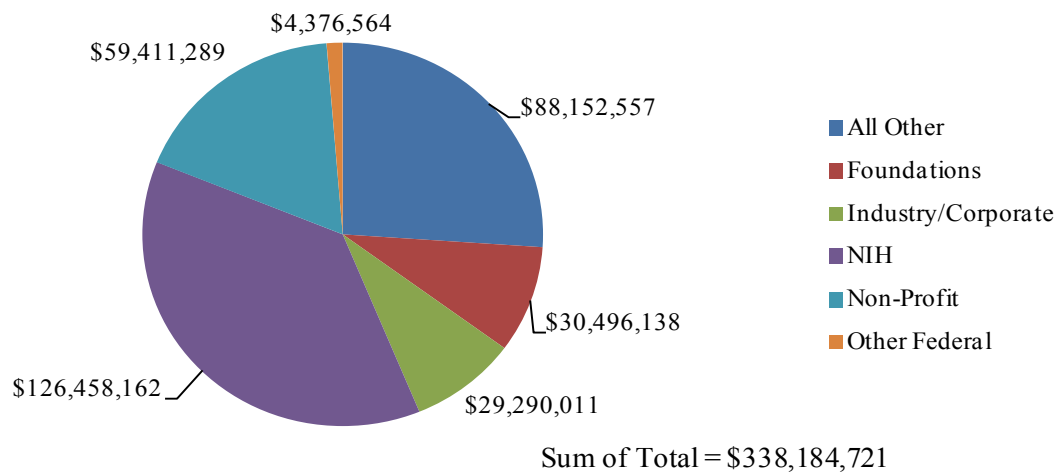
Katrina Armstrong, MD  
Physician-in-Chief

CLINICAL VOLUME		
Inpatient Volume	FY13	FY14
Discharges	19,842	20,662
Length of Stay	6.68	6.66
Discharge Days	132,600	137,576
Average Daily Census	379.7	400.7

Ambulatory Volume	FY-14
New Patient Evaluations	34,340
Established Patient Evaluations	508,563
Relative Value Units (RVUs)	1,835,696

DEPARTMENT OF MEDICINE RESEARCH	
Funding Proposals Submitted to	# of Proposals
NIH	307
Other Federal	29
Foundations	241
Industry/Corporate	182
Non-Profit	590
All Other Sponsors	154
<b>Total</b>	<b>1503</b>

### Department of Medicine Total Research Cost



# Organization 2015

## Physician in Chief, Department of Medicine

Katrina Armstrong, MD

Vice President of Medicine  
Executive Director  
Internal Medicine Residency Program Director  
Administrative Director, Academic Affairs  
Administrative Director, Clinical Operations  
Director of Finance

Greg Pauly, MHA  
Elizabeth Geagan, MHA  
Jatin Vyas, MD, PhD  
Mirar Bristol, MA  
Rhodes Berube, MPH  
Tewfik Ghattas, AM

### Division Chiefs

Cardiology

G. William Dec, Jr., MD - to December, 2014

Anthony Rosenzweig, MD - Current Chief

Henry Kronenberg, MD

*Joseph Avruch, MD - to July, 2015*

*Jose Florez, MD, PhD - Current Chief*

Henry Kronenberg, MD

Anne Klibanski, MD

William Crowley, MD

Ramnik Xavier, MD, PhD

Joshua Metlay, MD, PhD

Monera Wong, MD, MPH

*Daniel Hunt, MD - to March, 2015*

*Melissa Mattison, MD - Current Chief*

Eric Weil, MD

David Ryan, MD

Stephen Calderwood, MD

Ravi Thadhani, MD, MPH

Vicki Jackson, MD

Benjamin Medoff, MD

Andrew Luster, MD, PhD

Aidan Long, MD

John Stone, MD, MPH

Endocrine

*Diabetes*

*Endocrine*

*Neuroendocrine*

*Reproductive Endocrine*

Gastroenterology

Division of General Internal Medicine

*Geriatrics*

*Hospital Medicine*

*Primary Care*

Hematology & Oncology

Infectious Diseases

Nephrology

Palliative Care

Pulmonary & Critical Care Medicine

Rheumatology, Allergy & Immunology

*Allergy & Clinical Immunology*

*Rheumatology*

### Research Unit Chiefs

Analytic & Translational Genetics

Biostatistics

Center for Assessment Technology and Continuous Health

Disparities Research Unit

Laboratory of Computer Science

Medical Practice Evaluation Center

Mark Daly, PhD

Dianne Finkelstein, PhD

Dennis Ausiello, MD

Margarita Alegria, PhD

Henry Chueh, MD

Kenneth Freedberg, MD

Rochelle Walensky, MD, MPH

Lisa Iezzoni, MD, MSc

Andrew Chan, MD, MPH

Mongan Institute of Health Policy

Clinical and Translational Epidemiology Unit

### Councils

Clinical Council

Education Council

Research Council

Nesli Basgoz, MD

Stephen Calderwood, MD

Ramnik Xavier, MD, PhD

### Department of Medicine Initiatives

Diversity & Inclusion Board

Innovation Collaborative

James Jackson Society

Morton N. Swartz Initiative

Research Program Development

Sherri-Ann Burnett-Bowie, MD, MPH

Christiana Iyasere, MD

Mark Poznansky, PhD, MB, ChB

Jatin Vyas, MD, PhD

Hasan Bazari, MD

Marcia Goldberg, MD

### 2014-2015 Chief Residents

Andrew Brunner, MD

William Hucker, MD, PhD

Molly Paras, MD

Sachin Shah, MD

# Cardiology Division

## Chief

G. William Dec, Jr., MD  
*to December, 2014*  
Anthony Rosenzweig, MD  
*Chief as of January 2015*

## Section Head, Non-invasive Cardiology

Claudia Chae, MD

## Section Head, Electrophysiology

Jeremy Ruskin, MD

## Section Head, Invasive Card & Cath Lab

Michael Fifer, MD

## Clinical & Translational Research

Robert Gerszten, MD

## Medical Director, CCU

Gregory Lewis, MD

## Heart Failure & Transplant

Marc Semigran, MD

## Vascular Medicine & Intervention

Kenneth Rosenfield, MD

## Echo Lab Director

Michael Picard, MD

## EP Lab Director

Moussa Mansour, MD

## Nuclear Lab Director

Henry Gewirtz, MD

## EKG Lab Director

Christopher Newton-Cheh, MD

## Holter Lab Director

Jagmeet Singh, MD

## Fellowship Program Director

Douglas Drachman, MD

## Senior Administrative Director

Peter Tremblay

## Administrative Director, Clinical Operations

James Breed

## Finance Director

Joseph McElroy

## Administrative Manager, Cath & EP Labs

Janet McClintic

## Nursing Director, Cath & EP Labs

Sharon McKenna, RN

## Administrative Manager, Echo Lab

Carlos Vasco

## Clinical Activity

During FY 2014 the Cardiology Division continued to provide a large volume of clinical care in support of the hospital's patient care mission.

The cardiology programs based at MGH West in Waltham and Danvers continued their growth and development over the last year by adding new satellite outpatient programs in EP, adult congenital and valve disorders.

In order to address the value of wellness in the adult congenital heart disease (ACHD) population, physicians and nurses from the ACHD program have established the ACHD Health & Wellness Program at MGH in Waltham. The program is led by Ami Bhatt, MD, Doreen Defaria Yeh, MD and Lauren McLaughlin, RN.

Farouc Jaffer, MD, PhD assumed leadership of the coronary artery disease integrated care program. Along with colleague Robert Yeh, MD, MBA the pair have now completed over 100 coronary total occlusion (CTO) cases to care for patients at high risk for surgical interventions.

The heart failure team completed a care redesign initiative to improve the care of their patients and reduce hospital days and readmissions. A post-discharge outpatient care clinic was established to closed monitor all patients previously hospitalized for heart failure.

## Educational Activity

The division sponsors 55 fellows in cardiovascular disease, echocardiography, cardiac arrhythmia, interventional cardiology, vascular diagnostic & intervention, vascular medicine, structural heart disease, nuclear cardiology and heart failure and transplant.

Two fellows are currently supported by LaDue Awards from Harvard Medical School. Ten fellows are supported by the T32 molecular cardiology training grant which is entering the third year of a five year cycle.

Robert Gerszten, MD assumed the role of Program Director with Randall Peterson, PhD and Sekar Kathiresan, MD now serving as Associate Program Directors.

There are currently nine fellows in the division support by K awards: Andre Dejam, MD, PhD, Robert Yeh, MD, MBA, Steven Lubitz, MD, MPH, Rajeev Malhotra, MD, Ibrahim Domian, MD, PhD, Dipayan Chaudhuri, MD, PhD and Patrick Ellinor, MD, PhD. Marcello Panagia, MD, received an AHA Fellow to Faculty Award.

This year a new fellowship program was established in woman's heart health under the direction of Malissa Wood, MD and Nandita Scott, MD. Also, a new fellowship was approved for the next academic year in cardiovascular performance under the direction of Aaron Baggish, MD and Rory Weiner, MD.

Ami Bhatt, MD was one of the 2014 recipients of the American College of Cardiology (ACC) W. Proctor Harvey, M.D., Young Teacher Award.

The division had an excellent year with HMS promotions in 2014 with two promotions to Professor, one promotion to Associate Professor, and six promotions to Assistant Professor. Congratulations to Michael Fifer, MD and Jeremy Ruskin, MD for being promoted to Professor, David Sosnovik, MD for being promoted to Associate Professor and Ami Bhatt, MD, Ibrahim Domian, MD, PhD, Hanna Gaggin, MD, MPH, Steven Lubitz, MD, MPH, Tomas Neilan, MD and Ido Weinberg, MD for being promoted to Assistant Professor. Also, James Januzzi, MD was named as the inaugural Hutter Family Professor in Medicine at HMS, Michael Jaff, DO was named as the inaugural incumbent to the Paul and Phyllis Fireman Chair in Vascular Medicine, Randall Peterson, PhD was named the Charles Addison & Elizabeth Ann Sanders Professor of Basic Science and Timothy Guiney, MD was named the inaugural Paul Dudley White, MD Distinguished Service Chair in Cardiology at MGH.



## Cardiology Physician Spotlight



**Jim Januzzi, MD**

**Years in the Department:** 18

**Positions:** Roman W. DeSanctis Endowed Clinical Scholar; Hutter Family Professor of Medicine

**Why I wanted to come to MGH:** During medical school I performed a rotation in rheumatology at MGH, and recognized immediately the gravitas of the institution. Growing up my whole life in a medical environment, I was aware of what a special place MGH represented: a fine balance of clinical excellence, medical education and academic investigation. On deciding I wanted to be a clinical cardiologist, MGH was the only place I wanted to be; to train next to Roman DeSanctis, Dolph Hutter, Peter Yurchak, and other giants in clinical cardiology was an opportunity without compare. To call these men my colleagues and mentors is one of the great achievements of my career.

**Cardiology Division  
Administration Continued**

**Administrative Manager,  
Heart Failure & Interventional**  
Kristyn Lantagne

**Administrative Manager, Yawkey-5**  
Susan Topley

**Nurse Director, Cardiac Rehab &  
Prevention**  
Kate Traynor, RN

**Senior Project Manager,  
Clinical Research**  
Joanne Healy

**Senior Grant Administrators**  
Walden Barzey; Kjersten Reich;  
Alisa Speckmann

## Research Activity

In spite of a difficult external funding environment, total research expenditures in the Division totaled \$29.5 million in FY 2014. Division research faculty published high impact studies that appeared in *Circulation*, the *New England Journal of Medicine*, *Nature*, *Nature Genetics*, and *Science Translational Medicine*. Two members of the Cardiology Division were recognized as MGH Research Scholars by the Executive Committee on Research (ECOR): Sekar Kathiresan, MD and Robert Gerszten, MD. Dr. Kathiresan served as a senior author of two papers that appeared in the *New England Journal of Medicine* and one paper that appeared in *Nature*.

During FY 2014, six Hassenfeld Research scholars were appointed: Joanna Yeh, PhD, Gregory Lewis, MD, Robert Yeh, MD, MBA, Aaron Baggish, MD, Caroline Burns, PhD and David Milan, MD.

Congratulations also to Patrick Ellinor, MD, PhD who received a \$7 million dollar award from the National Institutes of Health (NIH) to fund a genome sequencing project for atrial fibrillation. The award will enable whole

genome sequencing of 2,800 individuals with early-onset atrial fibrillation.

The Clinical and Translational Research Program continues to thrive with over 150 ongoing clinical trials underway.

The Healthcare Transformation Lab (HTL) was established under the direction of Eric Isselbacher, MD and Maulik Majumadar. The HTL will focus on improving the experience and value of health care through collaborative innovation. To the end, the HTL held its first Open Innovation Contest - the Ether Dome Challenge - in partnership with Samsung and Harvard Business School. Six grant winners were announced including Jonathan Passeri, MD, Attila Roka, MD, PhD and Ada Stefanescu, MD. The HTL has also been busy putting together a Digital Health Practice Platform to provide continuous, coordinated and convenient cardiac care as well as working with Partners Innovation to develop "Co-Create", a program bringing together a team of engineers, scientists, designers and health care providers to solve unmet health care needs.

## Corrigan Minehan Heart Center Top Achievements

The Division of Cardiology is a member of Massachusetts General Hospital's Corrigan Minehan Heart Center. The Corrigan Minehan Heart Center provides treatment through specialized diagnosis specific interdisciplinary teams. The interdisciplinary teams are made up of dedicated cardiologists, cardiac surgeons, cardiac anesthesiologists, cardiac nurses and cardiac radiologists to provide leading cardiac care. Offering condition specific programs for 11 cardiac conditions, patients receive care from teams that specialize in and tailor care to the patient's specific diagnosis.

The Massachusetts General Hospital has been a leader in the treatment of cardiac disease since 1916, when it opened one of the nation's first dedicated cardiac units. The Corrigan Minehan Heart Center continues this tradition of excellence, providing care to our patients with a personalized approach to diagnosis and treatment.

Physicians and scientist at Corrigan Minehan Heart Center strive for continued discovery related to cardiac diseases with research focusing on understanding what leads to heart disorders, how to prevent heart disease, and improving the treatment for heart disorders. Our faculty work to both deliver the highest quality care and to lay the foundation for the cardiovascular care of the future by training the providers of the future.



# Endocrine Division

**Division Chief**

Henry Kronenberg, MD

**Chief, Diabetes Unit**

Joseph Avruch, MD *to July 2015*

Jose Florez, MD, PhD

*Chief as of July 2015*

**Chief, Endocrine Unit**

Henry Kronenberg, MD

**Chief, Neuroendocrine Unit**

Anne Klibanski, MD

**Chief, Reproductive****Endocrine Unit**

William Crowley, MD

**Administrative Director**

Smriti Cevallos, MBA

**Administrative Manager, Diabetes  
Research Center**

Nancy Kingori

**Administrative Manager, Diabetes  
Clinical Center**

William McLaughlin

**Senior Administrative Manager,  
Endocrine Unit Research**

Julia MacLaughlin

**Administrative Manager,  
Endocrine Unit Research**

Deborah Fitzgerald

**Administrative Manager,  
Endocrine Associates, Thyroid  
Associates and Lipid Associates**

Jessica Upham

**Administrative Manager,  
Neuroendocrine Unit Research**

Ivy Babbitt

**Administrative Manager,  
Neuroendocrine Clinical Center**

Dolores Collins

The Endocrine Division, with its faculty of 84 clinicians and investigators, continues to pursue its clinical, investigative and educational missions. With a research budget of \$34,589,205, the Endocrine Division has continued to successfully compete for National Institute of Health (NIH) dollars while also successfully garnering an increased amount of foundation and pharmaceutical support. The clinical activities of the Endocrine Division included 45,107 patient visits, mostly consultations in the outpatient setting. Three NIH training grants continue to fund 14 research fellowship slots each year to complement the ACGME-accredited clinical/research fellowship program that the Division has been running for 46 years.

## Clinical Activity

**The Diabetes Unit** has organized a new in-patient consultation service, which uses a team of nurse practitioner and staff diabetologist to deliver patient-centered care that is rapid, responsive and focused on patient education. Research by the group has demonstrated the long-lasting impact of the patient education program on control of diabetes long after the patients have returned home. This year, for the first time, the division fellowship training program is integrating first year clinical fellows into this novel program to provide the fellows with an intense experience in in-patient diabetes management. This program epitomizes the way that effective patient care, fellowship teaching, and research can be combined in a seamless whole.

**The Neuroendocrine Clinical Center** continues to be a national referral center and multi-disciplinary program that brings together endocrinologists, neurosurgeons, radiologists and radiotherapists to provide the most expert care to patients with pituitary tumors and other abnormalities. The recent establishment of the Jarislowsky Foundation Pituitary Center will allow this rich clinical environment to interdigitate with the latest discovery research focused on determining the root causes and novel therapies for pituitary tumors.

**The Reproductive Endocrine Associates** practice has expanded its services and mission under the new leadership of Frances Hayes, MB BCh BAO. Dr. Hayes, who also serves as the Endocrine Division's Clinical Director and the Division's representative to the Department of Medicine Clinical

Council, will both increase the accessibility of the Reproductive Endocrine Associates practice to patients and will increase the coordination among the various clinical practices within the Division.

**The Thyroid Associates Practice**

is regarded as the leading center for the care of patients with thyroid cancer in New England. In recognition of his leadership role in clinical care and research, Douglas Ross, MD just won the Outstanding Scholarly Physician Award of the Endocrine Society.

**The Endocrine Associates Practice**

maintains and expands its commitment to caring for those with osteoporosis and other diseases of bone and mineral metabolism. For many years now, the practice's physicians have prospectively participated in the care of patients with heart, lung and liver transplants before they have the bone disease often caused by anti-rejection medicines; this program has largely made transplant-associated osteoporosis a disease of the past. This year the practice is exploring a novel patient-based approach to diagnosing and treating the osteoporosis that underlies the fragility fractures that patients bring to the Orthopedic and Emergency Services. The plan is to bring together geriatric physicians, orthopods, endocrinologists and primary care physicians in a patient-centered program.



Steven Grinspoon, MD

### Educational Activity

Joseph Avruch, MD and Jose Florez, MD, PhD led the effort to obtain renewal of the NIH-funded training grant that is key to the research phase of the division's ACGME-accredited clinical/research fellowship program. Anne Klibanski, MD won the Outstanding Mentor Award of the Endocrine Society to acknowledge her leadership at MGH and around the country in the training of endocrinologists. Benjamin Leder, MD was chosen by the Endocrine Society as the Visiting Professor in Osteoporosis and Metabolic Bone Disease at the University of California, San Francisco.

### Research Activity

Three new grants are facilitating new directions for research in the Endocrine Division. Anne Klibanski, MD led the foundation of the new Jarislowsky Foundation Pituitary Center. Endowed funds for the center will allow increased resources to revitalize ongoing efforts to understand the molecular basis of the pathogenesis of pituitary tumors. The latest technologies will allow screening for new targets, exploitation of mouse models and development of a pituitary tumor pilot grant program. Steven Grinspoon, MD was awarded a U01 grant by the NIH to direct the REPRIEVE trial, (Randomized Study to Prevent Vascular Events in HIV), a study that will investigate whether a daily dose of pitavastatin will reduce the risk of CVD in people living with HIV. Henry Kronenberg, MD was awarded a P30 grant from NIH to establish a Center for Skeletal Research. This new center will provide core facilities, Pilot and Feasibility grants, and a lecture series to support investigators conducting bone and mineral research across multiple academic institutions in Boston. Robert Neer, MD won the Gerald D. Aurbach Award for Outstanding Research from the Endocrine Society; this award acknowledged Dr. Neer's demonstration that parathyroid hormone (1-34) could increase bone mass in people and his subsequent leadership of the pivotal clinical trial that led to this drug's approval for the treatment of osteoporosis.

**Years in the Department:** 23

**Unit:** Neuroendocrine

**Position:** Professor; Director, MGH Program in Nutritional Metabolism

**My Favorite DOM Memory:** Running the marathon for the MGH team. The team has a tent with the Bruins supporters. You practice for months and the day of the race, MGH volunteers are out there greeting and cheering you on. Many team members were recovered oncology patients or relatives of such patients, expressing extreme gratitude for our services. It was a humbling experience, and running was a chance to raise funds for the MGH and get to know others in the hospital, including nurses, administrators, and other doctors who share the MGH as a common bond.

## Endocrine Top Achievements

1. Stephanie Seminara, MD's group discovered a novel form of inherited idiopathic hypogonadotropic hypogonadism associated with cerebellar disease. In work that won the John Martin Prize at MGH for best clinical research paper of the year, Dr. Seminara showed that mutations in RNF216 and OTUD4, which encode a ubiquitin E3 ligase and a deubiquitinase, respectively, cause these novel abnormalities. This work has established a novel category of idiopathic hypogonadotropic hypogonadism that points to new pathways important for gonadotropin physiology.
2. Steven Grinspoon, MD's group demonstrated for the first time in a placebo-controlled trial that augmentation of endogenous growth hormone with tesamorelin, a growth hormone releasing hormone analogue, reduces liver fat in individuals with HIV-infection and visceral adiposity. Nonalcoholic fatty liver disease (NAFLD) is a prevalent co-morbidity of HIV infection, and patients with NAFLD are at increased risk for liver damage and cirrhosis as well as metabolic comorbidities including insulin resistance and dyslipidemia. This trial suggests that augmentation of growth hormone may be an efficacious treatment strategy for reduction of liver fat in HIV-infected patients and, potentially, in generalized obesity.
3. Steven Russell, MD, PhD, along with David Nathan, MD and engineers Firas El-Khatib, PhD and Edward Damiano, PhD of Boston University, is progressing rapidly toward general implementation of a novel treatment strategy for type 1 and type 2 diabetes mellitus. Recently, this team showed that an algorithm initialized with only the subjects weight was able to tightly control glycemia in subjects with type 1 diabetes who varied over ten-fold in their insulin requirements. In an outpatient study of adults and adolescents with type 1 diabetes, this wearable automated bionic pancreas improved glycemia over usual intensive therapy with less frequent hypoglycemic episodes.
4. The SIGMA consortium, led by Jose Florez, MD, PhD, David Altshuler, MD, PhD and colleagues discovered a previously unappreciated genetic locus that accounts for a substantial portion of the excess risk for type 2 diabetes experienced by Hispanic populations. The gene encoding Slc16A11, a putative transporter of unknown function, was found to contain a haplotype that is rare or absent in Europe and Africa, but occurs at ~10% frequency in Asians, in 26% of Mexican-Americans, and ~50% in Native Americans. Each copy of this haplotype increases the risk for T2D by ~20%. Elucidation of the function of Slc16A11 will likely unveil new avenues for the therapy of T2D.
5. Joel Finkelstein, MD's group clarified the role of testosterone in causing a syndrome of hypogonadism in men. They made two notable kinds of discoveries. First, they showed that the levels of testosterone needed to prevent a deficiency syndrome varied, depending on the target organ (fat mass, muscle mass and strength, and sexual function) examined. Because testosterone is converted to estradiol, the investigators determined which of the actions of testosterone reflected actions of estradiol. They found that the effects on muscle mass were independent of conversion to estradiol, while effects on fat mass depended entirely on conversion to estradiol and normal sexual function required independent actions of both testosterone and estradiol. These studies now make possible a coherent approach to the clinical problem of testosterone deficiency.

# Gastroenterology Division

**Chief**

Ramnik Xavier, MD, PhD

**Senior Administrative Director**

Danielle Le Hals

**Administrative Director, Research**

Lindsay Ware

**Administrative Director, Clinical Operations**

Helena Cohan

**Senior Administrative Manager**

Charles Ciano

FY14 was a successful year for the Gastroenterology (GI) Division, filled with expansion of our clinical footprint in the community and enhanced programmatic offerings, significant strides in research activities, and continued strength in our teaching efforts.

## Clinical Activity

This past year has largely been a year of growth, as we focus on expanding MGH GI presence in the community. We not only strengthened existing relationships - including increased endoscopy sessions at Newton-Wellesley Hospital, doubled clinic and endoscopy sessions at Danvers and introduced infusions at Danvers in collaboration with the MGH Cancer Center - but we also created new connections. In late summer, we opened up a practice at MGH West, where two gastroenterologists from the General GI and Liver subspecialties see patients each week. We also engaged in a new professional services agreement with Melrose-Wakefield Hospital to provide advanced endoscopy procedures.

As we worked towards a greater presence in the community, the GI Division also expanded programmatic offerings within the MGH campus. The new Eosinophilic Esophagitis (EoE) program was created this past year as a collaboration between MGH GI, Allergy/Immunology and Nutrition in order to facilitate multi-disciplinary care for patients with eosinophilic esophagitis. The division also piloted a program called the Evening Clinic with support from the Department of Medicine, in order to address clinic access issues. GI physicians could choose to hold clinic in the evening, after business hours, with the goal of seeing new patients or urgent visits. In its first few months, the Evening Clinic is well-booked, and we look forward to evaluating its effectiveness and expanding if appropriate. On the inpatient side, we introduced the inpatient Inflammatory Bowel Disease (IBD) service, which has successfully paired the needs of our complex IBD patients with expertise within the division.

We also introduced new ground-breaking technology this past year, both in clinic and to the endoscopy unit. Along with confocal microscopy capabilities during endoscopy procedures described below, we also started

offering Fibroscan exams to patients. Through simply pressing a specialized probe against a patient's ribs during a scheduled office visit, we now can detect and quantify liver fibrosis in a non-invasive manner. Other clinical milestones of note this past year include a 25% increase in infusions, particularly with the new drug Vedolizumab for the treatment of IBD, as well as the treatment of resistant C Diff infections through novel fecal microbiota transplantation (FMT) capsules and the introduction of new interferon-free Hep C drug.

Overall, in FY14, the GI Division performed over 26,000 procedures, 2,100 infusions and saw over 24,000 office visits. We anticipate volume to grow with the addition of several new faculty members in the next year.

## Research Activity

At the close of FY14, GI Research had an active annual budget of \$34.3M from external sponsors, including \$8.6M from industry sponsors, \$6.9M from foundations and nonprofit organizations, and \$18.8M from the National Institute of Health (NIH) including three new Career Development (K-series) awards; three new Research Project (R01) Grant awards; a competing renewal award for the existing Cooperative Center for Human Immunology Program (U19) for studies of Immune Failure with Viral Cure in Chronic HCV Infection; a new collaborative project as part of an Autoimmunity Center of Excellence Program (U19) for Studies on the Immunology of IgG4-related Disease, and a Center of Excellence in Translational Research Program (U19) for the study of Autophagy Modulators as Novel Broad-spectrum Anti-infective Agents. GI investigators also received \$303,250 from ECOR for a Scholar Award, MAO Physician-Scientist Development Award, Interim Support Funding, and a MGH-MIT Strategic Partnership award.





**Kathleen Corey, MD, MPH,  
MMSc**

### Educational Activity

We continue to coordinate a strong ACGME-accredited fellowship program in GI, welcoming four new fellows in July 2014. It remains amongst the most highly competitive GI fellowship programs in the country. In addition, we continue to hold advanced fellowships in GI motility, hepatology and IBD. The fellowship programs have created a successful pipeline for new faculty, and this year was no different, as we welcomed two new fellowship graduates onto the faculty in the fall to the general GI service.

Finally, an important milestone this past year came out of the spring division retreat, where staff from all different role groups came together to finalize the new GI Division mission statement, as follows:

*To instill hope in our patients and their families through the delivery of comprehensive, patient-centered digestive health care; and to strive to meet future challenges through research, education and innovation. We seek to achieve these goals in an environment where we uphold these core values: Excellence, Compassion, Teamwork, Integrity, Respect, and Leadership in investigation and training.*

**Years in the Department:** 12

**Position:** Director, MGH Fatty Liver Clinic; Instructor in Medicine

**Committees I'm Involved In:** MGPO Managed Care Committee, GI Unit Steering Committee

### Gastroenterology Top Achievements

1. Jules Dienstag, MD conferred the AASLD Award. In late 2014, the American Association for the Study of Liver Diseases (AASLD) conferred its highest honor, the Distinguished Achievement Award, on Dr. Jules Dienstag, the Carl W. Walter Professor of Medicine at HMS and MGH. The Award recognized a lifetime of pioneering clinical research in viral hepatitis, and, in particular, for his contribution to the successful introduction of directly acting antiviral therapy to the management of both HBV and HCV. In its announcement of this award, the AASLD states, "As a hepatologist, clinical investigator, and teacher, Dr. Dienstag has devoted his career to the understanding, prevention, and management of viral hepatitis. He has published 178 peer-reviewed papers and 209 chapters, reviews, and editorials; been a member of the HEPATOLOGY editorial board; and served as Associate Editor of Gastroenterology."
2. New confocal microscopy capacity with procedures: In mid 2014, we introduced an endomicroscopy system that effectively generates optical biopsies, allowing for instantaneous microscopic images of tissue in a minimally-invasive manner. This new technology allows for high visualization along the mucosa and can be a beneficial tool in management of several GI indications, including Barrett's Esophagus, bilio-pancreatic strictures, etc.
3. Introduction of new Hepatitis C drugs / interferon-free courses of treatments: Following FDA approval of several new treatments of chronic Hepatitis C Virus infection over the last year, we have been able to quickly introduce them into our practice. These new curative options, including Harvoni and Sovaldi, allow for treatment options that do not require administration with interferon and ribavirin, which have shown to have less efficacy in the treatment of the virus.
4. James Richter, MD, received a grant from CRICO/Risk Management Foundation for Studies to identify the causes and strategies to prevent interval colon cancers following screening colonoscopy using data analytics to improve the effectiveness of colon cancer screening.
5. Javier Irazoqui, PhD, recruited to the GI Unit February 1st, 2014. Javier's research seeks to understand the molecular mechanism of epithelial host responses to infection and the effects of these responses on bacterial pathogens and holds a Research Project Grant (R01) funded by the National Institute of General Medical Sciences for his study of the Role of MiT Transcription Factors in Host Defense Against Bacterial Infection.

#### Why I came to MGH:

When I interviewed for residency at MGH in 2002 I was struck by how devoted the faculty was to the housestaff. My interview team, led by Dr. Lloyd Axelrod, knew my application by heart and was sincerely interested in me and my future development. I was so excited by MGH that when Dr. Axelrod called a few days later to inquire about my interview experience I volunteered to give up my right arm if I was granted a position at MGH! Luckily, Dr. Axelrod allowed me to come to the program without such a sacrifice and I arrived in July 2003 fully intact.

# Division of General Internal Medicine

## **Chief**

Joshua Metlay, MD, PhD

## **Interim Chief, Geriatrics**

Monera Wong, MD, MPH

## **Chief, Hospital Medicine**

Daniel Hunt, MD *to March, 2015*  
Melissa Mattison, MD  
*Chief as of July 2015*

## **Chief, Primary Care**

Eric Weil, MD

## **Associate Vice President, Medicine & Primary Care Services**

Sally Iles

## **Administrative Director, DGIM**

Shelli Mahan

## **Administrative Director, DGIM**

Carol Milbury

## **Administrative Director, Geriatrics**

Debjani Banerji, MHA

## **Senior Administrative Manager, Hospital Medicine**

Danica Mari

## **Administrative Director, Primary Care**

Richard Perrotti

## **Director of Finance, Primary Care**

Evan Porter

## **Senior Administrative Manager, Bulfinch Medical Group**

Estelle Mullen

## **Director, Charlestown HealthCare Center**

Jean Bernhardt, PhD

## **Administrative Director, Chelsea HealthCare Center**

Jeannette McWilliams

## **Administrative Director, Internal Medicine Associates**

Virginia Manzella

## **Director of Operations, MGH West**

William Simmons

## **Administrative Director, Revere Health Center**

Debra Jacobson

The Division of General Internal Medicine (DGIM) at Massachusetts General Hospital was formally created in 1983. However, in many respects, the division can trace its origins to 1954, when John Stoeckle, MD was hired as the Chair of the Outpatient Department and its first full time staff member. In 1972, the Internal Medicine Associates (IMA) was formed to reorganize the medical clinic on the MGH campus as a group practice, which coincided with efforts to create health centers in Charlestown (1967), Chelsea (1973) and Revere (1973). In 1973, MGH launched the first primary care residency program in the country, which remains a cornerstone of the DGIM training mission. And later in the 1970s, MGH established the Medical Practices Evaluation Unit to study clinical effectiveness, which helped establish the precedent of the division serving as the center for health services research and research training at MGH, particularly for those in primary care who required an academic home. These core activities were linked in 1983 under the General Medicine Unit, which was subsequently reorganized as the General Medicine Division, now the DGIM, in order to accommodate the rapid growth in the clinical, research and training activities. In 2000, the John D. Stoeckle Center for Primary Care Innovation was created to house many of the clinical improvement activities of the division and connect research and training activities to the clinical mission.

## **Clinical Activity**

The DGIM clinical activity is organized under three clinical units: Primary Care, Geriatrics and Hospital Medicine.

**The Geriatrics Unit** includes the primary care practice site, Senior Health, the geriatrics fellowship, the GiFTS program, Fox Hill Village Wellness Center, and several community-based health educational programs. Given the high risk population, the Geriatricians follow their primary care patients during their inpatient stay at MGH to ensure continuity of care. This continuity of care model led to the collaboration and development of the GiFTS program, which is an inpatient co-management model with Orthopedics for patients with fragility fractures. In addition to the main campus outpatient practice, preventive, primary and urgent care is provided at the Wellness Center at Fox Hill Village, a continuing care retirement community in Westwood, MA. The Senior Health practice also provides a consultation service, a home visit program and a Geriatric Urology multidisciplinary clinic.

The Geriatrics Unit achieved several notable accomplishments in 2014 including: 1) received re-certification as a medical home (the first MGH practice to do so), 2) developed a multidisciplinary clinic providing urology consultation to the geriatric population, and 3) started planning for the expansion of the GiFTS program.

**The Primary Care Unit** encompasses 18 primary care practice sites (including four community health centers), distributed across the main MGH campus, greater Boston region, and Waltham (MGH West). 210 physicians (comprising 113 FTEs) provide care across these sites, responsible for over 160,000 unique patients who made close to 400,000 outpatient visits to MGH primary care providers last year. The majority of MGH primary care patients seek inpatient medical care at MGH. Admissions related to MGH primary care patients comprise approximately 28% of total hospital adult patient admissions. This is considerably greater than most academic medical centers. The DGIM is actively engaged in growing the size of the MGH primary care patient base, with a current goal to raise this to 230,000 adult patients through increased panel sizes, increased practice size, and addition of new practices.

A second key initiative has been the transformation of practices to patient-centered medical homes, as evidenced by achieving NCQA Level 3 medical home recognition. An intermediary in this process is achievement of Primed Status based on integration of such goals as electronic health record utilization, medical assistant staffing, improved workflows, and behavioral health integration. Six practices (Senior Health, Ambulatory Practice of the Future, North End Waterfront Health, MGH Back Bay, Mass General Medical Group and Primary Care Associates) have achieved Level 3 recognition, with one application

currently pending (MGH Broadway Primary Care – Revere).

Integral to medical home transformation are varied initiatives to improve population health management including D-Care, a program integrating behavioral health screening and services for patients with depression, currently generating 10-20 referrals per month; protocols for insulin initiation and titration; policy for prescribing opioids to manage chronic pain, centralized processes and enhanced tools to manage cancer screening and care of patients with chronic diseases, and expansion of the Integrated Care Management program (iCMP). The iCMP was initially designed within the Division of General Internal Medicine at MGH where it still remains the largest of all of the Partners programs, managing close to 4000 MGH patients. In 2014, the program became largely payer blind, adding NHP Medicaid patients to the existing Medicare and Commercial population. It also added community health workers and a home-based palliative care program.

**The Hospital Medicine Unit** includes both the Hospital Medicine Group (HMG) and the Inpatient Clinician Educator (ICE) program. Collectively, these 75 inpatient physicians provide care for approximately 75% of all general medical patients on the inpatient services of the MGH, overseeing greater than 10,000 hospital admissions last year. MGH hospitalists provide regionalized care on Phillips 20, Ellison 12, and Bigelow medical units and provide non-regionalized care (Team 4) across the hospital for an additional 40-60 patients per day. In addition, hospitalists account for 40% of the attending physicians who provide supervision across the Bigelow and Ellison 16 housestaff teams. Team 5 is a non-regionalized hospitalist service that provides care for socially complex patients with extended hospital admissions.

A key activity in 2014 was the launch of the Emergency Department Boarder service, with direct hospitalist supervision of all admitted patients awaiting hospital beds who have extended stays in the Emergency Department. The hospital medicine program also launched new improvement projects in inpatient-

outpatient communication, timely completion of discharge summaries, and ongoing work supporting transition of documentation to eCare and standardization of clinical documentation.

### Educational Activity

The DGIM collaborates with the Department of Medicine residency program in supporting the Primary Care Training program, which recruits and trains seven primary care residents each year. Recruitment activities have been highly successful and over the last several years there has been a major trend towards greater post training placement in primary care careers. DGIM also supports major HMS educational programs, especially the preclinical ambulatory experience and the ambulatory clinical experience linked with the primary clinical experience during third year.

The DGIM is also a core training site for the HMS general medicine fellowship. The nationally competitive two-year fellowship accepts 6-8 fellows per year, with 1-2 new fellows placed at MGH each year. MGH trainees from the fellowship have joined the MGH DGIM research faculty in each of the last three years.

### Research Activity

DGIM research encompasses 18 faculty members (15 MDs, 3 PhDs) and is organized across several research programs including Clinical Epidemiology, Tobacco Research, and the Medical Practice Evaluation Center. Total research expenses in FY2014 were \$8.5 million, which is essentially stable from 2013. DGIM investigators submitted 37 proposals, of which 16 (43%) received notices of award. Recognition for DGIM research last year was significant including 143 publications.



Suzanne Koven, MD

**Years in the Department:** 25

**Position:** Physician, Bulfinch Medical Group; Writer in Residence, DGIM

**Committees I'm Involved In:** I have been a founding member of the BMG, a longtime member of the internship selection committee, a member of the BMG's Patient Doctor Partnership, a participant in the "Group on Groups," leader of the Literature and Medicine program, and a resident preceptor.

**My Favorite DOM Memory:** Co-attending for many years with Mort Swartz, who always made me feel that what I had to offer the residents was just as valuable as what he had to offer. (It wasn't—but he was so generous and kind to make me feel that it was!)

**Fun Division Fact:** The DOM's DGIM is the first hospital division in the U.S. to appoint a writer in residence dedicated to enhancing the careers of medical professionals through writing and reading literature.

### General Internal Medicine Top Achievements

1. Nancy Rigotti, MD's group completed the Helping Hand I randomized trial demonstrating scalable hospital-to-outpatient support strategies led to significantly increased tobacco cessation among hospitalized smokers.
2. James Meigs MD's group made notable contributions to the prevention and genetics of type 2 diabetes, including the first published application of next generation resequencing, ENCODE annotation and wet-lab experimental confirmation to identify rare causal variants at a T2D quantitative trait locus identified by GWAS.
3. Daniel Singer, MD and colleagues continued their leading work on optimizing stroke prevention in individuals with atrial fibrillation (AF). Recent work has quantified the stroke risk posed by transient episodes of AF detected by implanted cardiac devices.
4. Anne Thorndike, MD and colleagues extended their work using creative approaches to "nudge" grocery shoppers to choose healthier (less obesity-inducing) foods. Effective techniques include "traffic light" labeling of foods based on healthiness and adjustments to display architecture to favor healthier choices.
5. Eric Weil, MD, Steven Atlas, MD and Daniel Horn, MD created centralized processes to manage cancer screening and care of patients with diabetes and cardiovascular disease using the second generation of TopCare, a tool which creates patient registries at the provider level. This program is currently being evaluated through a controlled study examining the role of centralized population health coordinators who review and act on information collected by the tool and coordinate administrative and clinical actions. Pilot practices incorporating centralized population health management teams have outperformed control practices over the last year, achieving CVD outcomes for 73% vs. 70% of the target population, and the performance is continuing to rise.



# Hematology & Oncology

**Chief, Hematology & Oncology  
Clinical Director, Cancer Center**  
David Ryan, MD

**Executive Director, Cancer Center**  
Mara Bloom, JD

**Administrative Director,  
Clinical & Translational Research**  
Glenn Siegmann

**Director, Clinical Research &  
Experimental Therapeutics**  
Keith Flaherty, MD

**Director, Molecular Therapeutics**  
Jeff Engelman, MD, PhD

**Program Director, Hematologic  
Malignancies**  
Tim Graubert

**Senior Administrative Director,  
Cancer Center**  
Elizabeth Souza

**Director of Clinical Services,  
Cancer Center**  
Theresa McDonnell, RN

**Finance Director**  
Assad Siddiqi

**Infusion Unit and Termeer  
Nursing Director**  
Erika Rosato, RN

**Lunder 9 Nursing Director**  
Barbara Cashavelly, RN

**Lunder 10 and Inpatient NP  
Nursing Director**  
Ellen Fitzgerald, RN

**Nursing Director,  
BMT/Leukemia Infusion**  
Laura White, RN

**Director, Quality**  
Inga Lennes, MD, MBA

**Director, Inpatient Service**  
Effi Hochberg, MD

**Director, Outpatient Experience**  
Bev Moy, MD

**Director, Infusion Unit**  
Larry Blaszkowsky, MD

**Director, Network**  
Joel Schwartz, MD

**Education and Marketing**  
Steve Herskovitz

## Clinical Activity

The Division of Hematology-Oncology practices on the MGH Boston campus and also the MGH-Danvers campus. In addition, the division provides physicians and oversight for hematology-oncology care at Emerson Hospital in Concord, Martha's Vineyard Hospital, Nantucket Cottage Hospital, Southern New Hampshire Medical Center in Nashua, New Hampshire and Exeter Hospital in Exeter, New Hampshire. In 2014, the division also assumed the hematology-oncology practice at Cooley-Dickinson Hospital in Northampton, MA.

The Division of Hematology-Oncology is fully integrated within the MGH Cancer Center. There are 119 physicians, 51 nurse practitioners, and 34 PhDs working in the division. The MGH Cancer Center had 123,600 visits in FY 2014 and 73,717 chemotherapy infusions in Boston. The inpatient service consists of co-localized services on Lunders 9 and 10 for 64 beds with the remaining patients on the Medicine service throughout the hospital. The average daily census for the Hematology-Oncology inpatient service ranges from 70-100 inpatients with an average LOS 6.42 days.

The Division of Hematology-Oncology also runs the inpatient service at Danvers with a daily census of 5-10 patients.

During FY 2014, Hematology-Oncology had the following recruits in Boston: Anna Fargo, MD (Thoracic Malignancy Center), Areej El-Jawarhi, MD (Bone Marrow Transplantation), Gabriela Hobbs, MD (Leukemia), Elizabeth O'Donnell, MD (Multiple Myeloma), Kerry Reynolds, MD (Inpatient and Education Service). The division also recruited the following physicians in community practice: Amy Bessnow, MD (Danvers), Saima Sharif, MD (Danvers), Roger Hakimian, MD (SNHMC), Gautami Rao, MD (SNHMC), Sonali Shah, MD (Exeter), Paul O'Donnell, MD (Martha's Vineyard and Bone Marrow Transplantation).

## Educational Activity

The Hematology-Oncology Fellowship Program is shared with the Dana-Farber Cancer Institute and the Brigham and Women's Hospital. The Fellowship Director at MGH is Dror Michaelson, MD and the overall Fellowship Director is Ann Lacasce, MD at Brigham and Women's Hospital and the Dana-Farber Cancer Institute. Each year, the fellowship program welcomes 14 new fellows into a three year program. During the first year of fellowship, seven fellows start at the MGH and seven fellows start at the Brigham/DFCI. On January 1 of each year, the fellows then switch to the other side of town. During their senior fellowship, all the fellows must pick an area of clinical expertise and pursue research either in the clinic or laboratory. In 2014, 10 senior fellows (five clinical and five laboratory) were based at MGH. The MGH Cancer Center has a T32 and a K12 program to support the fellows.

## Research Activity

In 2014, Keith Flaherty, MD succeeded Bruce Chabner, MD as Director of Clinical Research. The lead administrator for research within the MGH Cancer Center is Glenn Siegmann. The Cancer Center Clinical Trials office has a staff of 155 people and a budget of approximately 13 million. Clinical trials are managed through the SRC and IRB of the Dana-Farber/Harvard Cancer Center. The Division has pioneered an approach to the era of targeted therapy through a relationship with the Department of Pathology and in particular the Molecular Pathology lab. As such, there was an increase in therapeutic trial accrual by 18% (to 1,263) and an increase in non-therapeutic trials by 28% (to 2,926). Of note, there was a dramatic increase in accrual to early phase clinical trials (Phase I and I/II) by 31% (to 535) many of which were targeted therapies developed in the Henri and Belinda Termeer Center for Targeted Therapies. This was associated with an increase in revenue from industry contracts by 17% (to \$16.4 million).

## Hematology/Oncology Physician Spotlight



**Jennifer Temel, MD**

**Years in the Department:** 12

**Position:** Clinical Director, Thoracic Oncology; Director, Cancer Outcomes Research (CORe) Program

**Committees I'm Involved In:** Cancer Outcomes Research (CORe) Program; Palliative Care Taskforce; Partners Palliative Care Committee

**What MGH means to me:** The MGH is truly the most collaborative cancer program in the world. At MGH everything we do starts with the patient whether it is supportive care, standard of care, or research. The MGH Cancer Center encouraged and enabled me to pursue my career and research goals, even though they were unconventional at the time.

**Hematology/Oncology Division  
Administration Continued**

**Director, Grants Management**  
Deborah Zelen

**Fellowship Program Director**  
Dror Michaelson, MD, PhD

**Director of Development**  
Sara Silacci

### Hematology & Oncology Top Achievements

Investigators in the Division of Hematology-Oncology in collaboration with the Center for Cancer Research published more than 300 manuscripts in 2014 including *Nature*, *Cell*, *Science*, *Cancer Discovery*, and the *New England Journal of Medicine*. Highlights of clinical research included Ceritinib in ALK-rearranged non-small-cell lung cancer (Shaw, Engelman, *NEJM*), CDK 4/6 inhibitors sensitize PIK3CA mutant Breast cancer to PI3K Inhibitors (Vora and Engelman, *Cancer Cell*). Highlights of laboratory research include Culture of breast CTCs for individualized testing of drug susceptibility (Maheswaran and Haber, *Science*), mutant IDH inhibits HNF4a-hepatocyte differentiation in biliary cancer (Bardeesy and Ramaswamy, *Nature*). Drs. Jeff Engelman and Cyril Benes have also expanded patient derived cell lines for drug screening and established therapeutic concepts for targeting resistance (Crystal, Engelman, *Science*).

### CANCER CENTER OVERVIEW Centers and Support Services

Multidisciplinary Disease Centers	Specialty Centers
Breast	Experimental Therapeutics
Breast Evaluation	Palliative Care
Bone Marrow Transplant	Psychiatric Oncology
Sarcoma & Connected Tissue	Risk Assessment/Genetics Counseling
Endocrine Cancer	Survivorship
Head & Neck Cancer	Metastatic Spine Disease
Hematology	Cardiac Oncology
Leukemia	Cancer Fertility
Lymphoma	
Myeloma	
Melanoma	
Thoracic	
Genitourinary	
Gynecologic	
Pediatric	
Neuro-Oncology	
Gastrointestinal	
	Support Services
	Cancer Nutrition
	Gallagher Wellness/Integrative Therapies
	Images Boutique
	Oncology Chaplaincy
	Oncology Primary Nursing
	Oncology Social Work
	Patient Education and Peer Networking
	Quality Program
	Parenting at a Challenging Time
	Patient and Family Advisory Council

# Infectious Diseases

**Chief**  
Stephen Calderwood, MD

**Associate Chief**  
David Hooper, MD

**Administrative Director**  
Susan Clifford, MBA

**Clinical Director**  
Nesli Basgoz, MD

**Associate Clinical and Educational Director**  
Rajesh Gandhi, MD

**Director, Quality and Safety**  
Kimon Zachary, MD

**Director, Infectious Diseases Fellowship Program**  
Benjamin Davis, MD

**Director, Outpatient Antimicrobial Therapy (OPAT) Program**  
Sandra Nelson, MD

**Associate Director, OPAT Program**  
Kevin Ard, MD

**Director, Genito-Infectious Disease Practice**  
Donna Felsenstein, MD

**Director, Traveler's Advice and Immunization Practice**  
Edward Ryan, MD

**Director, Mycobacteria Center for Excellence**  
Rocio Hurtado, MD

**Director, Infectious Diseases Transplant**  
Jay Fishman, MD

**Clinical Director, Infectious Diseases Transplant**  
Camille Kotton, MD

**Director, Research**  
Marcia Goldberg, MD

**Director, Infectious Diseases Epidemiology**  
Rochelle Walensky, MD

In Fiscal Year 2014, the Division of Infectious Diseases had another very successful year. We recruited seven new faculty members, including five focused primarily on research and two as clinician educators; two other faculty members, Arnold Weinberg, MD and Cyrus Hopkins, MD, retired. The division now has a total of 49 faculty members. Over the past decade, we have recruited 21 faculty members, of whom 14 are women and seven men, and include four faculty underrepresented in medicine. Our faculty members have won 12 MGH Claffin Scholar Awards and six Physician Scientist Development Awards or Clinician Teacher Development Awards from the Multicultural Affairs Office.

## Clinical Activity

The clinical programs in the Division of Infectious Diseases continue to grow each year. During this past fiscal year, we saw 19,192 inpatient visits in consultation, and 22,365 outpatient visits, both in consultation and for HIV primary care. Our inpatient consultation teams now include three general consulting teams, one team seeing patients with HIV infection who are hospitalized and one team seeing patients following transplantation or other immunocompromising events. Our outpatient practices include general infectious disease, HIV infection, travel advice, tropical medicine, mycobacterial infection, hepatitis C, sexually-transmitted diseases, bone and joint infections, and patients receiving outpatient parenteral antimicrobial therapy.

## Research Activity

Research in the Division of Infectious Diseases continues to thrive. In FY14, the division had \$10.5 million (MTDC) in funding for research done in approximately 20,000 NASF of space, for an indirect cost density of \$208/NASF. Division faculty and fellows published 281 papers during this past year. In FY14, we successfully renewed one of our current three T32 training grants for another five years. Over the past decade, faculty in the division have received 46 NIH K Awards, and 11 faculty currently have K Awards. Three additional junior faculty have Harvard Catalyst KL2 Merit Awards.

## Educational Activity

The educational programs in the Division of Infectious Diseases continue to thrive. Our fellowship training program is combined with the Division of Infectious Diseases at the Brigham and Women's Hospital. We take ten new fellows each year into a variety of training paths. These paths include an investigative training path (for the majority of fellows), as well as clinician educator training paths focused on HIV, transplantation infectious disease, and general infectious disease, and a clinical microbiology training path.

This past year, we added a training path focused on infection control and antimicrobial stewardship. The division also offers one of the highest-rated CME courses in the Harvard system, Infectious Diseases of Adults, which attracts approximately 200 participants from around the world each year. Division faculty participate in teaching on the Bigelow Medical Service as well as offering ambulatory subspecialty rotations to medical residents, and a fourth-year advanced elective in Infectious Diseases to fourth-year medical students from Harvard and other medical schools.



**Mark Poznansky, PhD, MB, ChB**

**Years in the Department: 17**

**Position:** Associate Professor; Attending Physician; Director of the Vaccine & Immunotherapy Center

**Committees I'm Involved In:** DOM Innovation Task Force; Commercialization Council

**Why I wanted to come to MGH:**

The quality of the staff here and the innovative clinical medicine and science performed here that addresses the greatest of national and global medical challenges.

**What MGH means to me:**

A highly dynamic environment that delivers excellent clinical care and performs outstanding and enterprising science.

**Infectious Diseases Top Achievements**

1. Alginate encapsulant incorporating CXCL12 supports long-term islet cell transplantation without systemic immune suppression. ID Division faculty reported the first demonstration that T cell chemorepulsion or fugetaxis can be exploited to prevent allograft and xenograft rejection in islet cell transplantation in the long term without the concurrent use of systemic immune suppression. This work has led to successful collaborations with transplant immunologists and islet and organ transplanters. We have a strategic research agreement with the Juvenile Diabetes Research Foundation (JDRF) to further optimize the delivery and formulation of this novel encapsulant in murine models of allo and xeno-islet transplantation for Type I diabetes in collaboration with scientists at MIT and a recently award of \$1.67m by JDRF to explore the use of this chemorepellent in large animal models of islet cell transplantation for diabetes in collaboration with the University of Minnesota, University of California, Irvine and the MGH Transplant Surgery Division

2. Selection of a new conjugate vaccine platform technology into the Vaccine Development Program of NIH. In 2013, the NIH selected a new vaccine platform approach developed by a team headed by Edward T. Ryan, MD. The first vaccine being developed targets cholera, with the goal of developing a combination vaccine that protects against a number of the most deadly intestinal pathogens, including cholera, shigella, and typhoid

3. In 2011, the landmark HPTN 052 clinical trial showed that early initiation of antiretroviral therapy (ART) for the HIV-infected person in a serodiscordant couple could prevent HIV transmission to the negative partner – a concept called “treatment as prevention”. Rochelle Walensky, MD, MPH led an analysis with her CEPAC-International colleagues; they used the model -- with collaboration and data from the HPTN 052 trial -- to project the long-term clinical, transmission, and economic outcomes of “treatment as prevention”. To ensure that the results were applicable in a wide range of resource-limited settings, the analyses were conducted in both South Africa and India. In the first five years, early ART was reported to save money in South Africa, and was cost-effective in India. Over a lifetime, early ART in both countries was very cost-effective, providing an excellent return on the investment in terms of health benefits. This study provides the critical answer to an urgent policy question: it demonstrates that not only are there long-term clinical benefits to individuals, and that the benefits of preventing HIV transmission are likely to endure, but also that early HIV therapy provides excellent economic value. According to NEJM statistics, since its publication in October 2013, this paper has been downloaded over 12,000 times

Individual achievements: David Bangsberg, MD, elected to Association of American Physicians; Jatin Vyas, MD, PhD elected to American Society of Clinical Investigation and appointed Director, MGH Medical Residency Program; Nesli Basgoz, MD, received Infectious Diseases Society of America (IDSA) Outstanding Clinician Teacher Award; Rochelle Walensky, MD, received IDSA Oswald Avery Award for outstanding research; Richelle Charles, MD, received Harold Amos Faculty Development Award; Aima Ahonkhai, MD and Tariro Makadzange, MD, PhD received MGH Physician Scientist Development Awards; Stephen Calderwood, MD, elected President, IDSA.

**Infectious Diseases Division  
Administration Continued**

**Co Directors, Medical Practice  
Evaluation Center**  
Ken Freedberg, MD  
Rochelle Walensky, MD

**Antimicrobial Stewardship  
Program**  
Alyssa Letourneau, MD

**Administrative Director**  
Susan Clifford, MBA



# Nephrology Division

**Chief**

Ravi Thadhani, MD, MPH

**Associate Chief**

Winfred Williams, MD

**Clinical Director**

David J.R. Steele, MD

**Associate Clinical Director**

Andrew Lundquist, MD, PhD

**Director, Translational Research**

Herbert Lin, MD

**Director, Dialysis Unit and CAPD Unit**

Nina Tolkoff-Rubin, MD

**Director, Transplant Nephrology**

Eliot Heher, MD

**Director, Program in Membrane Biology**

Dennis Brown, PhD

**Director, Research Training**

Sylvie Breton, PhD

**Director, Informatics**

Ishir Bhan, MD, MPH

**Administrative Director**

Jason Robinson, MPH/MBA

**Senior Administrative Manager, Research**

Clifford Gardner

**Practice Manager**

Elizabeth Bonasoro

The Renal Division has had a wonderful year of accomplishments. Ravi Thadhani, MD, MPH was pleased to announce the appointment of Winfred Williams, MD to the role of Associate Chief of the Division of Nephrology. Dr. Williams has served on and chaired several national committees addressing key policy issues in nephrology and transplantation with a focus on health disparities in kidney disease. He is an Associate Faculty member in the MGH Center for Human Genetic Research, Faculty Affiliate of the Broad Institute of MIT and Harvard, and member of the Program in Medical and Population Genetics at the Broad. He was the founder and first director of the Center for Diversity and Inclusion. In a clinical and research landscape featuring both significant challenges and tremendous opportunities, Dr. Williams will play a major role in the division's ongoing success.

## Clinical Activity

The division had 39,021 visits in the Dialysis Unit, encompassing inpatient and outpatient dialysis, ICU and ward consultations. When combined with our 9471 outpatient visits, total visits across the division were up 5.7% from FY13.

David J. R. Steele, MD was appointed to the position of Clinical Director of Nephrology. In 2000, he joined the MGH Nephrology Division as Director of Ambulatory Services and has subsequently served as Associate Clinical Director for the division. He is Co-Chair of the MGH Department of Medicine Clinical Practice Council and has served as Physician Representative on the Massachusetts General Physicians Organization Board of Trustees. He has twice been awarded the Massachusetts General Hospital, Renal Division, Clinician of the Year, awarded by the MGH/BWH Renal Fellowship Training Program. As Clinical Director, Dr. Steele will build on this tradition working with members of the division to consolidate and enhance Nephrology care delivery across all aspects of our involvement within the MGH system.

Andrew Lundquist, MD, PhD has been appointed to the position of Associate Clinical Director of Nephrology. Dr. Lundquist joined the MGH Renal Division in 2013, after finishing his year as chief resident at MGH, with a clinic focused on inherited nephropathies and research looking into the role of non-coding RNAs in kidney development and disease at the Broad Institute. Dr. Lundquist will work with the Clinical Director to maintain the optimal clinical experience for the faculty and trainees in

both the inpatient and outpatient settings. He will also work to optimize the efficiency and growth of the MGH Renal Associates Outpatient Clinic, with a focus on improved patient experiences and education.

In April 2014, we were pleased to announce Eliot Heher, MD's appointment to medical director of the Nephrology Transplant Program. Dr. Heher has been a member of the MGH Division of Nephrology since 2007. Prior to his nephrology fellowship in the combined MGH/BWH program, Dr. Heher was the Chief Medical Officer of HTH Worldwide, Inc., a venture-capital backed healthcare technology and insurance company based in Radnor, Pennsylvania, which he cofounded. He also served as a Medical Director of Aetna-U.S. Healthcare, Inc. Dr. Heher's interests include clinical transplantation and quality and process optimization in transplant services, through teamwork, partnership with referring physicians, information technology, and an entrepreneurial spirit and energy.

Attracting and recruiting diverse faculty members has been a priority of the Division of Nephrology. Over the past two years, we have enjoyed enormous success in recruiting minority and women faculty to our division:

Nwamaka Eneanya, MD, appointed (2014) Instructor in Medicine in the MGH Department of Medicine (DOM) and HMS. Her research focus is end-of-life and dialysis decision analysis for patients at all stages of CKD, including ESRD. She is pioneering an effort to delineate issues of end-of-life care for ESRD patients from disadvantaged backgrounds and identifying, heretofore, unreported health disparities in end-of-life ESRD care; Hannah

## Nephrology Physician Spotlight



**Andrew Lundquist, MD, PhD**

**Years in the Department: 8**

**Position:** Assistant Clinical Director, Nephrology; Physician Director, Ellison 16

**Committees I'm Involved In:** DOM Residency Coaching, HMS PCE Core 1 Outpatient Mentorship; DOM Physician Director, DOM LOS > 7 Days Committee; Nephrology Executive Committee; Nephrology Fellowship Selection Committee; Outpatient Nephrology Access Committee

**My Favorite DOM Memory:** Building long term relationships with residents, attendings, nurses and patients on the Bigelow Service.

Gilligan, MD, appointed (2013) Instructor in Medicine, MGH DOM/HMS. She is an outstanding clinical transplant nephrologist with a busy in-patient and out-patient practice. Her research interests are in outcomes research, deciphering the role of immunosuppressive drug dosing and drug combinations in risk prediction for opportunistic infection and malignancy in transplant recipients; Jie Cui, MD, appointed (2014) Instructor in Medicine, MGH DOM/HMS. Her clinical and research focus is interventional nephrology, with a focus on in-vivo molecular imaging of vascular access using marine animal models. Clinically, she is an expert in the evaluation and management of dialysis vascular access failure and malfunction. She is one of very few female academic interventional nephrologists in the country.

We are proud of this recent progress and believe it may represent a benchmark for other academic Units within MGH. With the deep commitment of MGH leadership and our own divisional priorities, we feel very confident that we will continue to build on these successes.

### Research Activity

The division is proud to report an impressive portfolio of research activity as reflected in a sum total of 50M dollars in research funding spread across 25 industry-supported awards, 23 ROIs, 16 foundation grants, 4 K-level early trainee awards as well as a variety of other ancillary funding.

Herbert Y. Lin, MD was appointed as the Nephrology Division's Director of Translational Research. Dr. Lin has won numerous awards including the MGH Department of Medicine Stephen Krane Outstanding Young Investigator Award in 2008 and election to the American Society for Clinical Investigation in 2008. Dr. Lin leads a highly productive laboratory within the Division of Nephrology and Center for Systems Biology focusing on TGF- $\beta$ /BMP signaling pathways and is widely recognized for his mentorship of junior investigators. As Director of Translational Research for the Division of Nephrology, he will be responsible for the development of new Translational Research projects within the division.

### Nephrology Top Achievements

1. Nina Tolkoff-Rubin, MD, was named the first incumbent of the MGH Endowed Chair in Renal Transplantation on July 17th, 2014. "The MGH Endowed Chair in Renal Transplantation is the perfect tribute to Dr. Tolkoff-Rubin and will serve as much-deserved recognition for her distinguished career in nephrology," said Peter L. Slavin, MD, MGH president. Dr. Tolkoff-Rubin served as the Medical Director of the Nephrology Transplant Program since its inception until 2014. On behalf of the Division of Nephrology and Transplant Center communities, we want to thank her for her tireless efforts. We are extremely grateful for her dedication to the Renal Transplant Program. Dr. Tolkoff-Rubin joined the MGH in 1968.

2. Sylvie Breton, PhD was awarded an MGH Innovation Development Grant for her project "Early Urine Biomarkers of Kidney Inflammation." Dr. Breton's project was one of only 20 selected from nearly 350 applications across the Partners system. Dr. Breton is a Professor of Medicine at Harvard Medical School and a member of the MGH Division of Nephrology, Program in Membrane Biology, and the Center for Systems Biology.

3. Individual Awards. At the end-of-the-year Division Holiday Party, the accomplishments of seven members of the division were celebrated:

Laurie Moscatel, RN - Jean M. Nardini Excellence in Nephrology Nursing Award  
Jie Cui, MD and Naohiro Nomura, PhD - Dennis A. Ausiello Outstanding Post-Doctoral Fellow Award  
Anna Greka, MD, PhD - Alexander Leaf Excellence in Science Award  
David J.R. Steele, MD - Samuel O. Thier Excellence in Clinical Teaching Award  
Andrew Lundquist, MD, PhD - Leslie Fang Excellence in Clinical Nephrology Award  
Wendy DeMille - Wendy DeMille Excellence in Administration Award

# Palliative Care Division

**Chief**

Vicki Jackson, MD

**Administrative Director**

Debjani Banerji, MHA

**Fellowship Director**

Juliet Jacobsen, MD

**Director of Education**

Eva Chittenden, MD

**Associate Director**

Mihir Kamdar, MD

**Inpatient Co-Director**

Karen O'Brien, MD

**Inpatient Co-Director**

Todd Hultman, NP

**Outpatient Co-Director**

Simone Rinaldi, NP

**Outpatient Co-Director**

Jennifer Shin, MD

**Home Based Program Director**

Julia Gallagher, MD

**Administrative Manager**

Timothy Kowalczyk

The mission of the MGH Palliative Care Division is to provide compassionate interdisciplinary care to patients and families coping with serious illness, to train future academic and clinical leaders in the field of palliative care, and to improve patient care through innovative research and collaboration.

## Clinical Activity

With a tradition of care centered on clinical excellence, the division includes an inpatient consultation team, an outpatient clinic, and a team serving the needs of patients in their homes. Comprised of fifteen physicians, eight nurse practitioners, one registered nurse, and two social workers, the interdisciplinary clinical team made nearly 15,000 visits last year in the inpatient and outpatient settings. Patients included many individuals with cancer, but also those with heart, liver, kidney, lung or neurological disease at varying stages of treatment. The team works with patients and their families to improve quality of life through symptom management, advocate for patient needs, and establish goals of care during what is often a tumultuous, emotional time.

The most recent and novel clinical addition to the division is the Home-Based Palliative Care Pilot. The Home-Based program was developed in the past year to meet the complex medical and psychosocial needs of MGH primary care patients in the already successful Integrated Care Management Program. This program aims to meet the complex medical and psychosocial needs of these vulnerable patients, serve as a liaison to their PCPs, and utilize hospital resources judiciously by optimizing care in the home. Though recently implemented, clinicians are now making 60 homecare visits per month and the pilot thus far has demonstrated significant preliminary success.

## Educational Activity

In addition to establishing standards of clinical palliative care excellence, the division mirrors the larger institution's mission in its focus on educating the next generation of academic clinicians. Because palliative care is a relatively new field, education is a critical component to

improving care for patients with serious illness. The MGH Palliative Care Division is very proud to have the first interprofessional palliative care fellowship in the country. This innovative educational model enables physicians and nurse practitioner trainees to train together. The creation of this fellowship highlights the importance of training for mid-level medical providers, and offers a model of how to do this effectively. In addition fellowship training, the division is also actively involved in residency training. Every MGH internal medicine intern spends two weeks rotating through the outpatient palliative care practice, and we are host to medical students as well as national and international visitors. Finally, along with its interest in professional education, the division also supports the education of the public with a quarterly newsletter and uses a weblog to respond to patient questions about hospice and palliative care.

## Research Activity

The Palliative Care Division has an active program centered on clinical research and outcomes. In 2010, the division received international recognition for a seminal randomized controlled trial published in the *New England Journal* that demonstrated the benefits of early involvement of palliative care in patients with metastatic lung cancer. A second, larger version of this trial is currently being carried out to explore the benefits of palliative care in greater detail, and will be closing enrollment within the next year. The division also created a smartphone application known as ePAL to better manage outpatient cancer pain, the impact of which is currently being studied in a randomized controlled trial. In addition the division is partnering with Cardiology to examine how to optimally deliver palliative care to patients with heart failure by evaluating clinical risk factors that predict the need for palliative care involvement.

## Palliative Care Physician Spotlight



**Mihir M. Kamdar, MD**

**Years in the Department:** 7

**Position:** Associate Director

**What MGH means to me:** MGH means community to me. What I love about MGH is the interdisciplinary and interprofessional collaboration that occurs on a daily basis in the care of our patients. In my mind this is what is uniquely elemental in the fabric of MGH. It's what allows us to push the boundaries of clinical excellence, education and innovation. It also creates a wonderful sense of professional camaraderie and spirit – it's why I love coming to work here every day!

**Why I wanted to come to MGH:** To be part of an institution whose collective focus is on providing the highest level of care for our patients. The level of energy and collaboration in the name of patient care here is unlike any other institution.

Complementing the development of top-notch training programs for fellows and residents noted above, the division places a high priority on educational research. Utilizing the division's innovative outpatient practice, palliative care clinician-educators are developing cognitive models to understand and teach the newly-evolving practice of outpatient palliative care. Two of the division's top five publications, "The cultivation of prognostic awareness through the provision of early palliative care in the ambulatory setting: a communication guide" and "Helping patients with serious illness live well through the promotion of adaptive coping: a report from the improving outpatient palliative care (IPAL-OP) initiative" elucidate fundamental outpatient palliative care clinical skills. This work has been well-received at national conferences and is being translated into educational videos to be used by outpatient palliative care practices across the country as part of a clinical trial of outpatient palliative care.

Another important area of research for the entire Palliative Care Division is sustainability. Faced with work force shortages, ever-growing clinical demand, and some of the most emotionally challenging cases in clinical medicine, the field of Palliative Care

must learn how to promote resilience in its workforce. The MGH Division of Palliative Care has been a national leader in this area of research. Over the past five years, the division has been trialing work-place interventions to promote resilience. This division-wide effort has included trials of a Balint group, a mindfulness-based initiative, an intervention to promote wellness and stress modulation, and peer-coaching. In addition to strategies that promote self-care, stress management, and peer support, the division has also radically redesigned the inpatient consult service with the goal of promoting a more sustainable work environment by creating more variability in the clinical experience. This work is being recognized nationally, and the division is in the process of developing a sustainability initiative with the American Academy of Hospice and Palliative Medicine (AAHPM), to enable palliative care practices across the country to implement sustainability interventions.

### Palliative Care Top Achievements

1. Research into the Benefits of Early Palliative Care Integration: The palliative care division continues its collaborative research with the oncology division examining the advantages of early palliative care involvement for patients with advanced malignancies. Recent research from the division in this arena has led early palliative care involvement to be the standard of care for patients with advanced malignancies. The American Society of Clinical Oncology, the National Comprehensive Cancer Network, and the World Health Organization now recommends in large part due to this research.
2. Exploring and Optimizing Sustainability for Palliative Care Clinicians: Data suggests that across health care, burnout is common, and recent research suggests that burnout for those involved in palliative care is even higher than other medical specialties. The division continues to pioneer interventions aimed at both defining burnout in palliative care and developing longitudinal strategies for clinician sustainability.
3. Development of Palliative Care Core Competencies for Medical Students and Residents: The palliative care division was heavily involved in the creation of national core competencies.



# Pulmonary & Critical Care Medicine

**Chief**

Benjamin Medoff, MD

**Medical Director,  
Lung Transplant Program**

Todd Astor, MD

**Vice Chief, Critical Care  
Operations**

Ednan Bajwa, MD

**Medical Director, Pulmonary  
Function Lab**

Robert Brown, MD

**Medical Director, Interventional  
Pulmonary**

Colleen Channick, MD

**Vice Chief, Research and  
Education**

Josalyn Cho, MD

**Medical Director, Respiratory  
Acute Care Unit & Quality**

Paul Currier, MD

**Vice Chief, Clinical Operations**

Fiona Gibbons, MD

**Administrative Director**

Christine Kaliris

**Medical Director, Cardio-  
Pulmonary Lab**

Gregory Lewis, MD

**Medical Director, Sleep**

James Mojica, MD

**Medical Director, Adult Cystic  
Fibrosis**

Leonard Sicilian, MD

**Administrative Manger,  
Outpatient Operations**

Jennifer Timulty

**Administrative Manager,  
Pulmonary Function Lab**

Julie Walsh

**Nurse Manager, Interventional  
Pulmonary**

Bridgit MacFarland, RN

**Grants Administrator**

Ivelisse Nelson

The Division of Pulmonary & Critical Care Medicine (DPCCM), which was ranked number four by US News and World Report in 2014, has undergone tremendous growth over the past few years marked by an increase in our clinical operations, a growing research footprint and a revamped fellowship training program.

## Clinical Activity

The DPCCM provides comprehensive ambulatory and hospital-based care for patients with acute and chronic respiratory disease. We offer general pulmonary consultation and sub-specialty care for a wide range of disorders including occupational and environmental lung disease, interstitial lung disease, sleep disorders, pulmonary hypertension and thromboembolic disease, cystic fibrosis and non-CF bronchiectasis, and advanced lung disease requiring transplantation. In addition, DPCCM faculty care for critically ill patients in the medical intensive care unit (ICU), the cardiac ICU and the Respiratory Acute Care Unit (RACU) 24 hours a day and supervise adult codes. The DPCCM also supports a number of diagnostic centers for the hospital including a Pulmonary Function Laboratory (which performs more than 30,000 tests per year) and the Cardiopulmonary Exercise Testing (CPET) Laboratory, a national referral center that provides evaluations ranging from resting measurements of metabolic rate to comprehensive exercise studies. The Pulmonary Special Procedures Unit offers state of the art diagnostics in the field of interventional pulmonology. We perform rigid bronchoscopy, Nd Yag laser, endobronchial ultrasound, navigational bronchoscopy, bronchial thermoplasty, and endobronchial valve placement for the diagnosis and treatment of lung and airway disease. In addition, we offer standard procedures including tracheostomy, thoracentesis and chest tube placement. Finally, our faculty perform right heart catheterizations for the diagnosis and management of patients with pulmonary hypertension.

## Research Activity

The DPCCM has 34 full-time faculty members, 17 of whom have National Institute of Health (NIH) funding. In total, our faculty are supported by 15 major NIH grants (R, P, U mechanisms) and eight training or mentored

awards. The grants total \$12 million in funding, of which approximately \$6 million is administered through the DPCCM. Over the past year, we have created a Clinical and Translational Research Unit, which is tasked with supporting the increasing number of translational and clinical trials within the DPCCM in addition to fostering collaborations between our clinical and basic scientists.

In particular, we have three strong programs to highlight. First, our Critical Care Clinical & Translational Research Program participates extensively in NIH-funded extramural research. We serve as both the Clinical Coordinating Center and a recruiting site for the NIH/NHLBI Prevention and Treatment of Acute Lung Injury clinical trials network (PETAL), are a top-enrolling clinical site in the NIAID Influenza Research Collaborative and participate in multiple investigator-initiated NIH studies. Locally, our efforts are led by David Christiani, MD, whose groundbreaking research on the genetic epidemiology of critical illness has led to the creation of a 4000-patient cohort of critically ill patients whose genomes have been extensively characterized. Second, the DPCCM has a robust program in Translational Immunology led by Benjamin Medoff, MD with NIH-funded projects to study asthma, chronic obstructive pulmonary disease (COPD) and influenza infection. These projects are facilitated by a research bronchoscopy program, which allows for direct sampling of the lung immune system and in vivo lung imaging to quantify structural changes in the airway. The third major highlight is the establishment of a collaborative group within the DPCCM focused on idiopathic pulmonary fibrosis (IPF). This group, led by Andrew Tager, MD includes investigators in fibrosis, immunology, regenerative medicine and mechanobiology. In addition to studying the basic mechanisms of fibrosis, they are working to build a tissue biorepository and expand the number of IPF clinical trials enrolling at MGH. Our investigator-initiated translational projects are supported by a number of DPCCM faculty

## DPCCM Physician Spotlight



Alexandra Cist, MD

**Years in the Department:** 23

**Position:** Instructor in Medicine; Physician

**Committees I'm Involved In:** Optimum Care Committee; Ethics in Clinical Practice Committee; Emergency Preparedness

**What MGH means to me:** The people are its greatest asset. When at its best, MGH fosters an environment in which bright people work together in interdisciplinary teams to provide compassionate and excellent care to patients and their families.

**Fun DOM Fact:** Discovering that the Iron Lung stored in the Ellison 4 hallway was there for post-polio patients who preferred negative pressure ventilation and that Emerson ventilator #1 was in the Smithsonian, while we were still using Emerson ventilator #2 in the Gray 4 "GRACU" — it used a bicycle chain as part of the pumping mechanism.

who use cutting-edge techniques in advanced imaging, immunology and biomarker discovery to better understand disease phenotypes and pathophysiologic processes in ways that can be adapted for bedside care.

### Educational Activity

The DPCCM continues to have a major role in the education of Department of Medicine housestaff. Our faculty attend on three inpatient teams (two in the medical ICU and one in the cardiac ICU) and run a critical care lecture series. Residents rotate on the inpatient pulmonary consult service as well as through the outpatient pulmonary clinic and diagnostic centers. The outpatient experience, run by Dr. Bob Brown, has consistently been rated the top ambulatory subspecialty rotation (ASR), and the MICU is consistently the number one rated inpatient rotation for housestaff. Over the past year, our faculty have added two additional elective rotations for housestaff - the Advanced Cardiopulmonary Physiology lecture series and a hands-on rotation (Applied Cardiopulmonary Physiology)

that provides exposure to patients with unexplained dyspnea and advanced heart and lung disease, in addition to practical experiences with CPET and right heart catheterization. The DPCCM also has a four year fellowship training program, combined with Beth Israel Deaconess Medical Center (BIDMC), that trains six fellows per class. In order to address the challenges of academic medicine, we have developed a program to facilitate professional development for our trainees. This program involves identification of an area of excellence for each fellow (Investigation, Teaching & Educational Leadership, Academic Clinician), biannual meetings with a Training Advisory Committee, and a number of seminars and retreats. These seminars introduce fellows to research activities within the DPCCM, provide instruction on funding opportunities and grantsmanship, and assist with job preparation including CV completion, negotiation and interviewing skills. Finally, the DPCCM (together with BIDMC) is home to the largest interventional pulmonary fellowship training program in the country, with three fellows per year.

### Pulmonary & Critical Care Medicine Top Achievements

1. Pulmonary Thromboendarterectomy Program: The Pulmonary Hypertension and Thromboendarterectomy Program was established in 2011 under the leadership of Richard Channick, MD. This program provides comprehensive care for patients with pulmonary vascular disease, including chronic thromboembolic pulmonary hypertension (CTEPH). For patients with CTEPH, pulmonary thromboendarterectomy can reverse the disease process and dramatically improves the quality of life for patients who have often suffered for years with chronic shortness of breath. This high-risk and technically challenging surgery is only performed at a few centers in the world and requires close collaboration between highly specialized pulmonologists and cardiothoracic surgeons. Prior to 2011, only ten pulmonary thromboendarterectomies had been performed at MGH. Since 2011, these procedures have been performed with increasing frequency, with over 22 thromboendarterectomies performed this year. The program is now the second largest in the country and will likely perform its 100th surgery this coming year.

2. Lung Transplantation Program: Since 2012, the number of lung transplants performed at MGH has continued to grow. Over the past two years, lung transplant volume has doubled with 22 procedures in 2013 and 19 procedures in 2014. In addition to increasing volume, we have developed a live saving program utilizing extracorporeal membrane oxygenation (ECMO) and active rehabilitation as a bridge to lung transplant. This program provides a longer and better quality of life for patients with end-stage lung disease who have no other treatment options and has made MGH a referral center for the sickest transplant candidates. Since its inception, four patients have been transplanted from ECMO.

(Continued on next page)

### **Pulmonary & Critical Care Medicine Top Achievements Continued**

3. BioThreats Team: Our department has long played a key role in biothreats planning and preparation. In most years, this involves caring for patients with seasonal influenza infection. More recently, these efforts have been accelerated to deal with emerging biothreats, including Middle East Respiratory Syndrome (MERS) and 2009 H1N1 pandemic influenza. The 2014 Ebola Virus Disease (EVD) epidemic in West Africa spurred intensive preparations required to care for such patients and provide adequate infection control. On the division level, this involved an intense effort to prepare the Medical Intensive Care Unit and our clinical faculty, with support and coordination from the hospital. These efforts involved creation of a purpose-built Biocontainment Unit within the MICU and training of our staff to provide full-spectrum 24-hour care to patients with suspected or confirmed EVD. A recent visit by officials from the Centers for Disease Control certified the hospital and the MICU as being prepared for Ebola care. Going forward, the DPCCM is prepared to maintain a sustainable Biothreats Team staffed by volunteer faculty, both for ongoing readiness during the Ebola epidemic and for preparedness for future biothreats.

4. COPD Community Outreach: Chronic obstructive pulmonary disease (COPD) affects more than 20 million Americans and is now the third leading cause of death in the U.S. An analysis of MGH billing data for a subset of 383 Accountable Care Organization (ACO) patients with COPD managed in the iCMP program during 2012 revealed 37 MGH admissions for COPD and 206 all cause MGH admissions. Over a period of 90 days, there were 110 readmissions, a rate of 53%. Next year, CMS will begin penalizing hospitals with an excess rate of readmissions for patients with COPD. The DPCCM led efforts in COPD care redesign that identified significant barriers to care. In particular, travel to MGH for COPD care is prohibitive for many of our patients. In an effort to reach the patients at highest risk of admission, the DPCCM established community-based clinics for COPD patients in the Chelsea, Revere and Charlestown health centers. Open for the past year, these clinics are staffed by a DPCCM physician and nurse, already operating at capacity, and are providing pulmonary function testing, education and longitudinal care for patients with COPD.

5. Junior Faculty Development Program: In an effort to capitalize on the talent in the fellowship program and grow our research portfolio, the DPCCM established a junior faculty development program in 2010. This program, sponsored by the division and a generous philanthropic gift, provides critical bridge funding and protected time for junior faculty to develop their research programs so that they are highly competitive for grants. Over the last five years, we have supported nine junior faculty in this program, seven of whom have applied for and been awarded K or K-equivalent awards (a 100% success rate!). The past year was our most successful, with three faculty receiving funding. The division is already beginning to see the benefits of this program with a more vibrant academic environment and increasing collaborations among our research faculty. In the long-term, we hope the junior faculty development program will assist in placing our trainees in leadership positions within academic pulmonary divisions. We have already had success with one junior faculty member taking a position as the Director of Translational Research in the Pulmonary Division at Brown University.

# Rheumatology, Allergy & Immunology

## Chief

Andrew Luster, MD, PhD

## Director, Center for Immunology and Inflammatory Diseases

Andrew Luster, MD, PhD

## Clinical Directors

Aidan Long, MD (Allergy)

John Stone, MD, MPH  
(Rheumatology)

## Associate Clinical Directors

Ellen Dutta, MD (Allergy)

Mark Fisher, MD, MPH  
(Rheumatology)

## Director, Musculoskeletal Ultrasound Program

Minna Kohler, MD (Rheumatology)

## Clinical Lab Directors

Mandakolathur Murali, MD

(Clinical Immunology)

Allen Steere, MD (Lyme Serology)

## ACGME Program Directors

Aidan Long, MD (Allergy)

Marcy Bolster, MD (Rheumatology)

## Associate Program Directors

Aleena Banerji, MD (Allergy)

Robert Friday, MD, PhD  
(Rheumatology)

## Translational Research Directors

Daniel Hamilos, MD (Allergy)

Allen Steere, MD (Rheumatology)

## Director, Clinical Epidemiology & Health Outcomes

Hyon Choi, MD, DPH

## Co-Director, Vasculitis & Glomerulonephritis Center

Sebastian Unizony, MD

## Quality Assurance/Quality Improvement Directors

Aleena Banerji, MD (Allergy)

Deborah Collier, MD  
(Rheumatology)

## Subspecialty Education Coordinators

Michelle Conroy, MD (Allergy)

Eli Miloslavsky, MD (Rheumatology)

The mission of the Division of Rheumatology, Allergy and Immunology (DRAI) is to offer the highest quality, comprehensive specialty care to patients with a broad range of allergic, rheumatologic and immunologic diseases; to train the next generation of physician-scientists; to conduct cutting-edge basic, translational and clinical research in the broad areas of immunology, allergy and autoimmunity; and to offer continuing medical education opportunities to further our understanding in these areas.

During the 2014 fiscal year, the DRAI was involved in a number of wide-ranging clinical, research and educational activities that provided new and exciting opportunities for physicians, scientists and trainees, and helped position the division for ongoing success in the years to come. The DRAI is a unique multidisciplinary component of the Department of Medicine, and as the future of health care delivery and biomedical research continues to evolve, the DRAI's diverse structure should help it successfully navigate these changes.

## Clinical Activity

Clinically, the DRAI continued to implement its strategic plan to create multidisciplinary centers to provide the highest quality comprehensive specialty care and to increase clinical capacity to meet demand. Last year, the DRAI established the Dermatology-Rheumatology Clinic and this year the DRAI helped establish the Adult Eosinophilic Esophagitis (EoE) Clinic and the Vasculitis and Glomerulonephritis Center (VGC) at MGH. The multidisciplinary EoE Clinic includes allergists, immunologists, gastroenterologists and nutritionists and provides care for patients with a spectrum of allergic diseases of the gastrointestinal tract. The VGC combines the expertise of specialists from rheumatology and nephrology, and provides one access point to additional experts from dermatology, neurology, ophthalmology and pathology, to provide coordinated care to patients with vasculitis, glomerulonephritis and more than 30 related complex conditions. We believe these multidisciplinary clinics improve the coordination and efficiency of patient care, increase patient satisfaction, and provide greater learning and education opportunities.

To address clinical demand, in April 2014 the DRAI opened a new ~3,000 sq. ft. self-funded, state-of-the-art Allergy Practice at MGH West in Waltham. This major clinical expansion project was managed by DRAI staff in coordination with the Massachusetts General Physicians Organization (MGPO) and

it is already operating at near capacity. The Rheumatology Care Redesign Team, led by John Stone, MD, MPH, included members from pharmacy, nursing, budgeting, admitting and oncology, aimed to improve efficiencies related to the significant growth in infusion therapies, and to consider ways to improve the approach to the use of biologic medications in general. The team created standardized processes where previously there were none and improved prior authorization and infusion chair utilization. The Care Redesign Team's work also led to an emerging partnership with Operations Research at MIT, with the goal of facilitating collaboration between all MGH Infusion Centers and the potential for the creation of a virtual single Infusion Center. The rheumatology and allergy outpatient practices continued to improve patient access by implementing smart-calling strategies allowing for better backfilling of appointment cancellations from the waiting list, triaged urgent new patient requests through the Attending-on-Call, and piloted longitudinal medical record (LMR) patient reminders to facilitate potential lab work in lieu of lab monitoring office visits. Both the Allergy and Rheumatology Units were institutionally highlighted as two of five hospital-wide practices that demonstrated significant effectiveness at Patient Gateway enrollment. As a result of these efforts, patients will have easier access to their health information, providers will be closer to achieving meaningful use, and our practices will be more aligned with Partners eCare objectives.



This past year we added six new faculty members to the division. Hyon Choi, MD, one of our former fellows, was recruited back to MGH as the Director of Clinical Epidemiology and Health Outcomes in Rheumatology and Professor of Medicine at HMS. We also recruited Janice Lin, MD, MPH to direct the rheumatology portion of the joint Dermatology-Rheumatology Clinic and to join the Musculoskeletal Ultrasound Program in Rheumatology. In addition to these outside recruitments, we also retained several of our former star trainees. Eli Miloslavsky, MD joined our faculty as Clinician-Educator and Subspecialty Education Coordinator for Rheumatology. Naina Rastalsky, MD joined our growing Musculoskeletal Ultrasound Program to develop a new sports medicine program in Rheumatology. Finally, in the Allergy Unit, we retained two of our fellows and former MGH house officers Rebecca Saff, MD, PhD to help meet the clinical demand in our new MGH West practice and Caroline Sokol, MD, PhD as she develops her research career in the CIID.

### Research Activity

Scientifically, the DRAI had an active year publishing impactful papers and obtaining new grant funding. Published work from the DRAI included a wide range of topics, demonstrating the breath of research that is ongoing in the division. This included human systems immunology work published in *Science*, basic immune mechanisms studies published in *Nature Immunology*, *Immunity*, *JEM*, and *JCI*, novel clinical trials published in *NEJM*, and insights into disease pathogenesis in Lyme Arthritis and IgG4-RD published in *A&R* and *JACI*. Investigators in the DRAI were actively involved in major research collaborations, including three NIH U19 Cooperative Research Programs: i) A multidisciplinary program led by Andrew Luster, MD, PhD focusing on Asthma, Food Allergy and Immune Profiling that received two Administrative Supplements (>\$500K) and one Opportunity Fund Award; ii) Projects on IgG4-RD funded through an NIH

Autoimmune Disease Center of Excellence Grant that includes Robert Anthony, PhD of the CIID, John Stone, MD, MPH of Rheumatology and Shiv Pillai, MD, PhD of the Cancer Center; and iii) A project on the restoration of Innate Immunity funded by the Immune Tolerance Network that facilitates collaboration between Nir Hacohen, PhD of the CIID and Raymond Chung, MD of GI. An NIAID P01 Program Project with HMS was renewed, which includes both a Project led by Dr. Luster and Core led by Thorsten Mempel, MD, PhD focused on chemokine control of T cell trafficking in HIV transmission. A prestigious NIAID DP2 New Innovator Award on glycoengineering was awarded to Dr. Robert Anthony. In addition, Dr. Luster successfully renewed the Rheumatology T32 training grant funded through NIAMS. The DRAI also secured funding from the hospital and from two NIH Administrative supplements for major capital equipment purchases to establish a much needed confocal microscopy core and to expand the capacity of our intravital imaging facility to meet the growing demand around the hospital.

We held the first DRAI/CIID faculty and fellows retreat in November 2013, which brought together the different units within the DRAI to improve the understanding of the important role each group plays in the Division. The retreat provided a vision for the future and a chance to foster existing and create new collaborations. A major focus of the retreat was fostering translational immunology research in the DRAI, and this theme was carried forward in the year with the introduction of new Translational Immunology Research Conference, with a goal of fostering, facilitating and decreasing barriers to “Bedside-to-Bench” research in the division.

These achievements hopefully offer a glimpse into the diverse activities within the DRAI that strive to improve the tri-partied mission of the Department of Medicine.

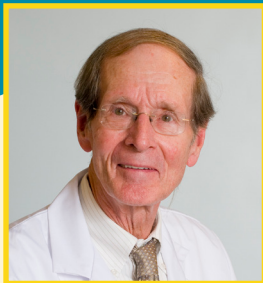
#### Division of Rheumatology, Allergy & Immunology Administration Continued

**Administrative Director**  
Sean Gilligan

**Clinical Managers**  
Karen Ferreira, Administrative  
Manager (Allergy)  
Jaime Tirrell, Practice Manager  
(Rheumatology)

**Research Managers**  
Carol Leary, MS, Senior Laboratory  
Manager  
Dimitrios Pashos, MUA, Senior  
Grant Administrator

## DRAI Physician Spotlight



**Dwight Robinson, MD**

**Years in the Department:** 55

**Unit:** Rheumatology

**Position:** Professor of  
Medicine; Physician

**What MGH means to me:**  
MGH has been a wonderful place to work, and that's why I have stayed here. My long career here was determined by working immediately after residency in the lab of the late Dr. Stephen M. Krane, who became the Chief of Rheumatology shortly after I met him. Steve introduced me to biomedical research, then encouraged me to spend two years in the biochemistry department at Brandeis University learning and doing more biochemistry research, and then joining the Arthritis Unit at Steve's invitation, where I remained doing research for about 40 years, before moving to full time patient care here also at MGH. It has been a great experience, and I most appreciate the opportunity to work here all of these years.

### Rheumatology, Allergy & Immunology Top Achievements

1. Patient Care: Opened a new ~3,000 sq. ft. self-funded, state-of-the-art Allergy Practice at MG West in Waltham to meet increased clinical demand. Amazingly, the clinic opened in mid April and we are almost at full capacity and have almost recouped all of our expenses.
2. Awards: Dr. Robert Anthony received a prestigious DP2 award from the NIH and Dr. Thorsten Mempel was named an MGH Scholar.
3. Grants: Obtained several new NIH grants, including a U19 Autoimmune Center of Excellence and a Human Immune Profiling Supplement (\$500K) to the Division's AACRC U19 program as well as renewed a P01 and an T32 training grant.
4. New Faculty Recruitment: Drs. Hyon Choi, Janice Lin, Naina Rastalsky, and Eli Miloslavsky joined our Rheumatology faculty and Drs. Rebecca Saff and Caroline Sokol joined our Allergy faculty. Dr. Choi will be directing a new program in Clinical Epidemiology and Health Outcomes in Rheumatology, Dr. Lin will be coordinating our Dermatology-Rheumatology clinic, and Dr. Rastalsky will be establishing a sports medicine musculoskeletal ultrasound program.
5. Scientific: The scientific breath of research in the DRAI was demonstrated by its published work which included human systems immunology (*Science*), basic immunology on a novel scavenger receptor in autoimmunity (*Nature Immunology*), cell trafficking and lung imprinting (*JEM*), and tumor immunology (*JCI*), as well as a novel clinical trial in vasculitis (*NEJM*) and insights into disease pathogenesis in Lyme Arthritis (*A&R*) and IgG4-RD (*JACI*).

In Memoriam  
**Kenneth D. Bloch, MD**  
1956 - 2014



The Massachusetts General Hospital, as well as the entire international community of cardiovascular researchers, suffered a tremendous loss with the passing of **Dr. Kenneth D. Bloch** on September 13, 2014. Ken fulfilled many roles at the MGH, as a world renowned researcher, a superb clinician, and a phenomenal teacher. However, I think Ken's most important role was that of a mentor.

Ken was raised in Brookline and formed early roots at the MGH. He was first introduced to scientific investigation by his father, Dr. Kurt Bloch, a physician-scientist and Chief of Allergy and Clinical Immunology at MGH. As he grew older, he spent summers working with Dr. Jerome Gross, using electron microscopy to study tadpole differentiation. After graduating from Roxbury Latin School, he completed his undergraduate coursework and medical training as part of an elite group of students in a combined program at Brown University. He subsequently completed his training as a resident in internal medicine and a fellow in cardiology at the MGH before coming on staff.

Ken began his research career in cardiology studying the natriuretic peptides with Drs. Jon and Christine Seidman in the Department of Genetics at Harvard Medical School. He cloned atrial natriuretic peptide (ANP) and identified the mechanisms by which ANP expression was regulated. This seminal work was published in *Science* and was followed closely by an in-depth investigation of the trafficking and secretory mechanisms by which ANP is produced in both the atria and ventricles. Ken went on to identify the serine protease that cleaves pro-ANP and to demonstrate that pro ANP is phosphorylated, two critical regulatory mechanisms

for ANP secretion. These findings laid the foundations for the field of natriuretic peptide biology. Moreover, Ken determined that ANP expression is increased in animal models of heart failure and hypertrophy, further laying the foundations of natriuretic peptide utilization as a biomarker in patients with cardiovascular disease.

Ken established his own laboratory in the MGH Cardiology Division in 1990 and continued a lifelong collaboration with his brother Dr. Donald Bloch, a physician-scientist in the Division of Rheumatology, Allergy, and Immunology. Together with his first post-doctoral fellow in the laboratory, Dr. Stefan Janssens, Ken cloned the cDNA encoding nitric oxide synthase 3 (NOS3), which enabled us to understand the importance of nitric oxide in the regulation of vascular tone and cardiac function. In subsequent years, during a more than 20 year collaboration with Dr. Warren Zapol, Ken's laboratory described the role of NOS3 both in the pathogenesis of pulmonary hypertension and in the myocardial dysfunction associated with sepsis. Ken also reported that cardiac-specific restoration of NOS3 could attenuate adverse ventricular remodeling in NOS3-deficient mice. This work helped to identify NOS3 and its downstream signaling mechanisms (such as soluble guanylate cyclase and phosphodiesterase 5) as possible therapeutic targets in cardiovascular disease.

Over the past 10 years, Ken focused his efforts on studying bone morphogenetic protein (BMP) signal transduction. Ken began studying BMP signaling in a BMPR2-deficient mouse model, helping to identify the mechanisms by which BMPR2 mutations result in pulmonary arterial hypertension in humans. In collaboration with Drs. Paul Yu, Charles Hong, and Randall Peterson, he discovered a novel family of small molecules (the dorsomorphin family) that specifically inhibits the type I BMP receptor. This discovery has advanced the entire field of BMP biology by permitting disruption of BMP signaling in the postnatal setting. Since the discovery of the dorsomorphin family of BMP inhibitors, Ken and the members of his laboratory have demonstrated essential roles for BMP signaling in a wide range of human diseases including heterotopic ossification, anemia of chronic inflammation, vascular calcification and atherosclerosis, and hemochromatosis. At the time of his death, Ken was working with the NIH on developing these compounds as treatments for human diseases, truly fulfilling the "bench-to bedside" tenant of a physician-scientist.

For more than 25 years, Ken devoted his academic life to fostering the careers of young scientific investigators in the laboratory, many of whom have gone on to establish their own independent research programs and leadership positions in academic medicine. In addition, as associate program director for the Cardiology Division at MGH, Ken successfully shaped



the career paths of many cardiovascular disease fellows, numbering well into the hundreds. He served as principal investigator for the MGH Cardiology Division T32 training grant, cycle after cycle, providing stability and important transitional funding for research fellows seeking to pursue more training in the basic sciences.

I was fortunate to have experienced Ken's mentorship on a daily basis. Ken's office door was literally always open, and he welcomed frequent "chatting", whether it was about the newest data or frustrations about an experiment, whether it was about career planning or grant writing or manuscript preparation. Ken directed a laboratory with more than 20 investigators, but did it in the style of a smaller laboratory, with close guidance and an environment of collaboration, support, and collegiality. Such a supportive environment could only be created through dedicated and vigilant leadership.

Ken's constant focus and priority was to advance all of his laboratory members to the next stage in their career development. He successfully guided me through multiple grant submissions and manuscript revisions with enormous energy and passion. I recall many 6 am meetings to edit my grant applications as well as many weekend and evening phone calls to run something "quick" by him. Ken always responded with a sense of calm and caring, an emphasis on teaching, and a good sense of humor! It is difficult to describe in words such tremendous devotion. Over the years, Ken taught me many valuable lessons in both the laboratory and in life. Simple things, like making sure the centrifuge is properly balanced or avoiding experiments that required too much statistical analysis, were learned early on! More important lessons have included the need to always have an open mind towards challenging established scientific theories as well as creating the right balance between scientific exploration and focus. These are lessons that will serve me throughout my career.

Ken provided mentorship both at the institutional level as well as on a national scale, serving on numerous research committees of the American Heart Association and delivering talks to Fellows-in-Training at the national Scientific Sessions conferences that serve to inspire and guide fellows transitioning to the research phases of their career. With decades of experience as a mentor, Ken was selected by the editorial board of *Circulation* to write an important and highly-profiled piece on developing careers in basic cardiovascular research (*Circulation*. 2009 May 12; 119(18):2526-30). This work is routinely referred to as a source of guidance by early career investigators, as illustrated in the following excerpt:

*The opportunities in basic science for graduating PhD students and for aspiring physician-scientists have never been so extraordinary. The sequencing of the human genome*



*and the development of the human haplotype map have enabled scientists to begin to unravel the basis of complex multigenic disorders. Rapid developments in stem cell biology are impacting many areas of cardiovascular biology and may enable repair of injured myocardium. High-throughput chemical genetic screening, proteomics, and metabolomics are changing the approaches with which investigators characterize novel signal transduction pathways and develop new therapeutic paradigms. Rapidly evolving molecular imaging technologies are non-invasively illuminating the fundamental processes contributing to cardiovascular diseases. New insights into the mechanisms involved in cardiac myocyte hypertrophy and dysfunction have important therapeutic implications for an expanding population of patients with congestive heart failure. For the young scientist looking to the future, there are major benefits in pursuing a basic science career including the excitement of discovery, the opportunity for life-long learning, and the potential to broadly impact cardiovascular science and medicine.*

Ken's words remain with us as a source of inspiration. Ken's legacy lives on in the numerous scientists and physicians that he mentored. In the end, a truly gifted mentor is one who not only teaches how to succeed but also inspires others to a life of mentorship. And Ken accomplished the latter, time and time again.

*Rajeev Malhotra, MD  
Cardiology Division*



**In Memoriam**  
**Stephen M. Krane, MD**  
**1927 - 2015**

*Dr. Stephen M. Krane* made outstanding and wide-ranging contributions to the bone and mineral field, to rheumatology, and to clinical medicine. He was influential in the establishment of the American Society for Bone and Mineral Research, served as its fourth president, and won the Society's highest honor, the William F. Neuman Award.

Steve grew up in New York City and served in the US Navy at the end of World War II. He graduated from Columbia University and then received his medical degree from Columbia University College of Physicians and Surgeons. After 3 years of internal medicine residency at the Massachusetts General Hospital, he spent a year as a research fellow in the MGH Thyroid Unit, followed by a year in Carl Cori's Biochemistry Department at Washington University, where he studied sugar transport with Robert Crane. He then returned to the MGH to serve as chief resident in medicine, followed by his appointment to the faculty of the Endocrine Unit, where he studied the effects of thyroid disease on calcium homeostasis.

In 1961, Steve became chief of the Arthritis Unit at the MGH, a post that he held until 2000. After his appointment, he initiated collaborations with Melvin Glimcher at the Children's Hospital, laying the foundations for his long-standing interests in collagen biology and the mechanisms of deregulated connective tissue remodeling in genetic diseases and inflammatory arthritis. Together with Glimcher, he published a series of manuscripts describing the mechanisms of mineralization in bones and teeth, and in 1972 published the first description of a heritable disorder of connective tissue attributable to hydroxylysine deficiency. In studies spanning his entire career, he contributed to the description of several additional genetic disorders associated with abnormal collagen structure and remodeling.

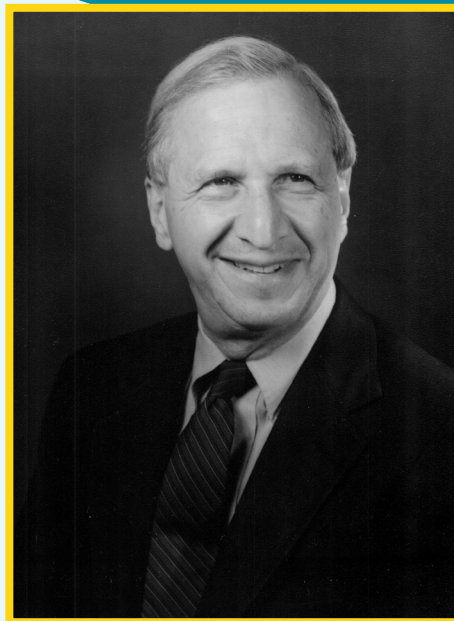
In the mid 1960s, he began a series of studies investigating the role of collagenases in the tissue damage and deregulated bone remodeling in Paget's disease of bone and inflammatory arthritis, a line of investigation that became the central focus of his research career. In 1967, he published two landmark papers in *Science*. Both studies were performed with Ted Harris, one of his first rheumatology fellows. Ted went on to a highly successful career in rheumatology, including serving as the president of the American College of Rheumatology and chief of medicine at Stanford University School of Medicine.

Steve's career provides an exceptional role model for any aspiring clinician-scientist. Over many years, he provided mentorship, inspiration, and guidance to numerous trainees who later became successful scientists and leaders in their respective fields. In his first publication in *Science*, he showed that patients with Paget's disease of bone excreted fragments

of collagen in their urine, providing evidence of a role for collagenases in bone remodeling in Paget's disease. In the other study, he was the first to identify a human collagenase involved in connective tissue breakdown using synovial organ cultures from patients with rheumatoid

arthritis. These early studies formed the basis for his major contributions to the understanding of the role of collagenases in deregulated connective tissue remodeling and joint tissue destruction in inflammatory arthritis. These papers exemplify his approach to research in which he used the study of human pathological disorders to define fundamental pathophysiological mechanisms responsible for connective tissue remodeling in both pathological and physiological states.

For the next five decades, Steve and his group continued to make major advances in the understanding of cellular and molecular mechanisms involved in the breakdown of joint tissues in rheumatoid arthritis and in defining the central role of collagenases in health and disease. In his early work in the 1970s with Jean-Michel Dayer, who later became head of the Division of Immunology and Allergy at the University of Geneva School of Medicine, and Graham Russell, then a visiting scientist from Oxford and the University of Sheffield, they were the first to identify the essential role of inflammatory cytokines produced by immune cells in synovial tissues in the pathogenesis of synovial inflammation and joint destruction in rheumatoid arthritis. These discoveries laid the foundation for the later clinical use of anti-cytokine therapies. These studies were continued in collaboration with Steve and Mary Goldring and Ed Amento over the next several decades. Later, in a collaboration with Rudolf Jaenisch at MIT, he established the importance of collagenase action in collagen degradation, employing a mouse with a collagen Ia1 molecule mutated to resist collagenase digestion. Subsequently, Steve's group established a mouse model missing the MMP13 gene and demonstrated the crucial role for collagenase in normal growth of long bones and in physiological connective tissue remodeling. Throughout these many years, Steve benefited from a close collaboration with Mike Byrne, a skilled scientist whose close interactions with Steve allowed Steve to be always just one step from the bench.



In the field of metabolic bone disease, Steve had a lifelong interest in the study of Paget's disease of bone and its treatment. He provided classic descriptions of the disorder with Charles Nagant De Deuxchaisnes, established a role for calcitonin as a therapy with Fred Singer, and studied calcitonin action with Steve Goldring, work that culminated with the cloning of the calcitonin receptor. Together with his close friend Lou Avioli, a founder of the ASBMR, Steve co-edited the much-acclaimed two-volume treatise entitled, *Metabolic Bone Disease and Clinically Related Disorders*.

Steve was a master clinician-educator in various roles at the MGH and Harvard Medical School. His most important teaching role was probably as the first master of the Walter B. Cannon Society of HMS from 1987 to 2001, a position from which he mentored large numbers of medical students about their future careers.

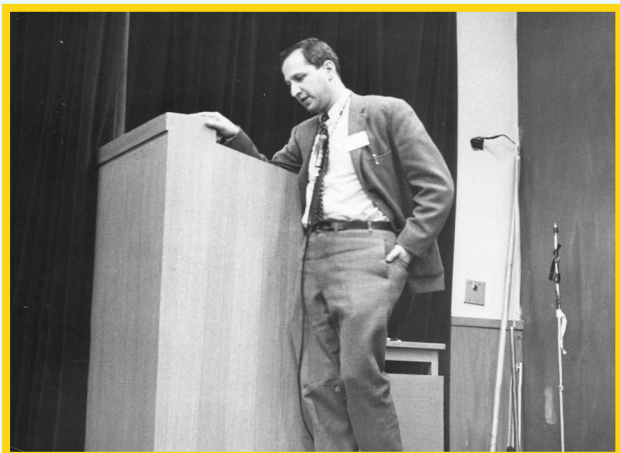
Stephen Krane was the Persis, Cyrus and Marlow B. Harrison Professor of Medicine, Harvard Medical School, and won many national and international awards for his research. These included the Heberden Medal (London), the Carol-Nachman Prize in Rheumatology, the Distinguished Investigator Award of the American College of Rheumatology, the Harold D. Copp Award of the International Bone and Mineral Society, and the Louis V Avioli Memorial Lectureship of the ASBMR.

Steve met his wife, Cynthia, when she was a nurse at the MGH. They had a wonderful married life of 60 years together. Cynthia encouraged Steve in what he sometimes said was his second career, as a superb and inventive cook, conducted in great style in an exceptionally well-equipped kitchen in their family home in Waban, MA. Another little-known skill of Steve's was as a jazz pianist, which he used to advantage as a student in playing piano in bars. In the early 1970s, he and his family had spent a sabbatical year

in Oxford in the William Dunn School of Pathology. During this time there, Steve further indulged his musical talents by supervising the construction of a harpsichord, which was proudly shipped back to his Boston home.

Steve and Cynthia brought up a close-knit family, whose great devotion was evident in the care their children gave to their parents in their last few years and particularly to Steve after Cynthia died in 2012. Steve was deeply attached to his four sons (David, Peter, Ian, and Adam) and seven grandchildren, of whose accomplishments he was immensely proud. He often recalled with great affection those many summers spent with the family at their second home in Woods Hole, Massachusetts. It was the focus of great times with the family but also where he often retreated for thinking and writing. Steve and Cynthia both loved a party and were great hosts. Steve's 70th and 80th birthday parties, both held in Woods Hole, were memorable events.

Steve was not only a brilliant scientist but also a warm friend to many in the field. His sense of humor was famous and outrageous; most of his jokes would not be printable in this fine journal. At the same time, he was a rigorous scholar, expecting from himself and others the clearest and most creative thinking. His deep and very serious commitment to science, combined with his warmth and humor, made Steve Krane truly unique. He will be sorely missed and remembered with great affection.



*Henry M. Kronenberg, MD  
Endocrine Division, Chief*

*Jean-Michel Dayer, MD  
Geneva University*

*Mary B. Goldring, PhD  
Weill Cornell Medical College*

*Steven R. Goldring, MD  
Weill Cornell Medical College*

*T. John Martin, AO  
University of Melbourne*

*R. Graham G. Russell, PhD  
University of Oxford*

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In Memoriam  
**Kenneth L. Minaker, MD**  
1948 - 2015



*Dr. Kenneth L. Minaker* passed away at his home in Newton, MA on Saturday, April 11, 2015. He was 66. He left behind his wife, Colleen, four children - Jason, Rebecca, Tara and Kyle - and six grandchildren.

Dr. Minaker received his Medical Degree from the University of Toronto and was in the first graduating class of Geriatric Fellows at the Harvard University Division on Aging. For more than 40 years, he developed and promoted novel approaches in the care of older adults, and devoted his career to advocating for them.

In 1995 Dr. Minaker was appointed Chief of the Geriatric Medicine Unit in the Department of Medicine at Massachusetts General Hospital. He was tasked to develop an aging-focused primary care practice, one of only a handful in the nation at the time. This practice - MGH Senior Health – is now internationally renowned and has served as a global model for geriatric programs.

Under his leadership, the Geriatric Medicine Unit diversified and grew exponentially. Among many of the accomplishments that Dr. Minaker presided over, were the following:

- Partnered with Beacon Hill Village to help seniors live in their homes as long as possible
- Launched an accredited Geriatric Medicine Fellowship Program in 2009 to train the next generation of Geriatricians
- NCQA certification and subsequent recertification of MGH Senior Health as a Level 3 Medical Home – first at MGH on both counts
- Started the Geriatric Inpatient Fracture and Trauma Service (GIFTS) to manage the medical needs of patients with traumatic fractures
- Developed a combined outpatient clinic with Geriatric Medicine and Urology to co-manage patients
- Established strong relationships with physician & nursing leadership at the North End Nursing Home
- Tirelessly championed the need for better transitions in care
- Helped to raise the status of Geriatric Medicine in US News and World Report

In 2013, Dr. Minaker was named the inaugural incumbent of the MGH Chair in Geriatric Medicine. This was the first Chair in Primary Care Medicine to be established at MGH. This acknowledgement is one of the highest honors that can be bestowed on a physician and none more deserving than Dr. Minaker. He was a master clinician and possessed all the virtues of a perfect physician. In his honor, the Chair will soon be renamed as the Kenneth L. Minaker Chair in Geriatric Medicine.

During his illustrious career, Dr. Minaker published 130 articles and contributed to 15 books, which informed his generation of Geriatricians and the one that followed.

He also received numerous awards and accolades including:

- Fellow of the Royal College of Physicians and Surgeons of Canada
- Nascher Manning Award from the American Geriatrics Society - given for distinguished life-long achievement in clinical geriatrics
- Greenwall Foundation Award from the American Federation for Aging Research
- Boston's Magazine: "Best Doctors".

In addition to his distinguished medical career, Dr. Minaker will be remembered most for his engaging demeanor, his sense of humor, his love of a good game of golf and for his dedication and devotion to his family.

Among his many wonderful qualities, the two that stood out the most were his never ending patience and his ability to see the good in everyone. It was once said of Dr. Minaker that he was not so much a mentor, but a talent scout. He found talent in everyone and then guided it to its fullest potential. He had the rare ability to focus only on the good in people. He never gave up on people. Whether one knew Dr. Minaker for 17 years, or for 17 minutes, one immediately felt his warmth and unshakable optimism. He was a teacher and a healer to so many, patients and colleagues alike. Aside from being a phenomenal geriatrician, he was a real human being in the best possible sense of the word.

Dr. Minaker's patients, their families and so many clinicians who worked with him all experienced his extraordinary compassion and unconditionally kind attention. Whatever the crisis or worry, he always conveyed a deep respect for the challenge, worked to find a solution and offered reassurance that he would be present in illness, in recovery and in health. He will be deeply missed.

*Monera B. Wong, MD, MPH*  
*Geriatrics Unit, Interim Chief*



# Notable Publications

## Cardiology

1. Sinner MF, Tucker NR, Lunetta KL, Ozaki K, Smith JG, Trompet S, Bis JC, Lin H, Chung MK, Nielsen JB, Lubitz SA, Krijthe BP, Magnani JW, Ye J, Gollob MH, Tsunoda T, Müller-Nurasyid M, Lichtner P, Peters A, Dolmatova E, Kubo M, Smith JD, Psaty BM, Smith NL, Jukema JW, Chasman DI, Albert CM, Ebana Y, Furukawa T, Macfarlane PW, Harris TB, Darbar D, Dörr M, Holst AG, Svendsen JH, Hofman A, Uitterlinden AG, Gudnason V, Isobe M, Malik R, Dichgans M, Rosand J, Van Wagener DR; METASTROKE Consortium; AFGen Consortium, Benjamin EJ, Milan DJ, Melander O, Heckbert SR, Ford I, Liu Y, Barnard J, Olesen MS, Stricker BH, Tanaka T, Kääb S, Ellinor PT. Integrating genetic, transcriptional, and functional analyses to identify 5 novel genes for atrial fibrillation. *Circulation*. 2014 Oct 7;130(15):1225-35. 2014 Aug 14. PMID: 25124494; PMCID: PMC4190011.
2. TG and HDL Working Group of the Exome Sequencing Project, National Heart, Lung, and Blood Institute, Crosby J, Peloso GM, Auer PL, Crosslin DR, Stitzel NO, Lange LA, Lu Y, Tang ZZ, Zhang H, Hindy G, Masca N, Stirrups K, Kanoni S, Do R, Jun G, Hu Y, Kang HM, Xue C, Goel A, Farrall M, Duga S, Merlini PA, Asselta R, Girelli D, Olivieri O, Martinelli N, Yin W, Reilly D, Speliotes E, Fox CS, Hveem K, Holmen OL, Nikpay M, Farlow DN, Assimes TL, Franceschini N, Robinson J, North KE, Martin LW, DePristo M, Gupta N, Escher SA, Jansson JH, Van Zuydam N, Palmer CN, Wareham N, Koch W, Meitinger T, Peters A, Lieb W, Erbel R, König IR, Kruppa J, Degenhardt F, Gottesman O, Bottinger EP, O'Donnell CJ, Psaty BM, Ballantyne CM, Abecasis G, Ordovas JM, Melander O, Watkins H, Orho-Melander M, Ardisino D, Loos RJ, McPherson R, Willer CJ, Erdmann J, Hall AS, Samani NJ, Deloukas P, Schunkert H, Wilson JG, Kooperberg C, Rich SS, Tracy RP, Lin DY, Altshuler D, Gabriel S, Nickerson DA, Jarvik GP, Cupples LA, Reiner AP, Boerwinkle E, Kathiresan S. Loss-of-function mutations in APOC3, triglycerides, and coronary disease. *N Engl J Med*. 2014 Jul 3; 371(1):22-31. Epub 2014 Jun 18. PMCID: PMC4180269.
3. Myocardial Infarction Genetics Consortium Investigators, Stitzel NO, Won HH, Morrison AC, Peloso GM, Do R, Lange LA, Fontanillas P, Gupta N, Duga S, Goel A, Farrall M, Saleheen D, Ferrario P, König I, Asselta R, Merlini PA, Marziliano N, Notarangelo MF, Schick U, Auer P, Assimes TL, Reilly M, Wilensky R, Rader DJ, Hovingh GK, Meitinger T, Kessler T, Kastrati A, Laugwitz KL, Siscovick D, Rotter JJ, Hazen SL, Tracy R, Cresci S, Spertus J, Jackson R, Schwartz SM, Natarajan P, Crosby J, Muzny D, Ballantyne C, Rich SS, O'Donnell CJ, Abecasis G, Sunyaev S, Nickerson DA, Buring JE, Ridker PM, Chasman DI, Austin E, Ye Z, Kullo IJ, Weeke PE, Shaffer CM, Bastarache LA, Denny JC, Roden DM, Palmer C, Deloukas P, Lin DY, Tang ZZ, Erdmann J, Schunkert H, Danesh J, Marrugat J, Elosua R, Ardisino D, McPherson R, Watkins H, Reiner AP, Wilson JG, Altshuler D, Gibbs RA, Lander ES, Boerwinkle E, Gabriel S, Kathiresan S. Inactivating mutations in NPC1L1 and protection from coronary heart disease. *N Engl J Med*. 2014 Nov 27; 371(22):2072-82. Epub 2014 Nov 12.
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2. Stanley TL, Feldpausch M, Oh J, Branch K, Lee H, Torriani M, Grinspoon SK. Effects of Tesamorelin on Visceral Fat and Liver Fat in HIV-infected Patients with Abdominal Fat Accumulation: A Randomized Clinical Trial. *JAMA*. 2014 Jul 23-30;312(4):380-9. PMID:25038357
3. Russell SJ, El-Khatib FH, Sinha M, Magyar KL, McKeon K, Goergen LG, Balliro C, Hillard MA, Nathan DM, Damiano ER. Outpatient glycemic control with a bionic pancreas in type 1 diabetes. *N Engl J Med*. 2014 Jul 24;371(4):313-25.
4. SIGMA Type 2 Diabetes Consortium, Williams AL, Jacobs SB, Moreno-Macias H, Huerta-Chagoya A, Churchhouse C, Márquez-Luna C, García-Ortiz H, Gómez-Vázquez MJ, Burt NP, Aguilar-Salinas CA, González-Villalpando C, Florez JC, Orozco L, Haiman CA, Tusié-Luna T, Altshuler D. Sequence variants in SLC16A11 are a common risk factor for type 2 diabetes in Mexico. *Nature*. 2014 Feb 6;506(7486):97-101.
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## Gastroenterology

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4. Pandharipande PV, Heberle C, Dowling EC, Kong CY, Tramontano A, Perzan KE, Brugge W, Hur C., Targeted Screening of Individuals at High Risk for Pancreatic Cancer: Results of a Simulation Model. *Radiology*. 2014

## General Internal Medicine

1. Sonnenberg L, Gelsomin E, Levy DE, Riis J, Barraclough S, Thorndike AN. A traffic light food labeling intervention increases consumer awareness of health and healthy choices at the point-of-purchase. *Prev Med*. 2013 Oct;57(4):253-7. PMID:23859926
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3. Baggett TP, Tobey ML, Rigotti NA. Tobacco Use among Homeless People — Addressing the Neglected Addiction. *N Engl J Med*. July 18, 2013; 369:201-204.

4. Cornes BK, Brody JA, Nikpoor N, Morrison AC, Dang HC, Ahn BS, Wang S, Dauriz M, Barzilay JI, Dupuis J, Florez JC, Coresh J, Gibbs RA, Kao WH, Liu CT, McKnight B, Muzny D, Pankow JS, Reid JG, White CC, Johnson AD, Wong TY, Psaty BM, Boerwinkle E, Rotter JI, Siscovick DS, Sladek R, Meigs JB. Association of levels of fasting glucose and insulin with rare variants at the chromosome 11p11.2-MADD locus: Cohorts for Heart and Aging Research in Genomic Epidemiology (CHARGE) Consortium Targeted Sequencing Study. *Circ Cardiovasc Genet*. 2014 Jun;7(3):374-82. PMID:24951664
5. Sepucha KR, Matlock DD, Wills CE, Ropka M, Joseph-Williams N, Stacey D, Ng C, Levin C, Lally J, Borkhoff CM, Thomson R. "It's Valid and Reliable" Is Not Enough: Critical Appraisal of Reporting of Measures in Trials Evaluating Patient Decision Aids. *Med Decis Making*. 2014 Apr 8;34(5):560-566. PMID:24713692

## Hematology & Oncology

1. Crystal AS, Shaw AT, Sequist LV, Friboulet L, Niederst MJ, Lockerman EL, Frias RL, Gainor JF, Amzallag A, Greninger P, Lee D, Kalsy A, Gomez-Caraballo M, Elamine L, Howe E, Hur W, Lifshits E, Robinson HE, Katayama R, Faber AC, Awad MM, Ramaswamy S, Mino-Kenudson M, Iafrate AJ, Benes CH, Engelman JA. Patient-derived models of acquired resistance can identify effective drug combinations for cancer. *Science*. 2014 Dec 19;346(6216):1480-6.
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3. Lawrence MS, Stojanov P, Mermel CH, Robinson JT, Garraway LA, Golub TR, Meyerson M, Gabriel SB, Lander ES, Getz G. Discovery and saturation analysis of cancer genes across 21 tumour types. *Nature*. 2014 Jan 23;505(7484):495-501.
4. Shaw AT, Kim DW, Mehra R, Tan DS, Felip E, Chow LQ, Camidge DR,

Vansteenkiste J, Sharma S, De Pas T, Riely GJ, Solomon BJ, Wolf J, Thomas M, Schuler M, Liu G, Santoro A, Lau YY, Goldwasser M, Boral AL, Engelman JA. Ceritinib in ALK-rearranged non-small-cell lung cancer. *N Engl J Med*. 2014 Mar 27;370(13):1189-97.

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## Infectious Diseases

1. Karlsson EK, Harris JB, Tabrizi S, Rahman A, Shlyakhter I, Patterson N, O'Dushlaine C, Schaffner SF, Gupta S, Chowdhury F, Sheikh A, Shin OS, Ellis C, Becker CE, Stuart LM, Calderwood SB, Ryan ET, Qadri F, Sabeti PC, Larocque RC. Natural selection in a bangladeshi population from the cholera-endemic ganges river delta. *Sci Transl Med*. 2013 Jul; 5 (192):192ra86
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A, Harris JB, Larocque RC, Calderwood SB, Qadri F, Felgner PL, Ryan ET. Immunoproteomic analysis of antibody in lymphocyte supernatant in patients with typhoid fever in Bangladesh. *Clin Vaccine Immunol.* 2014 Mar; 21(3):280-5

### Nephrology

1. Van Agthoven JF, Xiong JP, Alonso JL, Rui X, Adair BD, Goodman SL, Arnaout MA. Structural basis for pure antagonism of integrin  $\alpha V\beta 3$  by a high-affinity form of fibronectin. *Nat Struct Mol Biol.* 2014 Apr;21(4):383-8. doi: 10.1038/nsmb.2797. Epub 2014 Mar 23. PMID: 24658351. Free PMC Article
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3. Nigwekar SU, Solid CA, Ankers E, Malhotra R, Eggert W, Turchin A, Thadhani RI, Herzog CA. Quantifying a rare disease in administrative data: the example of calciphylaxis. *J Gen Intern Med.* 2014 Aug;29 Suppl 3:S724-31. doi: 10.1007/s11606-014-2910-1.
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### Palliative Care

1. Jackson VA, Jacobsen J, Greer JA, Pirl WF, Temel JS, Back AL. The cultivation of prognostic awareness through the provision of early palliative care in the ambulatory setting: a communication guide. *J Palliat Med.* 2013 Aug;16(8):894-900.
2. Jacobsen J, Kvale E, Rabow M, Rinaldi S, Cohen S, Weissman D, Jackson V. Helping patients with serious illness live well through the promotion of adaptive coping: a report from the improving outpatient palliative care (IPAL-OP) initiative. *J Palliat Med.* 2014 Apr;17(4):463-8.
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4. Mehta D, Chittenden E, Denninger J, Haime V, Traeger L, Jackson V, Park E. Promoting Resiliency Among Palliative Care Clinicians: A Pilot Intervention. *The Journal of Alternative and Complementary Medicine.* May 2014, 20(5): A102-A102.
5. Schaefer KG, Chittenden EH, Sullivan AM, Periyakoil VS, Morrison LJ, Carey EC, Sanchez-Reilly S, Block SD. Raising the bar for the care of seriously ill patients: results of a national survey to define essential palliative care competencies for medical students and residents. *Acad Med.* 2014 Jul;89(7):1024-31

### Pulmonary & Critical Care Medicine

1. Farhat MR, Shapiro BJ, Kieser KJ, Sultana R, Jacobson KR, Victor TC, Warren RW, Streicher EM, Calver A, Sloutsky A, Kau D, Posey JE, Plikaytis B, Oggioni MR, Gardy JL, Johnston JC, Rodrigues M, Tang PK, Kato-Maeda M, Borowski ML, Muddukrishnan B, Kreiswirth BN, Kurepina N, Galagan J, Gagneux S, Birren B, Rubin EJ, Lander ES, Sabeti P, Murray M. Genomic analysis identifies targets of convergent positive selection in drug-resistant *Mycobacterium tuberculosis*. *Nat Genet.* 2013 Oct;45(10):1183-9. PMID: 23995135
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  4. Philipp Mertins\*, Feng Yang\*, Tao Liu\*, DR Mani\*, Vladislav A. Petyukb\*, Michael A. Gillette\*, Karl R. Clauser, Jana W. Qiao, Marina A. Gritsenko, Ronald J. Moore, Douglas A. Levine, Reid Townsend, Petra Erdmann-Gilmore, Jacqueline E. Snider, Sherri R. Davies, Kelly V. Ruggles, David Fenyo, R. Thomas Kitchens, Shunqiang Li, Narciso Olvera, Fanny Dao, Henry Rodriguez, Daniel W. Chan, Daniel Liebler, Forest White, Karin D. Rodland, Gordon B. Mills, Richard D. Smith, Amanda G. Paulovich, Matthew Ellis and Steven A. Carr. Ischemia in tumors induces early and sustained phosphorylation changes in stress kinase pathways but does not affect global protein levels. (\*authors contributed equally). *Mol. Cell. Proteomics.* 2014 Jul; 13(7):1690-70. PMID: 24719451
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S, Vooder T, Valk K, Nelis M, Metspalu A, Lener M, Lubiński J, Johansson M, Vineis P, Agudo A, Clavel-Chapelon F, Bueno-de-Mesquita HB, Trichopoulos D, Khaw KT, Johansson M, Weiderpass E, Tjønneland A, Riboli E, Lathrop M, Scelo G, Albanes D, Caporaso NE, Ye Y, Gu J, Wu X, Spitz MR, Dienemann H, Rosenberger A, Su L, Matakidou A, Eisen T, Stefansson K, Risch A, Chanock SJ, Christiani DC, Hung RJ, Brennan P, Landi MT, Houlston RS, Amos CI. Rare variants of large effect in BRCA2 and CHEK2 affect risk of lung cancer. *Nat Genet.* 2014 Jul;46(7):736-41. PMID: 24880342

### **Rheumatology, Allergy & Immunology**

1. Lee MN, Ye C, Villani AC, Raj T, Li W, Eisenhaure TM, Imboywa SH, Chipendo PI, Ran FA, Slowikowski K, Ward LD, Raddassi K, McCabe C, Lee MH, Frohlich IY, Hafler DA, Kellis M, Raychaudhuri S, Zhang F, Stranger BE, Benoist CO, De Jager PL, Regev A, Hacohen N. Common genetic variants modulate pathogen-sensing responses in human dendritic cells. *Science* 2014; 343: 1246980.

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3. Ramirez-Ortiz ZG, Pendergraft WF, Prasad A, Byrne MH, Iram T, Blanchette CJ, Luster AD, Hacohen N, El Khoury J, Means TK. The scavenger receptor SCARF1 mediates the clearance of apoptotic cells and prevents autoimmunity. *Nature Immunology* 2013; 14: 917-926

4. Bauer CA, Kim EY, Marangoni F, Carrizosa E, Claudio NM, Mempel TR. Dynamic Treg interactions with intratumoral APCs promote local CTL dysfunction. *Journal of Clinical Investigation* 2014; 124: 2425-2440.

5. Mikhak Z, Strassner JP, Luster AD. Lung dendritic cells imprint T cell lung homing and promote lung immunity through the chemokine receptor CCR4. *Journal of Experimental Medicine* 2013; 210: 1855-1869.

# Residents: Current & Graduating

2014 CHIEF RESIDENTS	MEDICAL SCHOOL ATTENDED
Sarah Turbett	Albert Einstein College of Medicine
William Hucker	Washington University in St. Louis
Molly Paras	Mayo Medical School
Sachin Shah	Yale University School of Medicine
2015 CHIEF RESIDENTS	
Andrew Brunner	Brown Medical School
Chana Sacks	University of Chicago
Matthew Tobey	Boston University
Ana Weil	Tufts University
FOURTH YEAR MEDICINE-PEDIATRICS RESIDENTS	
Rebecca Cook	Vanderbilt University
Meredith Eicken	Vanderbilt University
Norman Farr	University of Texas
Matan Setton	Duke University
2014 -2015 THIRD YEAR RESIDENTS	
Ryan Ahern	University of Washington
Jehan Alladina	Baylor College of Medicine
Brandon Auerbach	Harvard Medical School
Catherine Bennet	Johns Hopkins University
Rupal Bhimani	Baylor College of Medicine
Karen Blumenthal	University of Pennsylvania
Carolyn Boscia	Harvard Medical School
Ross Boyce	University of North Carolina at Chapel Hill School
Laura Byerly	Oregon Health & Science University
Alice Cheng	University of Chicago
Ricardo Cigarroa	University of Texas Medical School, San Antonio
Katharine Clapham	Harvard Medical School
Jacqueline DePasse	University of California, San Francisco
Laura Flannery	Georgetown University
Lindsay Fourman	Weill Cornell Medical College
Traci Fraser	Baylor College of Medicine
Zachary Fricker	Boston University
Michael Genuardi	Tufts University
Robert Goldstein	Tufts University

THIRD YEAR CONTINUED	MEDICAL SCHOOL ATTENDED
Amanda Herzog	University of Wisconsin
Thomas Heyne	University of Texas Southwestern Medical Center, Dallas
John Hogan	University of Virginia
Gregory Hundemer	Vanderbilt University
Melissa Iammatteo	Albert Einstein College of Medicine
Jacob Johnson	Albert Einstein College of Medicine
Anna Juncadella	University of Miami
Omar Kattan	UCLA/Drew Medical Education Program
Daniel Katzman	Tufts University
Ang Li	Baylor College of Medicine
Tiffany Lu	University of California, San Francisco
Dan Ly	Weill Cornell Medical College
Anant Mandawat	Yale University
Suzanne McCluskey	University of Alabama
Stephen McCullough	Mount Sinai School of Medicine
Anthony Muiru	Harvard Medical School
Laura Myers	Harvard Medical School
Nilay Patel	Brown University
Grace Peloquin	New York University
Yoland Philpotts	Albert Einstein College of Medicine
Saif Rathore	Yale University
Nosheen Reza	University of Virginia
Julia Rotow	UCLA - David Geffen
Jack Rowe	University of Pennsylvania
Anna Rubin	Tufts University
Petra Simic	University of Zagreb
Jakub Sroubek	Albert Einstein College of Medicine
Ailis Tweed-Kent	Harvard Medical School
Nneka Ufere	Washington University, St. Louis
Muthiah Vaduganathan	Northwestern University
Alberta Wang	University of Texas Medical School, Houston
Alexander Yu	Texas Tech University



SECOND YEAR RESIDENTS	MEDICAL SCHOOL ATTENDED
Ian Allen	University of North Carolina at Chapel Hill School
Benjamin Bearnot	New York University
Rebecca Berger	Columbia University
Allison Betof	Duke University
Erin Blackstock	Harvard Medical School
Edmond Chan	University of Cincinnati College of Medicine
Lee Chang	University of California, San Francisco
Edward Chu	Mount Sinai School of Medicine
Jason Cooper	Texas Tech University School of Medicine
Kirsten Courtade	University of California - Davis
Christopher Danford	University of Nebraska College of Medicine
Dustin Dezube	Brown University
Michelle Dyke	University of Massachusetts Medical School, Worcester
Utibe Essien	Albert Einstein College of Medicine
Nkiruka Ezenwajiaku	Case Western Reserve University
Akl Fahed	American University of Beirut
Jocelyn Farmer	University of Michigan Medical School
Michael Forrester	Duke University
Joseph Franes	Harvard Medical School
William Freed-Pastor	Columbia University
Matthew Gartland	Vanderbilt University
Shruti Gupta	University of Virginia School of Medicine
Rachel Harris	Georgetown University
Kevin Heaton	University of Chicago
William Hillmann	Tufts University
Kenneth Igbalode	Baylor College of Medicine
Nikolaus Jilg	Technische Universität München
Tanya Keenan	University of Pennsylvania
Sarah Keller	University of Rochester School
Nathalee Kong	University of Massachusetts
Robert Korom	Weill Cornell Medical College
Aditi Mallick	Stanford University
Kabir Matharu	University of California - Davis

SECOND YEAR CONTINUED	MEDICAL SCHOOL ATTENDED
Nino Mihatov	Duke University
Vanessa Mitsialis	Harvard Medical School
Julian Mitton	Stony Brook University
Taher Modarressi	New York University
Scott Nabity	Duke University
Arun Padmanabhan	University of Pennsylvania
Shreya Patel	University of Arizona College of Medicine
James Pirruccello	Johns Hopkins University
Patricia Pringle	University of Massachusetts
Jorge Rodriguez	Tufts University
Robert Rogers	Columbia University
Jorge Sanchez	Stony Brook University
Amy Schoenfeld	Yale University
Alyssa Sclafani	Harvard Medical School
Sounok Sen	Yale University
John Serfas	Wake Forest School of Medicine
Prashant Singh	All-India Institute of Medical Sciences
Tessa Steel	Oregon Health and Science University
Jacob Stevens	Dartmouth Medical School
Kunal Tandon	Boston University
Diane Tseng	Stanford University
Neil Vasani	Yale University
Seth Wander	University of Miami
Jonathan Wing	University of Pennsylvania School of Medicine
Albert Yeh	Harvard Medical School
Tao Zou	University of Pennsylvania School of Medicine
FIRST YEAR RESIDENTS	MEDICAL SCHOOL ATTENDED
Michael Albers	Baylor College of Medicine
John Albin	University of Minnesota
Jason Bae	Yale University
Romit Bhattacharya	Icahn School of Medicine at Mount Sinai
Allison Bond	Boston University
Kelly Burke	Johns Hopkins University
Neel Butala	Yale University

FIRST YEAR CONTINUED	MEDICAL SCHOOL ATTENDED
Christopher Chen	Washington University in St. Louis
Raghu Chivukula	Johns Hopkins University
Meaghan Colling	Harvard Medical School
Jenna Cottral	Albert Einstein College of Medicine
Katherine Crabtree	University of California - Davis
Daniel Daunis	Louisiana State University
Matthew DiFrancesco	Perelman School of Medicine
Eleanor Emery	Weill Cornell Medical College
Amin Esfahani	New York University
Vijay Ganesh	Harvard Medical School
Oscar Gerdner	University of Connecticut
Nicolas Gonzalez Castro	Harvard Medical School
David Gross	Albert Einstein College of Medicine
Shauna Gunaratne	Northwestern University
Vikas Gupta	Duke University
Nancy Haff	Perelman School of Medicine
Jessica Hennessey	Duke University
Katie Israel	University of Texas Medical Branch
Charles Jain	University of Illinois
Aisha James	Icahn School of Medicine at Mount Sinai
Jana Jarolimova	Harvard Medical School
Vimal Jhaveri	University of Colorado Denver
Daniel Katz	Northwestern University
Brieze Keeley	Icahn School of Medicine at Mount Sinai
Erik Kelly	Thomas Jefferson University
Dhruv Khullar	Yale University
Shaan Khurshid	Perelman School of Medicine
Jonathan Kochav	Duke University
Megan Koster	Harvard Medical School
Sheela Krishnan	Brown University
Jacob Lazarus	Perelman School of Medicine
Darrick Li	Columbia University
Kaitlyn Lillemoe	New York University

FIRST YEAR CONTINUED	MEDICAL SCHOOL ATTENDED
Matthew Lopes	New York University
Jenna McNeill	Duke University
Stephanie Meller	Yale University
Sarah Messmer	Harvard Medical School
Nkemdilim Mgbojikwe	Howard University
Scott Millman	New York University
Chika Nwachukwu	Mayo Medical School
Oyindamola Ogunlaja	King's College of London
Lina Ortega	Case Western Reserve University
Aniruddh Patel	Yale University
Sara Perkins	Icahn School of Medicine at Mount Sinai
Maria Prom	Vanderbilt University
Judith Puckett	USF Health Morsani College of Medicine
Juan Ramirez	University of Massachusetts Medical School
Mike Rehorn	Northwestern University
Daniel Restrepo	USF Health Morsani College of Medicine
Elizabeth Rossin	Harvard Medical School
Sophia Ryan	Albert Einstein College of Medicine
Aartik Sarma	Harvard Medical School
Jacqueline Seiglie	Harvard Medical School
Madeleine Shapiro	University of Chicago
Carmela Socolovsky	University of Chicago
Zirui Song	Harvard Medical School
Molly Thomas	University of California - San Francisco
Ren VandeVrede	University of Illinois College of Medicine
Marat Volman	SUNY - Upstate Medical University
Emily Walsh	New York University
Patrick Ward	Perelman School of Medicine
Jonathan Weiner	Icahn School of Medicine at Mount Sinai
Catherine Woodward	Perelman School of Medicine
Erin Yao-Cohen	Dartmouth Medical School

# Incoming Interns

2015-2016 INCOMING INTERNS	MEDICAL SCHOOL ATTENDED
Mazin Abdelghany	Dartmouth
Max Adelman	Emory University
Henrietta Afari	Harvard Medical School
Adaugo Amobi	Harvard Medical School
Peter Ankomah	Emory University
Brian Boyle	Harvard Medical School
Leeann Brigham	Harvard Medical School
Sophie Cai	Harvard Medical School
Jacqueline Chu	Stanford University
Caitlin Cohen	Brown University
Alexandra Coromilas	Columbia University
Julia Cromwell	Johns Hopkins University
Jose Diaz	Albert Einstein College
Joshua Drago	Harvard Medical School
Victor Fedorov	Weill Cornell
Emily Ferenczi	University of Oxford
Julie Fiore	Medical College of Wisconsin
Shaan-Chirag Gandhi	Harvard Medical School
Shawnbir Gogia	University of California, San Francisco
Anna Goodheart	University of Pittsburgh
Akash Gupta	Yale University
Alexander Harding	Johns Hopkins University
Benjamin Herzberg	Harvard Medical School
Kelsey Hills-Evans	Stanford University
William Hwang	Harvard Medical School
Andrew Hwang	Tufts University
Patrick Johnson	Harvard Medical School
Caitrin Kelly	Emory University
Katherine Kentoffio	Harvard Medical School
Geon Kim	Harvard Medical School
Kelsey Lau	Baylor College
Hung Manh Le	University of Massachusetts
Jacob Lemieux	Harvard Medical School
Molong Li	Johns Hopkins University
Leo Luo	Harvard Medical School

INTERNS CONTINUED	MEDICAL SCHOOL ATTENDED
Elizabeth Madva	Weill Cornell
Timothy Maher	Northwestern University
Lucas Marinacci	Columbia University
Gregory McDermott	Weill Cornell
Christian Mewaldt	Northwestern University
Jeff Min	Baylor College
Yonina Murciano-Goroff	Harvard Medical School
Meghan Musselman	Temple University
Ana Pacheco-Navarro	Weill Cornell
Luke Pike	Yale School of Medicine
Andrew Piper	University of Massachusetts
Christine Prifti	Drexel University
Morgan Prust	Harvard Medical School
Jing Ren	University of Pennsylvania
Julia Roberts	New York University
Brian Rosborough	University of Pittsburgh
Jonathan Salik	Columbia University
Nazir Savji	New York University
Fabian Scheid	Charité-Universitätsmedizin Berlin
Katherine Schiavoni	Harvard Medical School
Nathan Scott	Harvard Medical School
Zoe Shtasel-Gottlieb	Harvard Medical School
Sean Spencer	University of Pennsylvania
Kimberly Sue	Harvard Medical School
Joome Suh	Yale School of Medicine
Lova Sun	University of Pennsylvania
Mina Tanaka	University of Illinois
James Torchia	Stanford University
Vivek Upadhyay	University of Illinois
Mahesh Vidula	Northwestern University
Risa Wong	Yale School of Medicine
Samantha Wu	Harvard Medical School
Alyssa Yang	University of Colorado
Andrew Young	Yale School of Medicine
Lauren Zeitels	Johns Hopkins University
Emily Zern	Vanderbilt University
David Ziehr	Harvard Medical School

# Graduating Fellows

<b>CARDIOLOGY</b>	<b>NEXT POSITION</b>	<b>INSTITUTION</b>
<b>Cardiovascular Disease</b>		
Aarti Asnani	Cardiologist	Massachusetts General Hospital
Jeffrey Lin	Multimodality Imaging Fellow	New York-Presbyterian/Weill Cornell Medical Center
Pradeep Natarajan	Cardiologist	Massachusetts General Hospital
Daniel Ong	Interventional Cardiology Fellow	Scripps Clinic
Marcello Panagia	Cardiologist	Massachusetts General Hospital
Ramon Partida	Interventional Cardiology Fellow	Massachusetts General Hospital
Sara Tabtabai	Heart Failure/Transplant Fellow	Massachusetts General Hospital
<b>Echocardiography</b>		
Mohammed Ali	Cardiologist	Ireland - Pending
Asaad Khan	Interventional Cardiology Fellow	Mt. Sinai Medical Center
Dmitriy Kireyev	TBA	TBA
Meagan Wasfy	Cardiologist	Massachusetts General Hospital
<b>Cardiac Arrhythmia (EP)</b>		
John Keaney	Cardiologist	Mater Hospital
Atila Roka	Cardiologist	Anderson Regional Medical Center
Jodi Zilinski	Cardiologist	Aurora Health Care
<b>Interventional Cardiology</b>		
David Ain	Vascular Medicine/Intervention Fellow	Massachusetts General Hospital
Robert Gallagher	Structural Heart Disease Fellow	Massachusetts General Hospital
Andreas Mauer	Structural Heart Disease Fellow	Massachusetts General Hospital
Peter Monteleone	Vascular Medicine/Intervention Fellow	Massachusetts General Hospital
<b>Vascular Diagnostic &amp; Intervention</b>		
Farhad Abtahian	Director of Peripheral Intervention	Rochester General Hospital
Bharat Samy	Cardiologist	Alexian Brothers Health System - Cardiovascular Associates
Stephen Waldo	Assistant Professor	University of Colorado School of Medicine
<b>Vascular Medicine</b>		
Jessica Mintz	Undetermined	Undetermined
<b>Structural Heart Disease</b>		
James Harkness	Cardiologist	Intermountain Heart Institute
Andrew Rassi	Structural/Interventional Cardiologist	Kaiser Permanente
<b>Nuclear Cardiology</b>		
Farzauq Burki	Hospitalist	Houston Medical Center
<b>Women's Heart Health</b>		
Sahar Naderi	Assistant Professor of Medicine	Stanford University Medical Center
<b>Heart Failure &amp; Transplantation</b>		
Johannes Steiner	Assistant Professor	University of Vermont
<b>ENDOCRINOLOGY</b>		
<b>Neuroendocrinology</b>		
Laura Dichtel	Research Fellow	Massachusetts General Hospital
Katherine Neubecker Bachmann	Instructor in Medicine	Vanderbilt University Medical Center



<b>ENDOCRINE CONT.</b> Reproductive Endocrinology	<b>NEXT POSITION</b>	<b>INSTITUTION</b>
Cindy Hong Ta Pau	Instructor in Medicine	Massachusetts General Hospital
<b>GASTROENTEROLOGY</b>		
Jay Luther	Instructor	Massachusetts General Hospital
Daniel Motola	Transplant Hepatology Fellow	Mt. Sinai
Joanna Peloquin	Assistant Professor	Johns Hopkins
Amandeep Singh	Attending Physician	Sturdy Memorial Hospital
Kyle Staller	Instructor	Massachusetts General Hospital
<b>Transplant Hepatology</b>		
Lindsay King	Assistant Professor	Duke University
<b>Obesity Medicine &amp; Nutrition</b>		
Fatima Cody Stanford	Obesity Medicine Physician	Massachusetts General Hospital Weight Center
<b>GENERAL INTERNAL MEDICINE</b>		
<b>Geriatric Medicine</b>		
Sara Emami	Attending Physician	Spaulding Nursing and Therapy Center
Daniela Donoso Pena	Primary Care Physician - Internal Medicine/Geriatrics	Marana Health Care Center
<b>HEMATOLOGY &amp; ONCOLOGY</b>		
Jessica Bauman	Instructor	University of Pennsylvania
Pavan Bendapudi	Instructor in Oncology	Massachusetts General Hospital
Curtis Chong	Instructor in Oncology	Dana Farber Cancer Institute
Areej El-Jawahari	Instructor in Oncology	Massachusetts General Hospital
Alex Herrera	Instructor in Oncology	City of Hope National Medical Center
Franklin Huang		The Broad Institute
Ariela Marshall	Instructor in Oncology	MD Anderson Cancer Center
Zofia Piotrowska	Instructor in Oncology	Massachusetts General Hospital
Daniel Stover	Instructor in Oncology	Dana Farber Cancer Institute
Tilak Sundaresan	Instructor in Oncology	TBA
<b>INFECTIOUS DISEASES</b>		
Kelly Bacht	Junior Faculty	Harvard Medical School
Taison Bell	Critical Care Fellowship	National Institutes of Health
Daniel Bourque	Junior Faculty	Massachusetts General Hospital
Justin Chan	Junior Faculty	Massachusetts General Hospital
Lenette Lu	Junior Faculty	Ragon Institute
Anne Neilan	Junior Faculty	Massachusetts General Hospital
Jon Robbins	Junior Faculty	Boston Children's Hospital
Dan Solomon	Infectious Disease Division, General Medicine Division	Mt. Auburn Hospital
Sarah Turbett	Clinical Microbiology Fellow	Massachusetts General Hospital
Gustavo Velasquez	Junior Faculty	Harvard School of Public Health
Ana Weil	Junior Faculty	Massachusetts General Hospital
Brian Zanoni	Junior Faculty	Massachusetts General Hospital

NEPHROLOGY	NEXT POSITION	INSTITUTION
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Joshua Hundert	Attending Physician	VA Boston Healthcare System, Emergency Department
David Leaf	Nephrologist	Brigham and Women's Hospital
Merranda Logan	Assistant Chief Quality Officer	Edward P. Lawrence Center for Quality and Safety, Massachusetts General Hospital
Opeyemi Olabisi	Nephrologist	Massachusetts General Hospital
Monica Chang Panesso	Nephrologist	Washington University, St. Louis
Kinjal Patel	Director, Nephrology & Kidney Disease Prevention	CareMore Health System
Kassem Safa	Transplant Nephrologist	Massachusetts General Hospital
Nicholas Zwang	Transplant Nephrology Fellow	Northwestern University
PALLIATIVE CARE		
Jori Bogetz	Assistant Professor	University of California, San Francisco
David Buxton	Psychiatrist	Insight Physicians
Danielle Friedman	Assistant Attending	Memorial Sloan Kettering Cancer Center, Palliative Medicine Department
Yuika Goto	Palliative Care Physician	Swedish Medical Center/Swedish Cancer Institute
Margaret Leung	Associate Physician	Kaiser Permanente
Jonathan Mullin	Attending Physician/Instructor	Dana-Farber Cancer Institute/Boston Children's Hospital
April Zehm	Assistant in Medicine	Massachusetts General Hospital
Haipeng "Mark" Zhang	Consultant	Dana-Farber Cancer Institute
PULMONARY & CRITICAL CARE MEDICINE		
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George Cheng	Interventional Pulmonary Fellow	Beth Israel Deaconess Medical Center
Jessica Cooksey	Faculty	University of Chicago
Paul Dieffenbach	Fellow	Brigham and Women's Hospital
Hilary DuBrock	Fellow	Beth Israel Deaconess Medical Center
Adel El Boueiz	Fellow	Brigham and Women's Hospital
Adam Gaffney	Fellow	Massachusetts General Hospital
Douglas Hsu	Fellow	Beth Israel Deaconess Medical Center
Daniela Lamas	Fellow	Brigham and Women's Hospital
Crystal North	Fellow	Massachusetts General Hospital
Rachel Putman	Fellow	Brigham and Women's Hospital
Krishna Reddy	Fellow	Massachusetts General Hospital
Jennifer Stevens	Faculty Member	Beth Israel Deaconess Medical Center
Critical Care Medicine		
David Dudzinski	Cardiologist	Massachusetts General Hospital
RHEUMATOLOGY, ALLERGY & IMMUNOLOGY		
Allergy & Immunology		
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James Kuhlen	Health System Physician	Acadia Allergy & Immunology
Rheumatology		
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### **Photography**

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