

CREATING A NEW VISION FOR **MEDICINE**



Annual Report 2018

Keck School
of Medicine
of **USC**

DEPARTMENT
OF MEDICINE

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ON THE COVER

A selection of our many outstanding USC Department of Medicine Faculty
Left to right: Anthony El-Khoueiry, MD; Lily Dara, MD; Antreas Hindoyan, MD; Kathleen Page, MD; Hui Yi Shan, MD;
Norah Terrault, MD; Lucy Golden-Mason, MD, PhD; Eric Hsieh, MD (Photo/Eric Weintraub)

Contents

| | | | |
|----|----------------------------|----|---|
| 2 | 2018 By the Numbers | 20 | Gastrointestinal and Liver Diseases |
| 3 | Comments from the Chair | 23 | Geriatric, Hospital, Palliative and General Internal Medicine |
| 4 | DOM Clinical Activities | 26 | Hematology |
| 6 | DOM Educational Activities | 28 | Infectious Diseases |
| 8 | Residents and Fellows | 31 | Nephrology and Hypertension |
| 10 | DOM Research Activities | 34 | Oncology |
| 13 | Publication Summary | 38 | Pulmonary, Critical Care and Sleep Medicine |
| 14 | Cardiovascular Medicine | 41 | Rheumatology |
| 17 | Endocrinology and Diabetes | | |

2018 By the Numbers

10
DIVISIONS

272
FACULTY
MEMBERS

382
PEER-REVIEWED
PUBLICATIONS

275
RESIDENTS AND
FELLOWS

64
FEDERAL
RESEARCH
GRANTS

\$32M
FEDERAL
GRANT
SUPPORT

Comments from the Chair

In my first year as department chair, I have been inspired every day by the commitment of our faculty and staff to the shared purpose of advancing compassionate quality medical care for the people we serve. The dominant theme for this year's annual report is "Creating a New Vision for Medicine." This is a particularly exciting time to be in the Department of Medicine as we endeavor to train the next generation of medical leaders through world-class patient care, transformative research, and comprehensive career development and mentorship in innovative ways.

This report provides an overview of our department's growth, accomplishments, and innovations. Academic medicine is a talent game; one needs to understand how to recruit it, manage it, and retain it. This requires fostering an environment and culture conducive to success, strategic vision, as well as investment with resources and support. We are committed to patient quality and safety, diversity in all forms, and proactive education of the medical workforce, with an eye on addressing the generational challenges we face in health care. In the past year, we have developed many new initiatives, including expansion of translational research, global health, creation of new research training fellowships, "niche" clinical services, and recruitment of interdisciplinary research "rainmakers" to catalyze collaboration across the campuses.

We will continue to leverage our academic and clinically oriented department to address the unmet needs of the community, enhance the quality and efficiency of care across the region, and facilitate groundbreaking discoveries in basic, clinical and translational research.

I'm pleased to share our 2018 Annual Report with you and welcome your feedback. If you have thoughts on our annual report, please share with us at: <https://keck.usc.edu/medicine/annual-report>.



Hugo R. Rosen, MD

Kenneth T. Norris, Jr. Chairman of Medicine
Professor of Medicine, Immunology and Molecular Microbiology
University of Southern California



The Department of Medicine's mission is to train the next generation of leaders through world-class patient care, comprehensive career development and transformative research. We strive for diversity, equity and inclusion.

DOM Clinical Activities

DOM is the largest department at one of the most expansive academic medical centers in the country. The complex is comprised of LAC+USC Medical Center (LAC+USC) and the Keck Medical Center of USC (KMC). The latter includes USC Norris Cancer Hospital (Norris) and Keck Hospital of USC (KH), as well as several ambulatory venues:

- Healthcare Centers 1 and 2 (HC1 & HC2), located on the USC Health Sciences Campus
- Engemann Student Health Center, located on University Park Campus – USC
- DaVita-USC Kidney Dialysis Center
- The Arthritis Center
- USC Westside Center for Diabetes
- USC Verdugo Hills Hospital
- Keck Medicine of USC-Arcadia
- Keck Medicine of USC-Beverly Hills
- Keck Medicine of USC-Downtown Los Angeles
- Keck Medicine of USC-La Cañada Flintridge
- Keck Medicine of USC-Pasadena
- USC Norris Oncology/Hematology in Newport Beach, Huntington Beach and Irvine

DOM is dedicated to providing quality, state-of-the-art patient care to both insured and uninsured patient populations.

LAC+USC Medical Center

DOM delivers a remarkable range and volume of high-quality inpatient and outpatient care at LAC+USC Medical Center. Each year its outstanding teaching programs provide direct education to 189 residents, over 80 subspecialty fellows and approximately 200 medical students at LAC+USC.

In the calendar year 2018, our inpatient services together cared for 17,968 inpatient encounters. This constitutes over half of the 31,688 admissions to LAC+USC Medical Center.

In partnership with Dr. Brad Spellberg, Chief Medical Officer, and Dr. Chase Coffey, Associate Chief Medical Officer, we have achieved tremendous reductions in our mortality rates and our indexed mortality to well below our UHC cohort. In addition, we have partnered with Dr. Josh Banerjee, Associate Medical Director for Transitions of Care, in piloting a pharmacy-led transition of care program on several of our medicine ward teams.

In the ambulatory care space, we continue to partner with Dr. Andy Lee, Associate Medical Director of Specialty Care and Clinical Innovations, in improving cycle times, access and quality of care in our specialty clinics.



LAC+USC Medical Center



Keck Hospital

Private Practice

DOM's private practice has continued to experience steady growth since its inception in the 1980s. In the past 10 years, overall activity has more than doubled and ambulatory visits have more than tripled to over 150,000 annually. The following are some of our most recent achievements:

- We continue to expand our outpatient practice in an ongoing partnership with the Keck Medical Center at all of our clinical locations
- Continued growth of Gastroenterology services, including Therapeutic Endoscopy and Inflammatory Bowel Disease
- Expansion of oncology services in Orange County and Arcadia

In recent years, the ambulatory practice has grown in several areas. The Divisions with the highest rate of growth in the past year include Gastrointestinal and Liver Diseases at 9%, Geriatric, Hospital, Palliative and General Internal Medicine at 11% and Infectious Diseases at 10%.

On the inpatient side, DOM accounts for 21% of all admissions at Keck Medical Center of USC. However, because of their consulting relationships with surgical colleagues, Department faculty provide care to a much larger number of patients.

The KH Hospital Medicine Program has had a significant impact on quality patient care, and has implemented a 24/7 Rapid Response Team and 24/7 coverage at the Evaluation and Treatment Center.

Innovation

The Value Based Services Organization (VBSO) began in 2018. This is a new program focused on USC faculty, staff, and their families. This program has targeted the most complex medical patients within the USC Trojan family. The team is comprised of nurses, social workers, pharmacists, therapists, and others who work with the primary physician of each patient to optimize their care. The goals of the program focus on improved health outcomes, reduced ER utilization, prevention of hospital admission, and higher quality care. The program has had interactions with several hundred patients to date. DOM is looking to expand in the coming years.

DOM Educational Activities

The Department of Medicine continues its intensive investment in advancing educational programs at both the Graduate and Undergraduate levels. Department faculty contribute extensively to medical student education in both the basic science and clinical clerkship years and directly supervise the training of nearly 270 house officers and fellows each year.

Graduate Medical Education

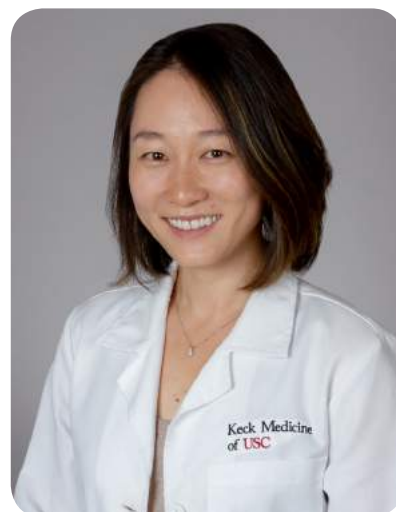
The academic year marked a year of growth within the Department of Medicine's training programs. The Internal Medicine Residency Program and the Department's 19 Subspecialty Fellowship programs have complete ACGME accreditation without citation. The residency continues to recruit high quality interns who serve as the foundation of the program and graduates residents who are well prepared for future career advancements.

American Board of Internal Medicine (ABIM) Certification

The program not only enjoys the success of continued ACGME accreditation, but has a 97% 3 year ABIM certification rate. Although much of this success can be attributed to the contributions of the faculty, credit also goes to the hard work from the graduating classes.

Undergraduate Medical Education

Drs. Canceko and Johnson continue to head student education and have been recognized for their efforts. Students continue to have rotations at multiple setting including LAC+USC Medical Center, Keck Medical Center and Huntington Hospital. Our core clerkship rotation has been voted as highest ranked 3rd year rotation by Keck School of Medicine students during this last academic year.



2018-2019 Chief Residents

(left to right): Drs. Analiese DiConti-Gibbs, Nikhil Singh and Stephanie Wu

The Internal Medicine Residents are led by DOM's Chief Medical Residents. Chief Medical Residents completed the program and stayed for a fourth year to gain experience in medical education. Dr. DiConti-Gibbs will next pursue a fellowship in Geriatrics at the University of California, San Francisco. Dr. Singh will next pursue a fellowship in Cardiology at the University of Chicago. Dr. Wu will next pursue a fellowship in Cardiology at Cedars-Sinai Medical Center.

Global Health Rotations for Residents

The Internal Medicine Residency Program has partnered with the Master of Science in Global Medicine Program, to develop a global health rotation for our residents. The program has identified multiple sites as options for the rotation including Panama, Japan and Malaysia. This rotation is designed to expose residents to different health care systems, diseases and treatments not commonly seen in the US and the clinical skills to diagnose and treat patients in an international setting. Through this rotation, residents will complement their training with valuable insight into in research, cultural competency, policy, public and international health.



The Internal Medicine Residency Training Program, Class of 2018

Innovation

In 2018, our Division of Cardiovascular Medicine introduced Ziopatch, new technology to monitor arrhythmias. Our Division of Pulmonary, Critical Care and Sleep Medicine incorporated Cryoprobe training to their curriculum. Renovations to curriculum propound our initiatives to evolve in education and training of our residents and fellows as well as our faculty.

Our Graduate Medical Education programs have embarked upon an aggressive faculty development strategy which includes working with learning theory experts and curriculum design specialists to further enhance both our didactic and workshop offerings and our everyday clinical teaching.

The Department of Medicine's drive to champion progress and breakthroughs, backed by our brilliant faculty, trainees and collaborative resources, will shape medicine and health sciences for future generations.

Graduate Medical Education

Vice Chair, Educational Affairs and Residency Program Director

Eric Hsieh, MD

Administrator of Educational Affairs

Nancy G. Shepherd, MS Ed

Associate Program Directors

Nida Hamiduzzaman, MD

Sonia Lin, MD

Andrea Lu, MD

Seth Politano, DO

Joshua Sapkin, MD

Patrick Sarte, MD

Chief Medical Residents

2017-2018

Stanley Fang, MD

David Herman, MD

Diane Reed, MD

2018-2019

Analiese DiConti-Gibbs, MD

Nikhil Singh, MD

Stephanie Wu, MD

Undergraduate Medical Education

Program Director

Jeffrey Canceko, MD

Associate Director

Matthew Johnson, MD

Medical Student Educator

Sonya Earley, PA-C, MA, CDE

Residents and Fellows

FELLOWS

Cardiology

Vaughn Eyvazian, *UCLA Ronald Reagan*
Peter Xu, *USC*
Jonathan Nattiv, *USC*
Kristen Burton, *USC*
Lena Awar, *UCLA Harbor*
Merije Chukumerije, *USC*
Sumit Patel, *Stanford University*
Leah Raj, *Emory University*
Ashwat Dhillon, *Cleveland Clinic's Fairview Hospital*
Hartaj Girn, *USC*
Chin Lee, *Cedars-Sinai*
Annahita Sarcon, *Scripps Clinic & Scripps Green Hospital*
Abhishek Shah, *UCSD*
Haron Yousaf, *Interfaith Medical Center*
Meena Zareh, *USC*

Clinical Cardiac

Electrophysiology

Kenneth Kita, *USC*
Young Kim, *University of British Columbia*

Interventional Cardiology

Henry Chu, *USC*
Katherine Yu, *UCI*

Endocrinology

Jessica Chan, *Lenox Hill Hospital*
Michael Cruz, *Santa Clara Valley Medical Center*
Dina Kamel, *USC*

GI/Liver

David Herman, *USC*
Jessica Hong, *USC*
Christopher Ko, *USC*
Okeefe Simmons, *University of Texas Southwestern (UTSW)*
Janet Kwok, *USC*
Paul Leonor, *USC*
Michael Quezada, *USC*
Varun Takyar, *University of Arizona*
Ahilan Arulanandan, *UC San Diego*
Adam Greenberg, *UCLA*
Brian (IM) Lee, *USC*
Kraig Young, *Boston University*
Jiaming Zhu, *USC*

Hematology

Sandra Algaze, *University of Miami - Jackson Memorial*
Priya Jayachandran, *UCSF Fresno*
Mihee Park, *USC*
Mindy Hsiao, *USC*
Upama Giri, *University of Tennessee*
Caitlin O'Neill, *USC*
Jasleen Khanuja, *Cedars-Sinai*

Nathan Punwani, *George Washington University*
Erwin Grussie, *Mt. Sinai-St. Luke's Roosevelt Hospital*

Oncology

John Hu, *University of Rochester*
Nara Lee, *Rutgers*
Grace Li, *St. Luke's Hospital-Chesterfield, MO*
Yi-Tsung Lu, *John H. Stroger, Jr. Hospital of Cook County*
Ravi Patel, *USC*
Varsha Tulpule, *USC*
Arnab Basu, *Johns Hopkins University/Sinai Hospital*
Victor Chiu, *UCLA-Olive View*

Infectious Diseases

Navid Pour Ghasemi, *USC*
Fernando Dominguez, *MetroWest Medical Center*
Patrick Wu, *Loma Linda*
Erin Dizon, *Santa Barbara Cottage Hospital*
Eriko Masuda, *USC*
Harold Glenn San Agustin, *Loma Linda*

Nephrology

Win Win Hlaing, *Kern Medical Center*
Jim Nguyen, *The Wright Center for GME*
Shahid Syed, *USC*
James Weltman, *Valley Hospital-Las Vegas*
Viktoriya Yanchuk, *Skagit Regional Health*
May Lwin, *Wyckoff Heights*
Mohammed Khaleel, *Swedish Covenant Hospital*

Pulmonary Critical Care

Mishala Bateman, *USC*
Rodrigo Garcia-Tome, *Mt. Sinai-West*
Gregory Grandio, *University of Connecticut*
Yash Kothari, *University of Louisville*
Christine McElyea, *UCSF Fresno*
Neha Mehta, *Lenox Hill Hospital/Hofstra Northwell*
Clay Wu, *St. Mary's Medical Center-San Francisco*
Peter Chung, *University of Texas Health Science Center-Houston*
Jennifer Genova, *SUNY Downstate Medical Center*
Waasil Kareem, *Pennsylvania Hospital - University of Pennsylvania Health System*
Vineeth Kumar, *Medstar Washington Hospital Center*

Jennifer Loeb, *University of Illinois-Chicago*
Stefania Pirrotta, *Mt. Sinai-St. Luke's Roosevelt Hospital*
Lucas Silqueira Hickson Cruz, *University of Connecticut*
Samridhi Amba, *St. Francis Medical Center-Trenton, NJ*
Abigail Beggs, *Lenox Hill Hospital*
Rami El-Yousef, *State University of New York Downstate*
Kelly Fan, *Scripps Clinic & Scripps Green Hospital*
Aaron Glucksman, *University of Connecticut*
John Kern, *Rutgers*
Reza Ronaghi, *UCSF Fresno*

Rheumatology

Chuang Alice, *Santa Clara Valley Medical Center*
Jun Jenny, *UCLA Olive View*
Wang Sky, *USC*
Simranjit Singh, *USC*
Kiana Taba, *West Virginia University*
Leanna Wise, *USC*

Sleep Medicine

Chana Chin, *Children's Hospital Los Angeles*
Philip Huyett, *University of Pittsburgh Medical Center*

RESIDENTS

First Year

Argin Baghranian, *Drexel University*
Nora Bedrossian, *University of Arizona*
Rupan Bose, *USC*
Carlos Buitrago, *State University of New York*
Erica Chan, *Virginia Commonwealth University*
Patrick Chang, *Tulane University*
Denaly Chen, *Albany Medical College*
April Choi, *Case Western Reserve University*
Lydia Chow, *Tulane University*
Tyler Degener, *Drexel University*
Jaspreet Dhillon, *Ohio State University*
Cameron Furey, *Loyola University Chicago*
Christina Gainey, *USC*
Jared Geibig, *Tufts University*
Percy Genyk, *Johns Hopkins University*
Serena Ghanshani, *USC*
Alexander Gong, *USC*
Cesar Gonzalez, *USC*
Hugh Gordon, *USC*
Anahid Hamparsumian, *Case Western Reserve University*
Semi Han, *University of California, Davis,*

Amanda Herrmann, *Rutgers University*
Liam Hilson, *University of Hawaii*
Brent Hiramoto, *Northwestern University*
Brian Horwich, *USC*
Owen Huang, *Albert Einstein College of Medicine*
Jeanney Kang, *USC*
Sheila Kapyur, *Virginia Commonwealth University*
Kevork Khadarian, *Albany Medical College*
Andrew Lee, *Tulane University*
Edward Lin, *USC*
Yao Liu, *Texas Tech University - Amarillo*
Deanna Lo, *Loma Linda University*
Katherine Loomis, *Michigan State University*
Julian McLain, *Chicago Medical School at Rosalind Franklin University of Medicine & Science*
Rose Monahan, *University of Virginia*
Darren Morris, *Pennsylvania State University*
Ashwini Mulgaonkar, *University of Arizona*
Swathi Nallapa, *USC*
Thaer Othman, *USC*
Ashil Panchal, *Thomas Jefferson University*
Joo Hye Park, *Virginia Commonwealth University*
Samantha Quon, *USC*
Mateen Saffarian, *USC*
Anjali Sharma, *USC*
Robert Tamai, *Johns Hopkins University*
Neal Tamba, *USC*
Jennifer Tang, *USC*
Alexander Tonthat, *Temple University*
Minh-Thu Tran, *Dartmouth*
Christopher Vo, *University of California, Irvine*
Alexandra Wong, *New York Medical College*
Gloria Wu, *USC*
Katharine Yang, *Baylor College of Medicine*
Paul Yang, *USC*

Second Year

Omeed Alipour, *USC*
Shamili Allam, *USC*
Divya Ayyala-Somayajula, *USC*
Patrick Baghdasaryan, *St. George's University*
Satish Balasubramanian, *SUNY Downstate*
Hussain Basrawala, *University of South Florida*
Alexander Becka, *University of Wisconsin*
Henry Bergquist, *University of Pennsylvania*
Neil Bhambi, *Rush Medical College*
Ernesto Casillas, *USC*
Patrick Chan, *USC*
Jeremy Chang, *UC San Diego*
Edward Chau, *USC*
Jonathan Cheng, *USC*
Kathan Chintamaneni, *Medical College of Wisconsin*
Joon Young Choi, *Wayne State*
Nicole Evans, *Drexel University*

Alakh Gulati, *University of Miami*
Shida Haghighat, *University of Miami*
Karen Haiber, *University of Arizona*
Eri Joyo, *University of Missouri-Kansas City*
Jackson Kim, *Tufts University*
Naina Lalani, *University of Texas*
Alice Lee, *Rush Medical College*
Christopher Lee, *UC San Diego*
Joseph Lee, *USC*
Nathan Lim, *Boston University*
Victor Lin, *USC*
Alexander Martin, *University of Cincinnati*
Anastasia Martynova, *I.M. Sechenov First Moscow Medical University*
Arazin Minasian, *USC*
Stefan Nguyen, *Ohio State University*
Wei Huang Ning, *USC*
Elizabeth Pan, *USC*
Ronak Patel, *University of Miami*
Janice Rivelle, *USC*
Alex Rosenberg, *Albert Einstein College of Medicine*
James Samuelson, *Sidney Kimmel Medical College*
Richard Seto, *Rush Medical College*
Shawn Shah, *USC*
Helen Shen, *Ohio State University*
Stacy Shen, *USC*
Philip Sheth, *USC*
Audrey Shi, *Temple University*
Peter Sohn, *Drexel University*
Kayvon Sotoudeh, *USC*
Liya Stolyar, *Rutgers University*
Heywan Tesfaye, *USC*
Justin Wayne Tiulim, *USC*
Jeffrey Tran, *USC*
Karen Tsai, *Stony Brook University*
Poorva Vaidya, *Georgetown University*
Evan Vidar, *USC*
Sarah Wheeler, *USC*
Jared Wong, *Loma Linda University*
Jeffrey Yeh, *USC*

Third Year

Andrea Cedeño, *USC*
Allen Chao, *Georgetown University*
Xin Chen, *University of Toledo*
Jaehoon Cho, *Stony Brook University*
Bradford Chong, *Rush Medical College*
Sandra Chung, *UC San Diego*
Patrick Deligero, *Florida International University*
Derenik Estepanian, *Chicago Medical School*
Christopher Foss, *University of Arizona*
Wesley Ghasem, *University of Cincinnati*
Nikhil Gupta, *Thomas Jefferson University*
David Hermel, *University of Vermont*
Melody Hermel, *Tufts University*
Ah-Reum Jeong, *USC*
Ravi Kankotia, *USC*
Daniel Kaplan, *USC*
Annika Khine, *Rosalind Franklin University*
Ki-Yoon Kim, *Rutgers University*
Wilson Kwan, *USC*
Alyssa Lampe, *USC*
Gieric Laput, *Michigan State University*
Alexandria Lee, *Saint Louis University*

Kenneth Leung, *USC*
Shiqian "Chinoy" Li, *Hofstra Northwell*
Bert Liu, *Boston University*
Linus Liu, *USC*
Lauren Mathias, *University of Oklahoma*
Prachi Nene, *Boston University*
Reeni Pandya, *Florida International University*
Ravi Patel, *University of Miami*
Reshma Patel, *Drexel University*
Sati Patel, *Texas Tech University*
Poysophon Poysophon, *USC*
Prachi Rana, *Chicago Medical School*
Jordan Rees, *USC*
Dipayon Roy, *USC*
George Samaang, *Tulane University*
William Singh, *University of Illinois-Chicago*
Kyndal Sonnier, *University of South Alabama*
Jenica Thangathurai, *USC*
Samuel Tomich, *USC*
Golnaz Vahdani, *University of Debrecen*
Yun Wang, *Michigan State University*
Lan Wang, *Drexel University*
Alexander Yang, *USC*
Helen Yang, *USC*
Stephen Yau, *University of Tennessee*
Chung Yao Yu, *USC*
Shi (Sherrrie) Yu, *UT Southwestern*
Brian Yu, *USC*
Pejman Zargar, *Chicago Medical School*
Katie Zhang, *USC*
Han Zhang, *University of Florida*
James Zhang, *University of California, San Diego*
Youning Zhang, *USC*
Diana Zhao, *Medical College of Wisconsin*

Med-Peds

Michelle Banh, *Edward Via College of Osteopathic Medicine-Auburn Campus*
Collin Cousins, *University of Minnesota*
Ammar Dahodwala, *Rowan University*
Alda Huang, *Thomas Jefferson University*
Margaret Nkansah, *University of Alabama*
Hannah Obasi, *University of California, San Francisco*
Tiffany Pan, *USC*
Hannah Gwin, *University of Mississippi*
Julian Hirschbaum, *A.T. Still University*
Peter Sorial Soliman, *University of Arizona*
Lissette Cervantes, *Loma Linda University School of Medicine*
Erica Patel, *USC*
Fernanda Delgado, *University of Washington*
Alexis Gordon, *USC*
Rebekah Harding, *University of Illinois*
Sara Ptasnik, *USC*
Minoos Sarkarati, *Meharry Medical College*
Jena Sussex, *USC*
David Chung, *Loma Linda University*
Spencer Liebman, *University of Virginia*
John Nixon, *Rush University*
Pruthul Patel, *USC*
Jaclyn Vargas, *USC*
Kira Watson, *Tufts University*

DOM Research Activities

More than 64 DOM faculty are currently engaged in basic and/or clinical (translational) research activities. These medical research programs are supported by expenditures now exceeding \$49 million annually, of which 64% are federally (primarily NIH) sponsored. Among the DOM faculty who received new NIH grants this reporting period are:

- Lucy Golden-Mason (R01, NIDDK)
- Howard Hodis (R01, NIA)
- Cameron Kaplan (R01, NIA)
- Akil Merchant (R01, NHLBI)
- Kathleen Page (R31, NIMH)
- Amy Ryan (Firth) (R01, NHLBI)
- Hugo Rosen (two R01s, P30 Center)
- Takeshi Saito (R21, NIAID)
- Brad Spellberg (R21, NIH)
- Hussein Yassine (R21, NIA)

In addition, five DOM faculty members held active K awards:

- Hossein Bahrami
- Lily Dara
- Eugene Lin
- Shan Luo
- Ling Shao

These faculty members represent nearly all DOM divisions and serve to underscore the quality of medical research currently being conducted by our faculty. It also indicates the ability of our faculty to compete for the very limited amount of NIH grant resources at a time of intense competition for extramural funding.

Interdisciplinary Research Programs

DOM's impact on the medical research enterprise of the Keck School of Medicine of USC has been largely achieved by members of our faculty playing key roles in the development of interdisciplinary NIH-sponsored research programs. Many of these programs have taken advantage of the unique and diverse patient populations served by our teaching hospitals and clinics, as well as the leadership talents of our faculty. Prominent examples of such programmatic efforts include:



*The Gehr Family Center for Health Systems Science (left to right):
Drs. Sonali Saluja, Albert Farias, Cameron Kaplan, Michael Hochman, Rosha Modi, Barbara Turner, Michael Cousineau*

Basic/Translational Science

The **Center for Molecular Pathways and Drug Discovery**, focuses on accelerating the pace of drug discovery and the development of less toxic and more effective therapies for the treatment of cancer and other diseases.

The **Circulating Tumor Cell Research Center** is a state-of-the-art, multi-platform facility for the capture and analysis of peripheral blood circulating tumor cells.

The **USC Diabetes and Obesity Research Institute (DORI)** supports research to address the world-wide epidemic of obesity and type 2 diabetes. Unique features of research conducted by DORI members are transgenerational effects of maternal diabetes, diabetes in youth, racial and ethnic determinants of obesity and diabetes, and the relationship between metabolic disorders and Alzheimer's disease.

The **Gehr Family Center for Health Systems Science** creates innovative collaborations to develop and promote sustainable, efficient, clinical-quality improvement strategies.

The **Gehr Family Center for Rare Blood Disorders** conducts translational research into blood diseases such as myelodysplastic syndromes, which can lead to leukemia and AML, the most common adult acute leukemia.



*Hastings Center for Pulmonary Research (left to right):
Drs. Parviz Mino, Ya-Wen Chen, Denise Al-Alam, Soula Danopoulos, Zea Borok, Ite Ojffringa, Scott H. Randell, Amy Ryan, Alessandra Castaldi*

The **Hastings Center for Pulmonary Research (H CPR)** strives to be a leader in lung biology and disease research.

The **Lupus Center** uses information gained by laboratory bench research to serve as the basis for the development of prototype treatment strategies for a wide variety of autoimmune diseases.

The **Research Center for Cell Therapy** will strengthen and expand the existing capabilities of cell based therapies by bringing together basic, translational and clinical investigators working on developing novel cell based therapies for the treatment of hard-to-treat diseases, such as immunodeficiency disorders, autoimmune disorders, genetic diseases and in-born errors of metabolism.

The NIH-sponsored **Research Center for Liver Diseases** provides a major institutional resource for multidisciplinary and interdepartmental investigations, educational seminars and start-up grant funding

opportunities in liver diseases.

The **USC Center for Body Computing** is dedicated to the development of innovative uses of new implantable device technologies.

The **USC/UKRO Kidney Research Center** is dedicated to the belief that collaboration among scientists is key to understanding and eliminating chronic kidney disease (CKD).

The **Will Rogers Institute Pulmonary Research Center** continues to contribute significant advances in research related to lung injury and pulmonary edema.



Dr. Kenneth Hallows, Director of USC/UKRO Kidney Research Center gives a speech at the UKRO Benefit Gala

Large Scale Clinical Trial Centers

The **Atherosclerosis Research Unit** conducts studies designed to assess the benefits of a wide variety of therapeutic interventions for prevention and reversal of atherosclerosis.

The adult **AIDS Clinical Trials Group (ACTG)** has become one of the nation's leading centers in carrying out NIH-sponsored AIDS clinical trials in adult populations.

The **Keck Diabetes Prevention Initiative** develops treatment programs for the epidemic of obesity and type II diabetes occurring in the medically underserved populations of Los Angeles.

The **Southern California Clinical and Translational Science Institute (SC CTSI)** provides a broad range of services and support to promote clinical and community trials, develop new methods to enhance the efficiency and effectiveness of clinical research, provide training in clinical and translational research, and disseminate research findings to improve clinical care and community health.

Publications Summary

The Department of Medicine continues its robust tradition of research with over 380 peer-review publications authored by faculty in 2018.

HIGH IMPACT PUBLICATION FEATURES

Scientific Reports

January 1, 2018

DOM Authors: Hittu Matta, Venkatesh Natarajan, Preet Chaudhary
Division of Hematology

Development and characterization of a novel luciferase based cytotoxicity assay

The American Journal of Medicine

February 2, 2018

DOM Authors: Michael Hochman *Division of Geriatric, Hospital, Palliative and General Internal Medicine*

Implications of Medicare's Value-Based Payment Initiative for Specialty Health Systems

Journal of Clinical Investigation

February 5, 2018

DOM Authors: Beiyun Zhou, Ulf Per Flodby, Janice Liebler, Edward Crandall, Zea Borok
Division of Pulmonary, Critical Care and Sleep Medicine

Claudin-18-mediated YAP activity regulates lung stem and progenitor cell homeostasis and tumorigenesis

Scientific Reports

July 23, 2018

DOM Authors: Elizabeth Ortiz, Stratos Christianakis, Daniel Arkfeld, William Stohl
Division of Rheumatology

Increased Cathepsin S activity associated with decreased protease inhibitory capacity contributes to altered tear proteins in Sjögren's Syndrome patients

Hepatology

August 23, 2018

DOM Authors: Laurie DeLeve
Division of Gastrointestinal and Liver Diseases

Incomplete Differentiation of Engrafted Bone Marrow Endothelial Progenitor Cells Initiates Hepatic Fibrosis in the Rat



Cardiovascular Medicine



Ray Matthews, MD

Division Chief

Professor of Clinical
Medicine

Director, Interventional
Cardiology and
Catheterization
Laboratories

The Division of Cardiovascular Medicine is at the forefront of the diagnosis and treatment of cardiovascular disease. The scope of activities in the Division ranges from the early diagnosis and treatment of patients identified as at risk for cardiovascular disease to cutting-edge medical, device and invasive therapies for patients with established disease. We are dedicated to preventing, treating and expanding the existing knowledge base of the causes of cardiovascular disease to ensure the best outcomes for our patients.

Clinical Activities

LAC+USC Medical Center

The Division of Cardiovascular Medicine has an active clinical practice at LAC+USC, which includes a 10-bed CCU with telemetry capabilities, consultative services and an outpatient cardiology clinic. They provide 24-hour consultation services for general cardiology, interventional cardiology, and electrophysiology. The Cardiac Catheterization and Electrophysiology laboratories are under the supervision of the Division, with programs in interventional cardiology and interventional electrophysiology. The Division also runs a busy STEMI-Receiving Center at LAC+USC. The STEMI program currently

holds the number one position for fastest door-to-balloon time in LA County.

Private Practice

Keck Hospital of USC

The Division provides care for a large group of tertiary referrals as well as consultative services to this progressive academic medical center. The latest in diagnostic and therapeutic cardiovascular services are provided including coronary and peripheral interventions, percutaneous therapy for structural heart disease, catheter cardiac ablation and device implantation. The division leads an advanced heart failure group offering the latest in medical and mechanical therapies and our cardiac transplantation results are among the best in the nation.

Cardiovascular Thoracic Institute

The CVTI is an institute model comprised of the division of cardiovascular medicine, cardiothoracic surgery and vascular surgery. This unique patient care delivery model allows patients to access care at any delivery point and receive a comprehensive multidisciplinary assessment concluding with the best therapy plan for that individual patient. The CVTI, now more than 20 years old, lead this patient care concept now referred to as the 'heart team' nationally.



Vivian Mo, MD, with a patient.



Educational Activities

The mission of the multifaceted and multidisciplinary USC Cardiovascular Medicine Fellowship Program is to educate fellows in the comprehensive assessment and management of patients with cardiovascular disease processes. The program includes a rich, comprehensive experience that combines clinical training at LAC+USC, Keck Medical Center of USC and the Cardiovascular Thoracic Institute. The educational experience extends to the education and training of Internal Medicine house staff, USC medical students and visiting medical students.

Research Activities

The division has a robust clinical research program with a group of certified coordinators operating through our Clinical research Unit (CTU). A wide variety of high quality, scientifically ground-breaking protocols are expertly and ethically conducted. Protocols range from NIH funded studies, to multicenter trials to physician generated trials. USC is nationally recognized for the high quality cardiac research it produces.

Division Highlights

Structural Heart Disease Program

The Structural Heart Disease Program at the Keck Medical Center of USC

applies a multidisciplinary approach to the management of patients. It includes interventional cardiologists, cardiac surgeons, cardiovascular imaging experts, cardiac anesthesiologists and advanced care nurse practitioners. Percutaneous aortic valve implantation forms the core of the program. To date, over 600 percutaneous aortic valve implants have been performed. Outcomes are carefully tracked and despite a challenging referral group remain excellent.

Electrophysiology Program

The Structural Heart Disease Program at the Keck Medical Center of USC applies a multidisciplinary approach to the management of patients. It includes interventional cardiologists, cardiac surgeons, cardiovascular imaging experts, cardiac anesthesiologists and advanced care nurse practitioners. Percutaneous aortic valve implantation forms the core of the program. To date, over 600 percutaneous aortic valve implants have been performed. Outcomes are carefully tracked and despite a challenging referral group remain excellent.

Vascular Medicine Program

The Vascular Medicine Clinical and Training Program at USC integrates the specialties of vascular surgery, preventive cardiology and interventional cardiology to bring the best preventive and curative therapies to patients at risk for, or suffering from, peripheral vascular disease.

FACULTY

Professor

Uri Elkayam, MD
Howard N. Hodis, MD
Robert A. Kloner, MD, PhD
Ray V. Matthews, MD
Leslie A. Saxon, MD
Jerold S. Shinbane, MD

Professor Emeritus

L. Julian Haywood, MD

Associate Professor

Leonardo C. Clavijo, MD, PhD
Rahul N. Doshi, MD
Michael W. Fong, MD
Luanda P. Grazette, MD
Vivian Mo, MD
Enrique L. Ostrzega, MD
David M. Shavelle, MD
Helga Van Herle, MD

Assistant Professor

Hossein Bahrami, MD
Philip M. Chang, MD
Parveen K. Garg, MD
Antreas Hindoyan, MD
Juliana Hwang-Levine, Pharm.D.
Somsupha Kanjanauthai, MD
Tomas Konecny, MD, PhD
David Laughrun, MD
Anilkumar O. Mehra, MD
Kruti Pandya, MD
Joseph Rahman, MD
Jacqueline Schwartz, MD
Jina Sohn, MD
Ajay Vaidya, MD

Clinical Instructor

Wendy Yu, MD, PhD

ADMINISTRATOR

Jasmin Cortes

Vascular Medicine Program

The Vascular Medicine Clinical and Training Program at USC integrates the specialties of vascular surgery, preventive cardiology and interventional cardiology to bring the best preventive and curative therapies to patients at risk for, or suffering from, peripheral vascular disease.

Advanced Heart Failure and Transplant Program

The dedicated Heart Failure team takes a multidisciplinary approach, working with all subspecialties in cardiology as well as cardiothoracic surgery, to develop the best treatment plan for heart failure patients. The latest in mechanical circulatory support and implantable sensor monitoring are offered along with a variety of clinical research protocol options for our patients which are not available in the community.

Center for Body Computing

The USC Center for Body Computing (USC CBC) is the digital health research and innovation center for the Keck Medicine of USC medical enterprise. With a mission to modernize health care through technology and to make healthcare more personal, affordable and accessible to all, the USC CBC collaborates with inventors, strategists, designers, investors and visionaries from health care, entertainment and technology to serve as an international leader on digital health and wearable technology. The purpose of these collaborations is to advance virtual and digital health opportunities in partnership with industry and non-profit organizations.

High Risk Coronary Intervention

Patients are referred from all over the Los Angeles basin for percutaneous coronary revascularization with hemodynamic support to Keck Medical Center of USC. These cases are frequently turned down by community cardiologists. Our experienced team brings an exemplary skill set to bare on these challenging cases with excellent outcomes.

Adult Congenital Heart Disease

Since 2007, there are now more adults than children with congenital heart disease. This “new” group of patients represent a challenge to the community cardiologist. Our program, headed by a director who is board certified in adult congenital heart disease offer expert medical and surgical care for these deserving patients.

Division Accomplishments

The Division of Cardiovascular Medicine celebrates several accomplishments in 2018:

- Acquired 11 top quality practitioners to our faculty to make us a formidable clinical force in Los Angeles.
- Achieved shortest door to balloon time amongst all 36 LA County STEMI receiving centers for 2018.
- Moved our entire private practice operation to HCCII from HCCI to allow the enterprise to bill as a 1206d clinic and still showing patient volume increases for 2018.
- Designated by US News and World Report as a top performer nationally for cardiology and cardiac surgery.
- Successfully recruited section directors for Echocardiography and Advanced Heart Failure/Transplantation who will enhance and grow those programs.

Honors and Awards

Michael William Fong, MD

Physician of the Year, Centric Health, State of CA Senate

Luanda Grazette, MD

Southern California “Super Doctor,” Los Angeles Magazine
Top Doctor, Pasadena Magazine

Antreas Hindoyan, MD

Choi Award Recipient for Outstanding Patient Care, Keck Medical Center of USC
Recognized Physician, March, Keck Medical Center of USC

Robert Kloner, MD, PhD

H Index = 98; Over 40,000 journal citations (web of science)

David Laughrun, MD

Golden Apple Award Cardiology Fellowship, Keck School of Medicine of USC
Faculty Teaching Award, Internal Medicine Residency, Keck School of Medicine of USC

Enrique Ostrzega, MD

Best Sub-Specialist of the Year Award, Department of Medicine, Keck School of Medicine, 2017-2018
Outstanding Teacher in the 4th year curriculum 2017-2018 by vote of medical students, Keck School of Medicine

Endocrinology and Diabetes

The Division of Endocrinology and Diabetes is a leader in research, patient care and training in endocrinology, diabetes and related conditions. Clinical care and clinical training cover all aspects of adult endocrinology, with special expertise in diabetes, thyroid disorders, pituitary disorders, lipid disorders, and metabolic bone disease. Division research programs focus on the pathogenesis and treatment of gestational and type 2 diabetes, prevention of type 2 diabetes, trans-generational impacts of maternal diabetes, obesity and appetite regulation, management of thyroid and pituitary disorders, and the role of lipids in the pathogenesis of Alzheimer’s disease. All these activities expand knowledge and provide state-of-the-art care for our patients.

Clinical Activities

LAC+USC Medical Center

Endocrine Clinics

Outpatient endocrine clinics provide consultation and develop treatment plans for patients referred with a variety of endocrine problems, focusing on diseases of the thyroid and pituitary, as well as bone calcium disorders. The Endocrine-Pregnancy clinic at LAC+USC provides care to pregnant women affected by endocrine diseases, the most common of which are diabetes mellitus and thyroid disorders.

Thyroid Cancer Clinic

This clinic is designed to provide dedicated care for patients with thyroid cancer. Besides providing state of the art care for thyroid cancer, the clinic also performs FNA’s for patients with thyroid nodules.

Roybal Lipid Clinic

Dr. Hussein Yassine runs the DHS LA County lipid program for management of complex lipid cases. The program includes education of primary care providers, and providing recommendations and guidelines for the use of new lipid agents.

Roybal Diabetes Complex Care Clinic

The Roybal Diabetes CCC provides specialist-led comprehensive care for individuals with diabetes and related disorders. This program serves as a model for diabetes management throughout Los Angeles County and offers a selective in diabetes care for 4th year KSOM medical students.

Roybal Diabetes Lifestyle Program

The Roybal Diabetes CCC team has established a successful weekly “Lifestyle Program” with emphasis on behavioral modification, diet and exercise.

Type 1 Diabetes Clinic

A continuity clinic in diabetes has been established at the Roybal Diabetes Center to allow fellows the opportunity to develop skills in the management of patients with complicated type 1 diabetes. The clinic provides a venue for patients with labile diabetes, especially type 1, to receive state-of-the-art care by a specialized team of providers.

Private Practice

Health Sciences Campus

The USC Division of Endocrinology and Diabetes provides assessment and management services for patients with a variety of endocrine disorders, especially in the areas of diabetes, pituitary diseases, thyroid disease, adrenal disorders and disorders of calcium and bone metabolism.

USC Westside Center for Diabetes and Endocrinology

This clinic provides state-of-the-art care to individuals with type 1 and type 2 diabetes and pre-diabetes as well general endocrine conditions. Services include diabetes education and management, treatment of lipid disorders, gestational diabetes, prediabetes, thyroid, adrenal and pituitary disease, osteoporosis, and PCOS, among others.

USC Thyroid Diagnostic Center

This program specializes in cytopathology,



Thomas A. Buchanan, MD

Division Chief

Professor of Medicine

Vice Dean for Research

Director of the Southern California Clinical and Translational Science Institute (SC CTSI)

Co-Director, Diabetes and Obesity Research Institute

nuclear medicine and the surgical subspecialties in the diagnosis and management of thyroid diseases. The USC Thyroid Diagnostic Center also sponsors the Annual Symposium on Thyroid Disease, which continues to be the longest running and most successful clinical meeting in the United States.

USC Pituitary Center

The USC Pituitary Center is a unique clinical and academic program that is fully dedicated to the treatment and evaluation of patients with pituitary tumors and other disorders affecting areas of the hypothalamus and pituitary gland.

Keck Medicine of USC-Pasadena

This practice is dedicated to the investigation and management of osteoporosis and diseases involving the skeleton and mineral metabolism.

USC Endocrine Services Laboratory

The USC Endocrine Laboratory has become nationally and internationally known for its unique approach to measuring thyroglobulin and anti-thyroglobulin antibodies, which are used as tumor-marker tests for managing patients with differentiated thyroid cancers.

Educational Activities

The overall goal of our training program is to provide broad and comprehensive clinical and didactic training in endocrinology and metabolism, as defined by the ACGME. Our fellows have consistently passed the American Board of Internal Medicine certification examination.

Inpatient Consultative Services

LAC+USC Medical Center

The Endocrinology and Diabetes inpatient consultative service provides consultative care across a full spectrum of adult endocrine diseases. Trainees gain experience in the management of inpatients with diabetes as well as complex endocrine disorders.

Keck Medical Center of USC

The Division of Endocrinology and Diabetes provides full consultative services to Keck Hospital of USC (KH) and USC Norris Cancer Hospital (Norris). KH's busy neurosurgical service provides fellows with considerable experience in the diagnosis and perioperative management of pituitary and hypothalamic disorders.

Outpatient Services

These activities provide trainees with diagnosis and

management of ambulatory patients with a variety of endocrine disorders.

Research Activities

USC Diabetes and Obesity Research Institute (DORI)

The USC DORI is a multi-school institute, housed in the Division of Endocrinology and Diabetes, which supports research and related training in the areas of appetite regulation, obesity, adipose biology, insulin resistance, pancreatic beta cell function – all designed to address the growing world-wide epidemic of obesity and type 2 diabetes. DORI is co-directed by Endocrinology and Diabetes Division members Kathleen Page and Thomas Buchanan.

Elizabeth O. Beale, MD

Dr. Beale is developing a minimally-invasive, low-tech, low-cost medical device for the management of obesity and related disorders, including type 2 diabetes. Her goal is to make therapy with this device as effective as gastric bypass available to low-income populations worldwide.

Thomas A. Buchanan, MD

Dr. Buchanan conducts research into the etiology, pathogenesis, genetics and prevention of gestational and type 2 diabetes with a focus on diabetes in Hispanic Americans. The information helps to develop clinical approaches to the prevention and early treatment of type 2 diabetes.

John D. Carmichael, MD

Dr. Carmichael is the Principal Investigator for several studies focused on pituitary disease. He is the Co-Investigator on Dr. Gabriel Zada's NIH R01 study, "DNA Methylation and gene expression variations influence pituitary adenoma hormonal function and invasive growth." He oversees the USC Pituitary Center research registry and database and he is involved in several ongoing multi-center international clinical trials.

Jonathan LoPresti, MD, PhD

Current clinical research focuses on endocrine emergencies, endocrine complications of hospitalized patients and the management of patients with thyroid cancer.

Kathleen A. Page, MD

Dr. Page researches how the brain regulates appetite and eating behavior to contribute to obesity and diabetes. She also studies early life determinants of obesity, diabetes and cardiovascular disease.

Anne L. Peters, MD

Dr. Peters is the co-founder of the ongoing Community

Diabetes Initiative, performing community-based participatory research within underserved areas to lower rates of childhood and adult obesity and diabetes and to create and pilot lower literacy teaching tools for the treatment of diabetes. Dr. Peters also directs the USC Westside Center for Type 1 Diabetes Research where a variety of clinical trials are on-going, including studies on the development of the artificial pancreas.

Carole Ann Spencer, PhD

Dr. Spencer's cutting-edge clinical research on Differentiated Thyroid Cancer is translated into clinical practice through the USC Endocrine Services Laboratory thyroglobulin and autoantibody tumor-marker testing service used by more than 1400 hospitals, academic centers and endocrinologists nationwide.

Hussein N. Yassine, MD

Dr. Yassine has a strong interest in lipid metabolism and is currently the principal investigator for two NIH R01's and one R21 grant. His focus is on the role of the omega-3 fatty acid docosahexaenoic acid (DHA) in Alzheimer's disease, and the mechanisms that regulate delivery to the brain with an emphasis on the role of APOE4.

Division Accomplishments

Endocrinology and Diabetes celebrates several accomplishments in 2018:

- Dr. Hussein Yassine received the 2018 Outstanding Investigator Award from the Western Section of the American Federation for Medical Research. Dr. Yassine also received an R21 award from NIH in addition to his two existing NIH R01 grants to develop novel PET imaging modalities for assessing Alzheimer's disease risk.
- Dr. Kathleen Page was promoted to the rank of Associate Professor, with tenure.
- Dr. Trevor Angell joined the division as new assistant professor of clinical medicine. Dr. Angell focuses on patient care at the Keck Medical

Center and is the Associate Medical Director of the USC Thyroid Center with Dr. Peter Singer.

- Dr. Dina Block joined the division as a new assistant professor of clinical medicine. Dr. Block joined Dr. Anne Peters at the USC Westside Center for Diabetes where she will provide outpatient care to patients with diabetes and other endocrine disorders.
- USC Pituitary Center members, Drs. John Carmichael of the Division of Endocrinology (co-investigator) and Dr. Gabriel Zada of the Department of Neurosurgery (principal investigator) received a new NIH R01 award titled "DNA Methylation and gene expression variations influence pituitary adenoma hormonal function and invasive growth."

Honors and Awards

Braden Barnett, MD

Resident Teach Award, Year Four Medical Students, Keck School of Medicine of USC

Elizabeth Beale, MD

Recognized for Exemplary Practice Performance by LA Care, Roybal Lifestyle Management Program

John Carmichael, MD

Top Doctors, *Pasadena Magazine*

Jonathan LoPresti, MD

Faculty Teaching Award, Keck School of Medicine of USC

Shan Luo, MD

K08 "Neural Mechanisms of Overeating Among Children Exposed to Gestational Diabetes Mellitus In Utero," The National Institute of Diabetes and Digestive and Kidney Diseases, NIH L.K. Whittier Foundation Award, L.K. Whittier Foundation

Jorge Mestman, MD

Annual Teaching Incentive Award, Division of Endocrinology and Diabetes, Keck School of Medicine of USC

Anne Peters, MD

Judge, Diabetes Innovation Challenge, Helmsley T1 Exchange, Boston, MA
Honorary Lecturer—Etzwiller Memorial Lectureship, International Diabetes Center, Minneapolis, MN
Honorary Lecturer—25th Albert Weinstein Lectureship, Department of Medicine Vanderbilt University

Charles Sharp, MD

Top Doctors, *Pasadena Magazine*

Hussein Yassine, MD

L.K. Whittier Foundation Award, L.K. Whittier Foundation
WAFMR Outstanding Investigator Award, American Federation for Medical Research

FACULTY

Professor

Thomas A. Buchanan, MD
Jorge H. Mestman, MD
John T. Nicoloff, MD, *deceased*
Anne L. Peters, MD
Peter A. Singer, MD
Carole Ann Spencer, PhD

Associate Professor

John D. Carmichael, MD
Jonathan S. LoPresti, PhD, MD
Kathleen A. Page, MD
Charles F. Sharp, Jr., MD

Assistant Professor

Trevor Angell, MD
Braden Barnett, MD
Dina Block, MD
Elizabeth O. Beale, MD
Shan Luo, PhD
Caroline T. Nguyen, MD
Hussein N. Yassine, MD

ADMINISTRATOR

Roxanne Gustovich Odom

Gastrointestinal and Liver Diseases



Neil Kaplowitz, MD

Division Chief

Professor of Medicine

USC Associates/Thomas H. Brem Chair in Medicine

This past year was a successful period of continual growth on all fronts for the Division of Gastrointestinal and Liver Diseases. The Division includes clinical, teaching and translational research components at Keck Medical Center of USC, including the Liver Transplant and Hepatology program and the Digestive Health Center, which contains endoscopy, inflammatory bowel disease, and pancreaticobiliary and motility.

Clinical Activities

LAC+USC Medical Center

Separate Gastroenterology and Hepatology Consult Services provide inpatient consultations, outpatient consultations and follow-up care at the GI and Liver clinics, which occur during the same time as the HCV treatment clinic. GI clinic has become an Inflammatory Bowel Disease (IBD) clinic with Fellows staffed by IBD specialists providing close follow up to patients. A full range of endoscopic procedures are provided in the Endoscopy Suite in the Diagnostic and Treatment Building at LAC+USC. The Division performs a variety of advanced procedures, including endoscopic retrograde cholangio-pancreatography (ERCP), choledochoscopy, endoscopic ultrasound (EUS), radiofrequency ablation of Barrett's esophagus, large mucosal resections in colon and stomach, and deep enteroscopy.

Private Practice

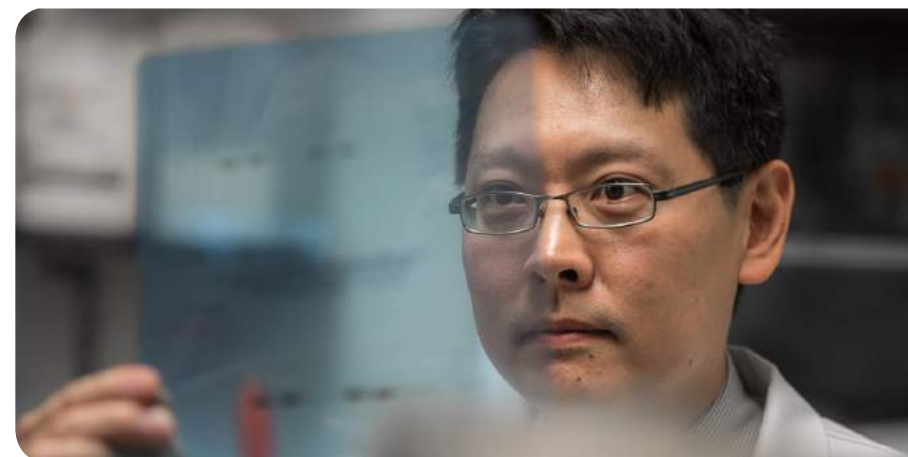
Divisional activities at Keck Hospital of USC (KH) and USC Norris Cancer Hospital (Norris) encompass inpatient and outpatient services in gastroenterology and hepatology. The program is a referral center for Norris/KH but has also received cases from the San Gabriel Valley as well as the central coast, Nevada and Washington.

The USC Liver Transplantation Program at KH provides pre- and post-transplant care to patients with end stage liver disease and portal hypertension. Liver replacement options include cadaveric and live donor liver transplantation. In 2017, the Liver Transplant Program performed a total of 99 adult transplants; 72 from deceased donors and 13 from living donors. The transplant hepatologists also evaluate potential living donors for pediatric patients at CHLA who are awaiting liver transplantation. In 2017, CHLA performed 16 deceased-donor and four living-donor liver transplants.

Educational Activities

GI and Liver Disease Fellows

The USC GI and Liver Diseases Fellowship Program is committed to providing excellent clinical training in consultative gastroenterology and hepatology, and diagnostic and therapeutic endoscopy.



Ling Shao, MD, PhD, in his research lab

Fellows are matched to a 3-year general gastroenterology and hepatology training program that offers expert training in capsule endoscopy, deep enteroscopy, EMR, radiofrequency ablation, Bravo pH, impedance/pH, manometry/pH, EUS and advanced biliary endoscopy. The training program emphasizes the pursuit of new scientific advancements in the fields of gastroenterology and hepatology that support outstanding opportunities for learning and educational endeavors.

Clinical Training

Division of Gastrointestinal and Liver Diseases fellows participate in inpatient GI and liver disease consultation services at LAC+USC and KH.

Fellowship Research

Fellows have the opportunity to participate in the division's clinical and basic science research activities. Fellows work closely with faculty mentors who provide support, guidance and instruction in study design, clinical and basic science research techniques, laboratory methods and biostatistics.

Liver Transplant Program

The USC Liver Transplant Program is based at KH. Fellows rotating at KH participate in the perioperative care of patients, with emphasis on the evaluation, medical decision-making and care needed for patients with cirrhosis and the complications of portal hypertension.

Research Training and Career Development

The USC Division of Gastrointestinal and Liver Diseases is involved in a wide range of basic science and clinical research activities. Fellows choosing to pursue an academic research career may spend up to 20 months performing clinical or basic science research during the three-year program.

Digestive Disease Core Center Grant

This NIH-funded program at the USC Research Center for Liver Diseases started in 1995 and entered its 5th cycle ending in 2021. It offers core facilities for support, training and research applications in cell culture, cell and tissue imaging and analytical-metabolic approaches, and maintains an extensive base of shared instrumentation.

Medical Students

Significant activities in student teaching include instruction during Year I GI/Liver Diseases courses, Year I hepatology lectures and a gastroenterology board review course.

FACULTY

Professor

Laurie D. DeLeve, MD, PhD
Lucy Golden-Mason, PhD
Andrew F. Ippoliti, MD
Neil K. Kaplowitz, MD
Hugo Rosen, MD
Edy E. Soffer, MD
Jacques Van Dam, MD, PhD

Associate Professor

James L. Buxbaum, MD
Tse-Ling Fong, MD
Cheng Ji, PhD
Jeffrey A. Kahn, MD
Michael M. Kline, MD
Murad Ookhtens, PhD
Andrew A. Stolz, MD
Takeshi Saito, MD, PhD
Thomas M. Zarchy, MD
Shuping Zhong, PhD

Assistant Professor

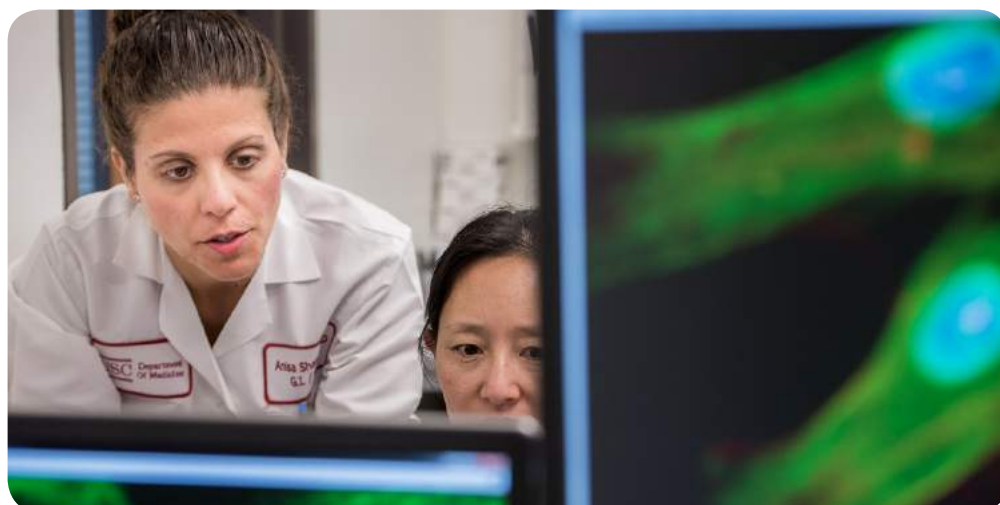
Lily Dara, MD
John A. Donovan, MD
Helen Han, MD
Caroline Hwang, MD
Gregory E. Idos, MD
Saro Khemichian, MD
Brian Kim, MD
Zhang-Xu Liu, MD, PhD
Rushabh Modi, MD
Ara Sahakian, MD
Anisa Shaker, MD
Ling Shao, MD, PhD
Sarah Sheibani, MD
Tin Aung Than, MBBS, PhD
Sanda Win, MD, PhD
Liyun Yuan, MD, PhD

Clinical Instructor

Wei-Chung Chen, MD

ADMINISTRATOR

Maria Vidrio



Anisa Shaker, MD, with Chao Niu, Research Associate

Research Activities

Faculty members of the Division are actively engaged in clinical and basic research. In the laboratory, the areas of gut and liver injury, animal models, and cell and molecular biology are actively investigated.

In addition, strong clinical research was conducted by Division members in esophageal diseases, liver transplantation, colonic disease, polyps, colon cancer and inflammatory bowel disease, pancreatitis/exploratory endoscopy, and alcohol and drug induced liver disease.



Heather Johnson, Research Lab Specialist, in the USC Research Center for Liver Diseases

Division Accomplishments

The Division of Gastrointestinal and Liver Diseases celebrates several accomplishments in 2018:

- Drs. Kim, Donovan and Kahn were successful in gaining ACGME approval of the Liver Transplant Hepatology Fellowship and initiated the curriculum they designed. The first fellow will start July 1, 2019.
- Participation at the Annual Meeting of AASLD (“Liver Meetings”). Dr. Kaplowitz co-organized the Research Workshop and Dr. Fong was co-organizer of the Postgraduate Course. Both were speakers at the respective programs.
- Dr. Buxbaum was appointed Associate Editor of Gastrointestinal Endoscopy, and Dr. Sahakian, CME Editor, a major endoscopy journal in the field.
- Drs. Rosen (Chair, Department of Medicine) and Lucy Golden-Mason joined KSOM and call the GI/Liver Division their home.
- The Division now has 14 faculty who receive NIH support.

- Dr. Stolz successfully renewed a U01 on Drug-Induced Liver Injury; USC is one of five clinical sites in the U.S. and only site west of Indiana, marking us as a major center for the study of Drug-Induced Liver Injury (DILI). The basic research grants of Kaplowitz, DeLeve, Dara further highlights our prominence in the field.

Honors and Awards

Lily Dara, MD

AASLD Hepatotoxicity SIG Education Committee, Vice-Chair, American Association for the Study of Liver Disease
AASLD-EASL Masterclass, American Association for the Study of Liver Disease, Orlando FL

Cheng Ji, PhD

R01 “Primary role of Golgi stress in anti-HIV drug and alcohol abuse-induced hepatotoxicity,” National Institute of Drug Abuse, NIH

Neil Kaplowitz, MD

Honorary Professor, Integrative Medical Center for Liver Diseases, Hospital of Beijing, Beijing, China 2018

Hugo Rosen, MD

Top Doctors in America, U.S. News
Elected to American Association of Physicians (senior physician scientist honor society)

Anisa Shaker, MD

Top Doctor, Pasadena Magazine

Ling Shao, MD, PhD

USC GI Fellows Teaching Award, USC Division of Gastroenterology, 2018

Edy Soffer, MD

Top Doctor, Pasadena Magazine

Jacques Van Dam, MD, PhD

Recipient, ASGE Rudolf Schindler Award

Sanda Win, MD, PhD

Donald E. And Delia B. Baxter Foundation Fellowship Award

Geriatric, Hospital, Palliative and General Internal Medicine

The Division of Geriatric, Hospital, Palliative and General Internal Medicine (GHPGIM) has demonstrated significant growth in the areas of clinical practice and teaching. The private practice has steadily grown over the last year as we expand our services and branch out beyond the USC community. The GHPGIM Division is one of the Department of Medicine’s leaders in terms of private practice revenue and number of patient visits. The Healthcare Center 2 (HC2) has continued to serve as the hub of the Division’s ambulatory private practice, in which Division faculty saw an average of 140 patient visits per day during 2018. The Division’s Hospital Medicine Program at LAC+USC Medical Center (LAC+USC) has achieved the Department’s goal of providing all of the teaching and supervision on the General Medicine Service by General Medicine faculty. The Hospital Medicine program at the Keck Medical Center has continued to expand, both in numbers and influence. The Palliative Care section has also expanded in terms of patient volume, impact, teaching and education.

Clinical Activities

LAC+USC Medical Center

Outpatient Care

Faculty provide direct patient care and supervise residents in providing care to over 35,000 patient visits a year. Faculty also provides comprehensive care to the elderly population in the Geriatric Clinic, which receives approximately 4,000 visits per year.

Faculty members continue to work with pharmacy, nursing, information systems and hospital information management to develop a multidisciplinary approach to numerous medical problems such as Type 2 diabetes mellitus, congestive heart failure, and chronic pain.

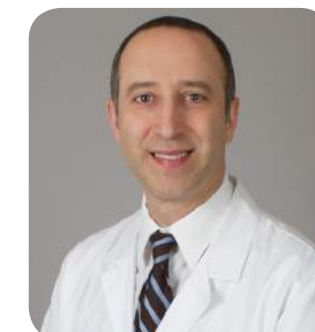
Inpatient Care

Faculty members continue to develop initiatives aimed at decreasing length of stay, improving operational efficiency through refining patient flow, reducing denied days, and optimizing the utilization of limited inpatient resources.

The Medicine Consult Service provides ongoing medical care to inpatients on surgical services, evaluates patients for transfer to LAC+USC and facilitates the flow of patients within the hospital. This service continues to actively work with hospital leadership on improving transitions of care.

Adult and Pediatric Palliative Care

The Palliative Care Services care for seriously ill patients in all units of the hospital, including the Emergency Department, all active medicine-surgery wards and ICUs. The Palliative Care teams include dedicated nurses, chaplains, nurse practitioners and social workers to support the inpatient consult team.



Michael S. Karp, MD

Division Chief

Clinical Associate Professor of Medicine (Clinician Educator)



Sunita Puri, MD, Medical Director, Palliative Medicine and Supportive Care Service, Keck Medical Center, with a patient.

Private Practice

GHPGIM faculty conducted ~30,000 private practice patient visits during 2018. In addition to the core facility, located on the USC Health Sciences Campus, patients are seen in satellite locations including Keck Medicine of USC-Downtown Los Angeles, La Cañada Flintridge, Beverly Hills, Pasadena and University Park Campus.

The Section of Adult and Pediatric Palliative Care continues to grow and to see inpatient consults at both the Keck Hospital and the Norris Cancer Center. They see outpatient consults as well, in partnership with faculty from multiple disciplines, including the Hematology and Medical Oncology services.

Hospital Medicine Program

The Hospital Medicine Program (HMP) at KH allows for 24/7 onsite faculty inpatient coverage and resident supervision, staffing at the Evaluation and Treatment Center (ETC) and rapid response coverage for the hospital campus (Rapid Response Team).

Educational Activities

Internal Medicine Residents

Faculty members in the Division of GHPGIM are responsible for the supervision of Internal Medicine Residents as they care for patients at LAC+USC on the Inpatient Medicine Wards service, at Keck Hospital, and daily Primary Care Clinics. The Division of GHPGIM finds it imperative that young physicians and allied health personnel are prepared to meet the challenges presented by the ever-changing nature of medicine as well as the aging of the American population.

Research Activities

Gehr Family Center for Health Systems Science

The Center is funded by a generous gift from Norbert Gehr to the Gehr Center founder David Goldstein. Mr. Gehr wanted his gift to support Dr. Goldstein's efforts to establish a nationally renowned Health Systems Science program on the Health Sciences Campus. The Center's charge is to identify more effective ways to implement "best practices" in real-world settings, to be thought leaders in the field of Health Systems Science, and to provide medical trainees with opportunities to conduct mentored Health Systems Science research.

Kurt Hong, MD, PhD, FACN

Dr. Hong's active research includes studies evaluating impact of nutritional counseling on healthcare outcomes and quality of life improvements in the ambulatory clinic setting.

Division Accomplishments

GHPGIM celebrates several accomplishments in 2018:

- Hospital Medicine at Keck Medical Center has grown to provide co-management services with Transplant Nephrology, Hepatobiliary, Head and Neck Surgery.
- General Internal Medicine started to work in conjunction with the Value Based Services Organization (USC Care), in order to provide better care for USC EPO/PPO patients with complex, chronic conditions.
- Palliative Care began an outpatient clinic to better serve patients facing the challenges of serious, life threatening disease, with a focus on goals of care,

symptom and pain management, quality of life.

- Hillman Foundation grant successfully completed nurse led advance care planning group visits for high risk diabetics piloted in adult primary care clinic, with visits expanded to other high risk populations.
- The Palliative Care Immersion training program was launched for generalists interested in improving their palliative care skills in their own practices, in partnership with the Gehr Family Center.

Honors and Awards

Kevin Bechler, MD

Attending of the Year, University of Southern California Department of Medicine, Los Angeles, CA, 2017-2018

John Brodhead, MD

America's Top Physicians, Consumer Research Council of America "Health Grades" Honor Roll
Top Doctor, U.S. News & World Report

Jeffrey Canceko, MD

2018 Year IV Faculty Teaching Award, Keck School of Medicine of USC
Kaiser-Permanente Excellence in Teaching Award for the Clinical Years, Keck School of Medicine of USC

Michael Hochman, MD

Commencement Speaker, Health Promotion, Disease Prevention, and Global Health Program Keck School of Medicine of USC

Jennifer Marks, MD

Pasadena Magazine, Top Doctor Award

Seth Politano, MD

Outstanding Teaching in Year II, Keck School of Medicine of USC

Michael Wang, MD

Care Partner Award, Keck Medical Center of USC Nursing Awardee

Wei-I Vickie Wu, MD

Fellow in Hospital Medicine, Society of Hospital Medicine, Class of 2018
Nominee, 1st Annual Excellence in Professionalism Award, Keck Medicine of USC

Stephanie Zia, MD

Faculty Award for Outstanding Teacher in Year III, KSOM
3rd Place, Southern California Region Clinical Vignette Poster Presentations, Society of General Internal Medicine (SGIM)
California-Hawaii Regional Meeting, Palo Alto

FACULTY

Professor

Barbara Turner, MD

Associate Professor

Ron Ben-Ari, MD
John L. Brodhead, Jr., MD
Julia Cassetta, MD
Nida Hamiduzzaman, MD
Diana C. Homeier, MD
Michael Hochman, MD
Kurt M. Hong, MD, PhD
Eric P. Hsieh, MD
Jose L. Gonzalez, MD
Michael S. Karp, MD
Jennifer Marks, MD
Sharon E. Orrange, MD
Seth A. Politano, DO
Patrick E. Sarte, MD
Carin van Zyl, MD
Michael D. Wang, MD
Andrew Young, DO

Andrea Lu, MD
Daniel Martinez, MD
Carlo Medina, MD
Rishi Mehta, MD
Anuj Ohri, MD
James E. Pacino, MD
Radhika Prabhakar, MD
Sunita Puri, MD
Kavita Renduchintala, MD
Justin Rice, MD
Glenn Rogers, MD
Mayuko Sakae, MD
Sonali Saluja, MD
Joshua D. Sapkin, MD
Aneesah Smith, MD
Aaron Storms, MD
Loni Tang, MD
Gregory L. Taylor, MD
Arnold Tsai, MD
Bryce D. Turner, MD
Welmoed van Deen, MD
Mabel Vasquez, MD
John Vo, MD
Khang Vo, MD
Carrie Ward, MD
Vickie Wu, MD
Shijun Cindy Xi, MD
Marshall Yuan, MD
Stephanie Zia, MD

Assistant Professor

Haig H. Aharonian, MD
Kevin A. Bechler, MD
Emily Beers, MD
Hillel Bocian, MD
Linda Calvillo-King, MD
Jeffrey B. Canceko, MD
Wen D. Chen, MD
Alexander Connelly, MD
Katherine Frishe, MD
Morgan Hawkins, MD
Douglass Hutcheon, MD
Arek Jibilian, MD
Matthew S. Johnson, MD
Matthew Jung, MD
Ronald Kall, MD
Cameron Kaplan, PhD
Mahmood M. Khaledy, MD
Huda Khaleel, MBChB
Shazia S. Khan, MD
Michael Kwak, MD
Edward S. Lee, MD
Justin J. Lee, MD
Sonia Lin, MD
Justin Liu, MD

Clinical Instructor

Sonya L. Earley, PA

ADMINISTRATOR

Jennifer Severa



Patrick Sarte, MD, delivers a lecture to residents.

Hematology



Preet Chaudhary, MD, PhD

Division Chief

Professor of Medicine

Bloom Family Chair in Lymphoma Research

Director for Bone Marrow Transplant

In the past year, the Jane Anne Nohl Division of Hematology and Center for the Study of Blood Diseases continued its growth in the areas of clinical practice, teaching and research. Members of the Division are conducting research in several areas of benign and malignant hematology. In particular, Division faculty members have special research strengths in the areas of adoptive cellular therapy and viral associated malignancies, including those seen in patients with HIV/AIDS. Members of the Division are also involved in a number of innovative investigator-initiated and National Cooperative Group (e.g., SWOG, AMC) sponsored clinical studies.

The Division is responsible for multiple clinical services at Los Angeles County + USC Medical Center (LAC+USC), USC Norris Cancer Hospital (Norris) and Keck Hospital of USC (KH). At Norris, the Division is responsible for a busy inpatient

service and the Bone Marrow/Stem Cell Transplantation (BMT) service, which successfully performs transplantation on patients with acute leukemia and other hematologic malignancies. The Division is experiencing increases in new outpatient visits, admissions and clinical efficiency (reduced length of stay) at Norris and LAC+USC. A substantial number of cases are placed into peer-reviewed clinical trials with accompanying translational research protocols, thus bringing innovative treatment strategies and therapeutic reagents to patients.

Clinical Activities

LAC+USC Medical Center

At LAC+USC, the Division conducts inpatient services for severely ill patients with hematologic malignancies and patients receiving chemotherapy. Additionally, the Division maintains a consultation service and seven outpatient half-day clinics.

Keck Medical Center of USC

USC Norris Cancer Hospital

Divisional activities at Keck Hospital of USC (KH) and USC Norris Cancer Hospital (Norris) encompass inpatient and outpatient services in gastroenterology and hepatology. The program is a referral center for Norris/KH but has also received cases from the San Gabriel Valley as well as the central coast, Nevada and Washington.

The USC Liver Transplantation Program at KH provides pre- and post-transplant care to patients with end stage liver disease and portal hypertension. Liver replacement options include cadaveric and live donor liver transplantation. In 2017, the Liver Transplant Program performed a total of 99 adult transplants; 72 from deceased donors and 13 from living donors. The transplant hepatologists also evaluate potential living donors for pediatric patients at CHLA who are awaiting liver transplantation. In 2017, CHLA performed 16 deceased-donor and four living-donor liver transplants.

Keck Hospital of USC

The Division of Hematology is responsible for seeing patients with various hematologic conditions on a consultative basis at KH. One fellow and one faculty are assigned to this rotation on a monthly basis.

Clinical Studies

Recruitment into clinical trials from all hospitals affiliated with Norris Comprehensive Cancer Center (Cancer Center) was strong over the past year. The Division of Hematology conducted clinical trials from a number of targeted therapies as well as immunotherapy products. Plans are underway to open clinical trials in chimeric antigen receptor modified T-Cells.

Educational Activities

The faculty are responsible for the education of approximately 84 interns and 120 residents each year.

Medical Students

The Division's course in Hematology and Clinical Immunology involves approximately six weeks per year as part of a newly developed curriculum. In addition, the Senior Clinical Hematology Elective takes two to four students for a four- to six-week elective on the Hematology Consultation Service.

Research Activities

The Division is actively involved in basic, translational and clinical research in benign and malignant blood disorders. Active areas of basic and translational research in the Division include molecular pathogenesis and animal models of AIDS-associated malignancies, multiple myeloma and lymphoma, development of targeted therapies for hematologic malignancies, cancer drug resistance, and clotting and bleeding disorders. In the area of clinical research, the Division is conducting clinical trials involving conventional agents, novel drugs and immunotherapy for the treatment of benign and malignant blood disorders.

Division Accomplishments

The Division of Hematology celebrates several accomplishments in 2018:

- The USC Blood and Marrow Transplant (BMT) program performed 129 transplants in 2018, a record high for the program.
- The Center for International Blood and Marrow Transplant Research (CIBMTR) listed the USC BMT Program as the best one year survival among the programs performing Adult Allogeneic Transplants in California.
- Dr. Preet Chaudhary's laboratory published an article in Scientific Reports describing a novel luciferase based assay for detection of cytotoxicity of chimeric antigen receptor expressing T cells. The article was the top ten most downloaded paper on the journal's website for 2018. The paper also had an Altmetric score of 119 and was in the 98th percentile (ranked 6,559th) of the 378,820 tracked articles of a similar age in all journals and in the 97th percentile (ranked 451st) of the 17,368 tracked articles of a similar age in Scientific Reports
- Dr. Chaudhary was made a member of the National Academy of Inventors.

Honors and Awards

Preet Chaudhary, MD, PhD

Ming Hsieh Immunotherapy Grant, Ming Hsieh Institute for Research of Engineering-Medicine for Cancer

Cage Johnson, MD

Leadership in Promoting Diversity Award, American Society of Hematology (ASH)

George Yaghmour, MD

Southern California TOP DOCTORS RISING STARS, *Los Angeles Magazine* Certificate of Professionalism Award, Keck School of Medicine of USC

FACULTY

Professor

Preet M. Chaudhary, MD, PhD
Parkash S. Gill, MD
Howard A. Liebman, MD

Professor Emeritus

Donald I. Feinstein, MD

Associate Professor

Mojtaba Akhtari, MD
Kevin Kelly, MD, PhD
Ann F. Mohrbacher, MD
Casey L. O'Connell, MD
Vasu Punj, PhD
Anil Tulpule, MD
Ilene C. Weitz, MD

Assistant Professor

Hittu Matta, PhD
Zaw Win Myint, MD
Venkatesh Natarajan, PhD
Caroline I. Piatek, MD
Giridharan Ramsingh, MD
George Yaghmour, MD

ADMINISTRATOR

Janette España



Ann Mohrbacher, MD, with a patient at Norris Cancer Hospital.

Infectious Diseases



Fred Sattler, MD
Division Chief
Professor of Medicine

An important research mission of the Division of Infectious Diseases for more than three decades has been to investigate strategies to prevent and treat HIV and its complications. The NIH-supported AIDS Clinical Trials Group (ACTG) is a major focus of research in the Division; USC was one of the original 12 sites funded by the Division of AIDS in 1986. The Division also remains a lead member of the California Collaborative Treatment Group (CCTG), which is funded by the State of California. The CCTG is the largest collaborative HIV clinical research consortium in California and has been continuously funded at USC for more than 2½ decades.

The Division oversees all aspects of patient care in the Rand Schrader Health and Research clinic for HIV, which includes specialty services (Pulmonary, Hematology-Oncology, Neurology, Psychiatry, Ophthalmology, Dermatology and Colorectal Surgery) to manage a number of common complications that continue to plague the HIV population. To meet the changing face of HIV, several additional clinics have been added. A Nutrition-Metabolism Clinic focuses on the management of weight gain, obesity and metabolic disorders (e.g. dyslipidemia, insulin resistance). The Hepatitis Clinic evaluates and treats HIV patients (about 30%) co-infected with HBV and HCV at increased risk for liver related complications.

Clinical Activities

Keck Medical Center of USC and LAC+USC Medical Center

The ID Service provides in-patient consultations at these hospitals:

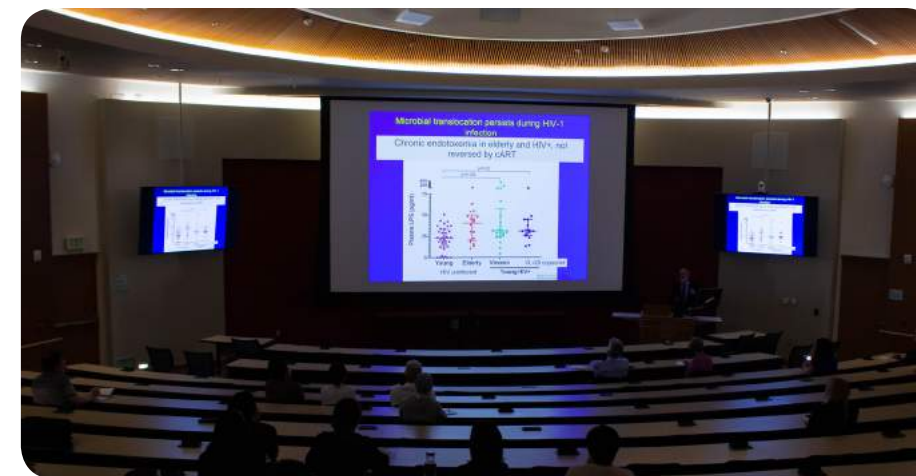
Rand Schrader Health and Research Clinic

ID faculty and fellows provide comprehensive HIV care of patients in this Clinic.

New Clinical Programs Initiated in 2018

We have developed important new programs in the Division that were fully implemented in 2018. These include antimicrobial stewardship and surveillance programs. The California Medical Society and Joint Commission, require that every hospital in California have an antimicrobial stewardship programs and have been extremely pleased with these new programs at Keck, Norris and LAC+USC medical center hospitals.

- Dr. Neha Nanda, Infection Control Officer at Keck hospitals, has continued to implement novel approaches to antimicrobial stewardship and surveillance. She coordinates and oversees daily in-hospital rounds with different ID faculty and pharmacists. Metrics showed that these approaches for the first-time in 2018 decreased *C. difficile* disease and empiric usage of



An Infectious Diseases Seminar

- broad-spectrum antibiotics.
- An antimicrobial stewardship and blood culture surveillance service (ID attending, ID fellow, pharmacists) who round daily was implemented July 1. Dr. Noah Wald-Dickler developed a training syllabus for ID fellows rotating on the service and with the clinical experience provides the basis for evaluation of fellow performance in antimicrobial stewardship, a mandated ACGME training for ID Fellows.
- A dedicated Orthopedic ID Service at Keck Hospital, headed by Darren Wong, was fully implemented July 1. This service expedites in-patient consultation for orthopedic device and spine infections and provides excellent training for ID fellows. Dr. Wong oversees a weekly Ortho ID Clinic in HC2 for patients receiving outpatient IV antibiotics and to expedite outpatient consultation from Orthopedics and Neurosurgery.

Educational Activities

The training experience is provided by highly experienced faculty on the general, transplant and ortho ID consultation services at Keck and Norris hospitals along with general ID consultation and antimicrobial services at LAC-USC Medical Center. Unparalleled opportunities for training in HIV medicine are also available at the Rand Schrader Clinic, which provides complete primary and specialty HIV care for approximately 2000 HIV infected individuals. LAC-USC and the Rand Schrader Clinic provide care for

a largely underserved minority population (60-70% Latinos and 12-15% African-Americans). The clinical and racial/ethnic diversity makes the ID fellowship program at USC one of the truly unique programs in the United States.

Research Activities

Faculty Research Areas

The ID Service provides in-patient consultations at these hospitals:

Emily Blodget, MD

Dr. Blodget has completed research on the incidence and outcomes of multi-drug resistant infections and impact of antibiotic prophylaxis in patients awaiting liver transplantation.

Joseph J. Cadden, MD

Dr. Cadden is Co-PI on an NIH-funded investigation to evaluate and develop better social support services for HIV+ persons.

Michal Dube, MD

Dr. Dube is the USC PI of the California Collaborative Treatment Group, currently performing a 4-year study of PrEP linkage and adherence in transgender persons. He is a scientific thought leader, chairs studies and serves on important committees in the ACTG. He also conducts studies of the microbiome in HIV.

P. Jan Geiseler, MD

Dr. Geiseler has served as Co-Investigator in ACTG and CCTG studies that evaluate antiretroviral therapy utilizing new

FACULTY

Professor

Michael P. Dubé, MD
Fred R. Sattler, MD
Brad Spellberg, MD

Associate Professor

P. Jan Geiseler, MD
Brenda E. Jones, MD
Neha Nanda, MD

Assistant Professor

Emily Blodget, MD
Joseph J. Cadden, MD
Nicholas Skandalis, PhD
Darren W. Wong, MD

Instructor of Research Medicine

Brian M. Luna, PhD

Clinical Instructor of Research

Noah Wald-Dickler, MD

ADMINISTRATOR

Erika Anaya



Division of Infectious Diseases Faculty

treatment and prevention strategies for patients infected with HIV.

Brenda E. Jones, MD

Dr. Jones is the USC Principal Investigator of the tuberculosis diagnostic study, "Evaluation of the 4th Generation Quantiferon Test for the Detection of Tuberculosis Infection".

Neha Nanda, MD

Dr. Nanda heads Healthcare Epidemiology/Infection Prevention and Antimicrobial Stewardship at Keck and its affiliated hospitals and clinics, which provide opportunities for research in healthcare associated infections and strategies to impact physician behavior in antimicrobial prescribing.

Fred R. Sattler, MD

Dr Sattler is PI of the ACTG grant at USC, member of the ACTG NAFLD Focus Group, member/facilitator for the Immune Activation FG, and A5371 Vice Chair to assess weight loss on hepatic lipid. He is PI (R01) to evaluate a GHRH analog on neurocognition, brain structure and function in HIV.

Brad Spellberg, MD

Dr. Spellberg is investigating the immunology, vaccinology, and host defense against highly resistant Gram-negative bacilli, including Acinetobacter and carbapenem-resistant Enterobacteriaceae infections.

Noah Wald-Dickler, MD

Dr. Wald-Dickler is conducting research in antimicrobial stewardship outcomes including submission of a K23 application.

Darren W. Wong, MD

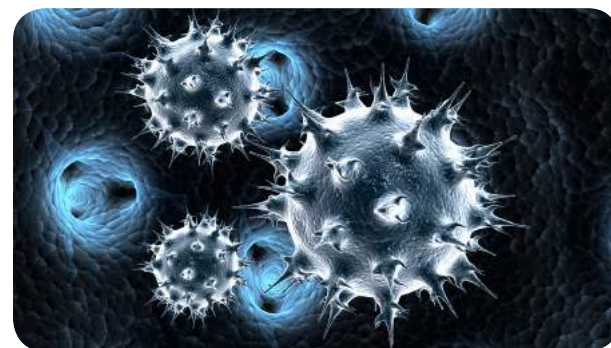
Darren Wong is the primary ID expert for orthopedic and spine infections Keck Hospital, which provides a wonderful opportunity for studies to improve treatment for these infections.

Division Accomplishments

The Division of Infectious Diseases celebrates several accomplishments in 2018:

- All of the Infectious Diseases fellows who graduated in 2018 passed their ID Boards. This success has occurred in three consecutive years reflecting the broad and in-depth didactic educational programs and clinical training provided by the ID faculty in the Division.

- Dr. Fred Sattler was appointed to an NIH task force on Obesity in HIV which was an outgrowth of his convening a consensus panel that published their recommendations in Clinical Infectious Diseases the year before. Dr. Michael Dube was a collaborator and co-author for the guidelines.
- Dr. Neha Nanda, Infection Control Officer at Keck hospitals, has continued to implement novel approaches to antimicrobial stewardship and surveillance. Her metrics showed in 2018 that these approaches for the first time decreased the incidence of C. difficile disease and usage of empiric, broad spectrum antibiotics that fosters emergence of microbial resistance.
- Dr. Brenda Jones was USC PI for the Multi-center study of QuantiFERON-TB Gold Plus", which increases assay sensitivity for active tuberculosis in compromised patients. Following FDA approval, QFT-Plus was implemented at Health Sciences Campus Hospitals in 2018.
- Dr. Joseph Cadden and Dr. Martin (Eddy) Sattah oversee the large Rand Schrader HIV / HCV Clinic (about 1/3 of HIV patients are co-infected with HCV). A milestone was met in the 2018 as so many patients had received DAO agents with sustained virologic response that for the first time the wait time for a new appointment was ≤ 2 week.



Honors and Awards

Neha Nanda, MD

Recognized for leading Colon Surgical site Infection Reduction Collaborative at Keck Medical Center of USC, Vizient

Brad Spellberg, MD

Faculty Teaching Award, Division of Infectious Diseases, Department of Medicine, Keck School of Medicine of USC

Darren Wong, MD

Super Doctors, Southern California Rising Stars

Nephrology and Hypertension

The Division of Nephrology and Hypertension is committed to providing comprehensive up-to-date medical care to patients with a variety of kidney diseases, hypertension, renal failure, fluid and electrolyte disturbances and transplantation of the kidney, kidney-pancreas and kidney-liver. The Division operates both in the public sector at LAC+USC Medical Center (LAC+USC) and in the private sector at Keck Hospital of USC (KH), USC Norris Cancer Hospital (Norris) and DaVita-USC Kidney Dialysis Center (DaVita-USC).

Clinical Activities

LAC+USC Medical Center

At LAC+USC, the Division of Nephrology has two consult services, each with an attending, fellow, medicine residents and students, and manages approximately 160 consultations per month. The Division provides more than 7,000 acute hemodialysis treatments annually, as well as continuous renal replacement therapy (CRRT) for fluid, electrolytes and metabolic support of acutely ill patients in the intensive care units.

Chronic Kidney Disease Clinics

The Division of Nephrology and Hypertension provides highly specialized care for many underserved patients in Los Angeles County who have all aspects of kidney disease, hypertension, kidney stones and prior kidney transplants. The mission of the Chronic Kidney Disease Clinics is to educate patients about their kidney diseases to prevent the progression to end-stage renal disease and treat its complications. The faculty also provide ambulatory training and education for medical students, medicine interns, residents and nephrology fellows. Finally, the clinics provide care for many long-term kidney transplant patients on multiple immunosuppressive medications. The Division sees 30 to 50 patients per session in the general renal outpatient clinics.

Private Practice

At KH and Norris, Nephrology and Hypertension faculty members admit private patients and provide consultations to patients with kidney diseases, fluid and electrolyte disturbances, acid-base disorders and hypertension. Nephrology faculty provide renal replacement therapy and consultation services at KH and Norris. In addition, faculty work very closely with the kidney, pancreas, heart, lung and liver transplant surgeons to provide care to patients with end-stage renal disease who require living-related, living-unrelated or cadaveric kidney transplants. Faculty care for more than 350 patients with end-stage renal disease at DaVita-USC Kidney Center. As the largest outpatient dialysis facility on the West Coast and one of the largest academic dialysis units in the country, DaVita-USC Kidney Center is recognized as a model for the community for its efficiency, quality of care and dedication of staff.

USC Hypertension Clinic

The USC Hypertension Center is a comprehensive clinical program for the diagnosis and management of patients with secondary and resistant forms of hypertension. The Center specializes

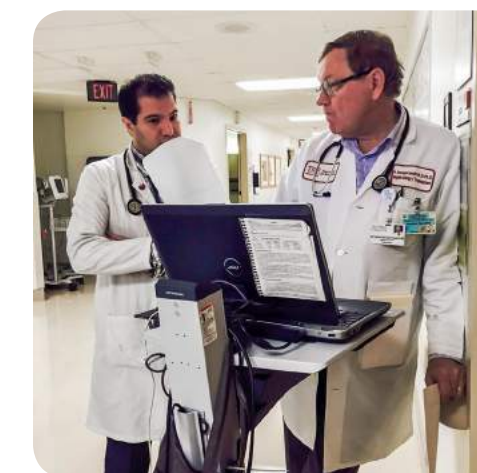


Kenneth R. Hallows, MD, PhD

Division Chief

Professor of Medicine

Director, USC/UKRO Kidney Research Center



Miroslaw J. Smogorzewski, MD, PhD, with a trainee in clinic.



Nuria Pastor-Soler, MD, PhD, in the Kidney Research Center Lab

in the diagnosis and management of renovascular hypertension, pheochromocytoma and primary aldosteronism, and in the management of resistant hypertension and orthostatic hypotension. This Center has been ranked number one in the country for quality care and clinical outcome.os

USC Kidney Transplant Center

The Kidney Transplant Program at USC is the fastest growing program of its kind in Los Angeles. A total of 163 kidney transplants were performed in 2018. The first simultaneous lung-kidney transplant was performed at Keck in 2018, furthering collaborations between different transplant specialties at the multi-organ transplant institute.

The center has performed close to 2000 transplants since its inception and has consistently been ranked highly for its quality. The recent Scientific Registry of Transplant Recipients (SRTR) outcome published by the United Network of Organ Sharing (UNOS) placed Keck's transplant program as one of only 30 centers out of 300 transplant centers in the US with outcomes significantly better than expected. Moreover, last year it was one of only a handful of programs with a 5-star rating on the UNOS 5-tiered outcomes analysis.

The transplant center participates in several clinical trials, including cutting-edge studies of tolerance and novel therapeutic agents, and was a lead on one of the largest global trials ever conducted in kidney transplant recipients.

Educational Activities

The Nephrology Fellowship Program is designed to provide training in all fields of Nephrology, including abnormalities of fluids and electrolytes, glomerulonephritis, tubulointerstitial nephritis, renal vascular diseases, dialysis and transplantation. During rotations, fellows are exposed to all aspects of clinical nephrology, including dialysis and transplantation. Fellows are also involved in a variety of clinical and basic research in the fields of hypertension, treatment of acute and chronic kidney disease, progression of renal disease and management of dialysis.

Research Activities

The Division is committed to basic, translational, clinical and population research. Current areas of basic and translational investigation include the mechanisms of hypertension, acute kidney injury, acid regulation and its role in CKD, polycystic kidney disease and metabolomic biomarkers, kidney cancer, and the noradrenergic control of blood pressure in kidney disease.

Clinical research areas include the testing of novel therapeutics in polycystic kidney disease, mechanisms and management of vascular calcifications in dialysis patients, detection and management of cardiovascular disease in dialysis patients, prevention of progressive renal disease in African-Americans, and new experimental therapeutics in kidney transplantation.

There is also a growing research program in the health economics of kidney disease. The Division has also developed an urgent-start peritoneal dialysis program, which is the largest of its kind in the country. In addition, research is ongoing to enhance assessment of intravascular volume and response to ultrafiltration in critically ill patients.

The Division's USC/UKRO Kidney Research Center (KRC) is supported by private funding (principally the University Kidney Research Organization (UKRO)), federal grants from the National Institutes of Health and US Department of Defense, and University grants and supporting funds.

Division Accomplishments

Nephrology and Hypertension celebrates several accomplishments in 2018:

- The Division filled in the general nephrology fellowship match (for the first time in five years)
- The Division successfully recruited additional clinical and physician-scientist faculty and MLPs
- The Division launched the only current investigator-initiated clinical drug trial at KSOM

- The Division performed a record number of living donor and overall kidney transplants
- Division faculty received Outstanding Year II Course Award for Renal Systems Course

Honors and Awards

Zhongwei Li, PhD

2018 Wright Foundation Pilot Award, Wright Foundation

Mitra Nadim, MD

Outstanding Year II Course Award, Keck School of Medicine
Excellence in Professionalism Award (Nominee), Keck Hospital of USC

Yasir Qazi, MD

Castle Connolly America, USC
Top Doctors, Los Angeles Magazine, Los Angeles, CA

FACULTY

Professor

Vito M. Campese, MD
Kenneth R. Hallows, MD, PhD
Elaine M. Kaptein, MD
Mitra K. Nadim, MD

Professor Emeritus

Shaul G. Massry, MD

Associate Professor

Arshia Ghaffari, DO
Osun Kwon, MD, PhD
Saeid M. Nosrati, MD
Nuria M. Pastor-Soler, MD, PhD
Yasir A. Qazi, MD
Biagio Saitta, PhD
Miroslaw J. Smogorzewski, MD, PhD

Assistant Professor

Gbemisola A. Adenuga, MD
Kausar Hamiduzzaman, MD
Hui Li, MD
Zhongwei Li, PhD
Thin Thin Maw, MD
Roshan Rajani, MD
Hui Yi Shan, MD
Santhi Voora, MD
Yan Zhong, MD

Clinical Instructor

Melissa Alvarez, NP
Zaid Haddad, MD
Sarah Masters, NP
Neeraj Sharma, MD

ADMINISTRATOR

Jennifer Severa



Kenneth Hallows, MD, PhD, (right) offers a complementary consultation on World Kidney Day.

Oncology



Darcy Spicer, MD

Division Chief

Associate Professor of
Clinical Medicine

Assistant Dean for Clinical
Research Studies

IRB Director & Co-Director,
Lynne Cohen Clinic

The Division of Oncology has four sections: Gastrointestinal Malignancies, Genitourinary Malignancies, Solid Tumors and Women's Malignancies. The Division provides medical oncology clinical services at Los Angeles County + USC Medical Center (LAC+USC), USC Norris Cancer Hospital (Norris), Keck Hospital of USC (KH), Pasadena and three USC Norris Oncology/Hematology service locations in Orange County. In 2018, the division expanded into Koreatown, Buena Park, and Arcadia, through the acquisition of strong community medical oncology and hematology practices.

Clinical Activities

LAC+USC Medical Center

The Division is responsible for outpatient clinics, a consultative service for patients with solid tumors and a daily Infusion Center/Day Hospital. Each section of the Division rotates and provide daily attending rounds for consult patients on the Medicine Wards of the Inpatient Tower.

The application of novel treatment strategies has been crucial to the successful management of patients with metastatic cancer. This serves to achieve total integration of clinical and clinical research practice.

Private Practice

USC Norris Cancer Hospital - Outpatient Clinic/Day Hospital

Different specialties provides care at the Norris Outpatient Clinics throughout the week.

Keck Hospital/Norris Cancer Hospital-Inpatient Service

During 2018, Oncology faculty were responsible for 735 admits, and 4,238 inpatient days. The average length of stay was 5.77 days.

Keck Hospital-Consultation Service

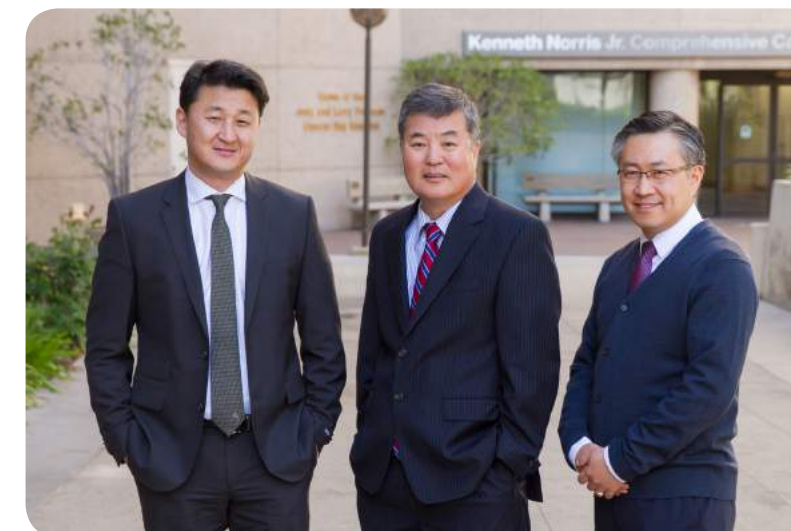
At KH, one fellow and one faculty are assigned to see inpatient consultations on a monthly basis for all tumor types. The teams consulted on 145 patients.

USC Norris Westside Cancer Center

The Cancer Center offers the latest in treatments from a range of specialties, all focused on the oncologic care of patients with prostate cancer. It strives to bring new therapies to patients and is advancing the clinical care of prostate cancer through novel clinical trials.

Keck Medical Center of USC-Pasadena

The Pasadena office offers treatments in all aspects of both hematologic and oncologic care for residents of the San Gabriel Valley. Patients are offered participation in the many clinical trials being conducted by the Division.



*The doctors of Keck Medicine of USC in Koreatown and Buena Park
Pictured (L to R): Drs. Clan Hahn, Han Joo Kim, and Sang Hoon Ahn*

Keck Medicine of USC in Orange County

USC Norris Oncology/Hematology locations in Orange County are located in Huntington Beach, Newport Beach and Irvine. Advanced treatment and clinical trial opportunities are available to Orange County residents in their local communities. Keck Medicine is working in collaboration with Hoag Hospital to continue expanding a higher level of comprehensive cancer and oncology services throughout Southern California.

Keck Medicine of USC in Koreatown and Buena Park

Keck Medicine of USC acquired the LA Cancer Center hematology and oncology practice in Koreatown and Buena Park. These university-based practices predominantly serve a large Korean-speaking population. Patients are temporarily being seen at USC Norris Cancer Hospital while their offices are being upgraded and renovated.

Keck Medicine of USC in Arcadia

Keck Medicine of USC opened a hematology and oncology practice in Arcadia towards the end of 2018. This expansion offers another location for care in the San Gabriel Valley.

Clinical Trials

A substantial number of patients are entered into peer-reviewed clinical trials with accompanying translational research protocols, thus bringing innovative treatment strategies and therapeutic agents to patients.

Recruitment into clinical trials from all hospitals affiliated with the Cancer Center was strong, with more than 4,877 cases recruited in 2018. Adult patient

recruitment was represented by study type as follows: 431 interventional therapeutic studies; 42 interventional non-therapeutic; and 3,370 to non-interventional studies. Enrollment by ethnicity was 42.9 % Hispanic or Latino for interventional therapeutic trials; 61.9% for interventional non-therapeutic and 29.9% for non-interventional. Enrollment by gender was 51.3% female for interventional therapeutic trials; 66.7% female for interventional non-therapeutic and 59.9% female for non-interventional studies.

Educational Activities

Division of Oncology faculty are responsible for the education of approximately 52 interns and 120 residents on rotation each year. These individuals have been assigned to either the Consult Service at LAC+USC or the inpatient service at Norris Hospital or Consult Service at Keck Hospital. During daily rounds, the house staff are exposed to the entire spectrum of malignant diseases and the patient's natural history.

Fellowship training activities include involvement in the design and conduct of early-phase clinical trials, bedside teaching, and a series of tumor boards and conferences designed to illustrate principles of the biology of cancer and its management. These activities are augmented by faculty mentorship of fellows who may want to participate in specific scholarly research projects associated with particular disease sites or malignant disease processes.



*Dr. James Hu, MD, (left) with
Donald R. Frayer, MD, in
clinic*



Anthony El-Khoueiry, MD, in the Norris Research Tower

Research Activities

Research programs received substantial funding from the NIH and other peer-reviewed grant support, as well as industry-funded studies. The Division increased its emphasis on translational research based on fundamental concepts of molecular biology. This approach has been predicated on the emerging knowledge of the molecular correlates of anticancer drug resistance, increased understanding of the genes associated with familial and sporadic patterns of malignancy (colorectal and breast cancer, in particular), the immunological basis of tumor response and resistance, and a more precise assessment of the pharmacology of novel anticancer compounds.

Selected Programs

Dr. Janice Lu has evolved the breast cancer program to provide state-of-the-art clinical trials.

A study by Kevin McDonnell confirmed redox activity in eukaryotic DNA repair proteins and established MUTYH C306W as a pathogenic variant, highlighting the essential role of redox signaling by the [4Fe4S] cluster.

Dr. Jorge Nieva has initiated an autologous tumor infiltrating lymphocyte (TIL) study in solid tumors in addition to a TIL trial in head and neck cancer. In development is a TIL trial in lung cancer.

Dr. Bing Xia is using a Dean's Pilot Funding Program Grant to study Molecular Basis of Gender Disparities in Lung Adenocarcinoma.

Dr. Anishka D'Souza is developing virtual reality, guided

imagery, and humor therapy on in-patients receiving chemotherapy.

Dr. Gino In and the USC melanoma program was the highest accruing site globally for a phase 3 study exploring the combination of ipilimumab with intratumoral tilsotolimod (TLR9 agonist) in melanoma patients who are refractory to PD-1 inhibition.

Dr. Jacek Pinski is in the process of establishing a cross-disciplinary, undergraduate and postgraduate educational curriculum, expressive art therapies program and research efforts to improve patient care involving students and faculty from the USC Schools of Medicine, Art, Psychology, Social Work and Public Health.

Dr. Syma Iqbal created a robust esophagogastric program with trials in each presenting clinical scenario in both adenocarcinoma and squamous cell carcinoma.

Under the mentorship of Dr. Heinz-Josef Lenz, Drs. Francesca Battaglin, Madiha Naseem, and Alberto Puccini received three out of twelve 2019 ASCO Annual Meeting Merit Awards at the Gastrointestinal Cancers Symposium.

Division Accomplishments

Oncology celebrates several accomplishments in 2018:

- USC Norris was named Top Cancer Hospital in Southern California.
- Seven new faculty including: Dr. Sang-Hoon Ahn and Dr. Clan Hahn (Korea town and Buena Park); Dr. Bing Xia, Dr. Anishka D'Souza, and Dr. Haris Zahoor (Norris); Dr. Jacob Thomas (Newport Beach); Dr. Umair Ghani (Huntington Beach); and Dr. Henry Wang (Arcadia).
- Under the mentorship of Dr. Heinz-Josef Lenz, Drs. Francesca Battaglin, Madiha Naseem, and Alberto Puccini received three out of twelve 2019 ASCO Annual Meeting Merit Awards at the Gastrointestinal Cancers Symposium.
- Dr. Janice Lu and colleagues successfully initiated a new breast cancer multidisciplinary clinic.
- Dr. Kevin McDonnell's work on the pathologic MUTYH variant p.C306W which undergoes rapid oxidative degradation.

Honors and Awards

Umair Ghani, MD

Best Research Presentation, Division of Medical Oncology, KSOM

Cynthia Martel, MD

Voted one of the best oncologists in the San Gabriel Valley, Pasadena Magazine

Shannon Mumenthaler, MD

Research Fellowship, Rose Hills Fellowship Fund for Undergraduate Research, USC
CER Faculty Awardee, Co-Organizer, Women in Academic Leadership, Sponsored by USC Center for Excellence in Research

David Quinn, MD

Bernard L Schwartz Memorial Lectureship, Scripps Institute, La Jolla, CA. Lecture: "Prostate Cancer 2018", February 19th, 2018

Henry Wang, MD

Top Doctor, Pasadena Magazine

FACULTY

Professor

David B. Agus, MD
Stephen B. Gruber, MD, PhD
Heinz-Josef Lenz, MD
Janice Lu, MD, PhD
Louis A. Vandermolten, MD

Associate Professor

Greg R. Angstreich, MD
Sang-Hoon Ahn, MD
John R. Daniels, MD
Anthony B. El-Khoueiry, MD
Amir Goldkorn, MD
Mitchell E. Gross, MD, PhD
Syma Iqbal, MD
Jerry S.H. Lee, PhD
Mark V. McNamara, MD
Minh D. Nguyen, MD
Jorge J. Nieva, MD
Jacek K. Pinski, MD, PhD
David I. Quinn, MD, PhD
George Semeniuk, MD
Darcy V. Spicer, MD
Henry Wang, MD

Instructor of Clinical Medicine

Charite N. Ricker, MS

Clinical Instructor (Practitioner)

Monica Averia, NP
Breidi Calloway, NP
Lilia Frausto, NP
Karen Julien, NP
Taline Khoukaz, NP
Kristi Lara, PA
Michael Luther, PA
Tina Soo, NP

Assistant Professor

Afsaneh Barzi, MD, PhD
David M. Burtzo, MD
Anishka D'Souza, MD
Diana L. Hanna, MD
Dilruba N. Haque, MD
James S. Hu, MD
Gino In, MD
Umair Ghani, MD
Clan Hahn, MD
Reginald Hill, PhD
Irene Kang, MD
Kian Kani, PhD
Jonathan Katz, PhD
Paul Macklin, PhD
Cynthia L. Martel, MD, PhD
Shannon M. Mumenthaler, PhD
An Nguyen, MD
Daniel L. Ruderman, PhD
Sarmad Sadeghi, MD, PhD
Jacob Thomas, MD
Bing Xia, MD
Shigang Xiong, MD, PhD
Kelly Yap, MD
Haris Zahoor, MD

ADMINISTRATOR

Timothy Chung

Pulmonary, Critical Care and Sleep Medicine



Zea Borok, MD
Division Chief
Professor of Medicine
Ralph Edgington Chair in Medicine

The Division of Pulmonary, Critical Care and Sleep Medicine (PCCSM) strives towards excellence in all three academic missions, providing exceptional clinical care, robust basic and clinical research programs and outstanding opportunities for training of the next generation of clinicians in our highly sought after fellowship programs. Division faculty and fellows provide services in seven Intensive Care Units, two at LAC+USC, four at KH, and one at Norris.

Research areas in the Division include airway and alveolar epithelial cell biology, gene regulation in lung injury and repair, lung cancer, nanoparticle trafficking across the alveolar epithelium, pulmonary fibrosis, stem cell biology and regenerative medicine, outcomes in critical care, cystic fibrosis, pulmonary hypertension and sleep.

Clinical Activities

LAC+USC Medical Center

The Division of PCCSM operates a 40-bed Medical Intensive Care service at LAC+USC. The Division provides consultative services to inpatients and intensive care units of other divisions and

departments, including internal medicine, surgery (including trauma), neurology, neurosurgery, burns, emergency medicine and cardiology.

Keck Hospital of USC

The Division cares for inpatients with a wide spectrum of acute and chronic lung diseases and critical illness in the KH Intensive Care Units. Specialized multidisciplinary programs that provide patient-centered care include the Lung Transplant Program, Adult Cystic Fibrosis Center, Center for Advanced Lung Disease, Multidisciplinary Lung Cancer Program, Asthma and Allergy Program, Sleep Center, Interventional Pulmonary Program and Pulmonary Hypertension Program.

USC Norris Cancer Hospital

The Division operates the Intensive Care Unit at Norris Hospital and provides consultative services to floor patients.

Special Clinical Services

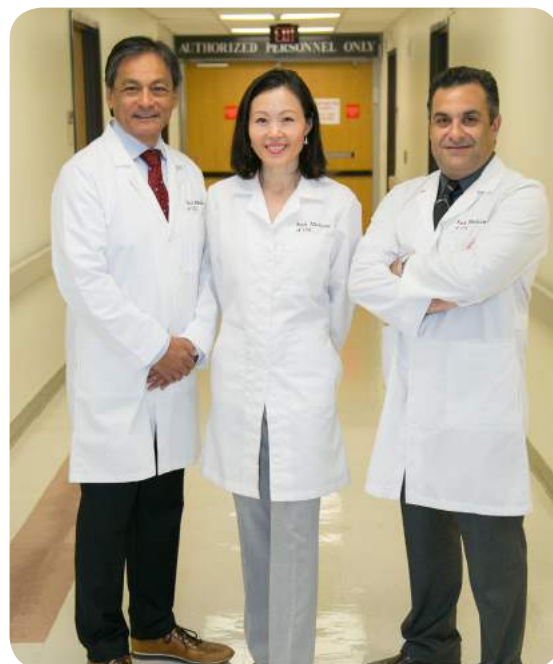
The Division has established several clinical Programs of Excellence, each of which offer specialized treatment for various pulmonary disorders, as well as an outstanding educational setting for fellow education:

The **USC Interventional Pulmonary Program** provides a full spectrum of services for the minimally-invasive diagnosis, staging, and management of lung cancer.

The **USC Sleep Disorders Center** has expanded and now occupies a separate area at KH with full staff support.

The **USC Multidisciplinary Lung Cancer Program** includes several faculty members from PCCSM who actively participate in the evaluation, diagnosis and management of patients with thoracic cancers.

The **USC Center for Advanced Lung Disease (CALD)** is a program that deals



USC Bronchial Thermoplasty Program (L to R): Richard Barbers, MD, Ching-Fei Chang, MD, and Raymar Mahdavi, MD

with the diagnosis and treatment of all types of complex lung diseases.

The **Anton Yelchin Adult Cystic Fibrosis (CF) Center** provides direct care and consultation for adult CF patients. The CF Center received an unprecedented gift of \$1 million from the Yelchin family to name the CF Center in memory of their son Anton.

Educational Activities

The PCCSM Fellowship Program is designed to provide each trainee with exposure to the diagnosis and management of pulmonary diseases, the experience and skills required of an intensivist and the opportunity to develop research interests. Seven new fellows are currently admitted to the program every year.

During the clinical phase of training, fellows devote their time to evaluation, diagnosis and treatment of patients admitted to LAC+USC, KH and Norris. Fellows assess problems, make appropriate diagnostic and therapeutic recommendations and perform specialized procedures. Trainees receive instruction in pulmonary function testing, thoracic and critical care ultrasonography, x-ray and computerized tomography interpretation, the principles and techniques of mechanical ventilation and inhalation therapy, and all aspects of tertiary pulmonary, critical care and sleep medicine.

Research Activities

Faculty Research Areas

The Division has a strong and expanding basic science research enterprise with a focus on lung injury, repair and regeneration. Basic and clinical research remains a major focus of the Division's interests and activities. A number of investigators study pulmonary structure and function at the organ, tissue, cellular and molecular levels.

Hastings Center for Pulmonary Research

The Hastings Center for Pulmonary Research (HCPR) was established in 2014 with an initial gift of \$7.5 million over 5 years to create a center of excellence for lung research at USC under the direction of Dr. Zea Borok. The major goals of the HCPR are to recruit a cadre of excellent lung scientists, create a collaborative environment for study of lung disease and provide training opportunities for the next generation of scientists. In 2018, the Hastings Foundation renewed their commitment to support the HCPR for an additional ten years.



KSOM Dean Laura Mosqueda (left) with Dr. Borok at the 2nd Annual Hasting Center for Pulmonary Research Symposium

Special Basic/Translational Research Activities

Zea Borok, MD

Dr. Borok's research program is broadly focused on cell and molecular biology of the alveolar epithelium. Her studies, which are funded by NIH/NHLBI, will provide important insights into mechanisms that regulate repair of the alveolar epithelium following injury and could lead to the development of novel therapeutic approaches for lung fibrosis by preserving the epithelium.

FACULTY

Professor

Richard G. Barbers, MD
Ahmet Baydur, MD
Zea Borok, MD
Edward D. Crandall, PhD, MD
Kwang-Jin Kim, PhD
Janice M. Liebler, MD
Renli Qiao, MD, PhD

Associate Professor

David M. Kelley, MD
May M. Lee, MD
Richard L. Lubman, MD
A. Purush Rao, MD
Beiyun Zhou, PhD

Assistant Professor

Ching-Fei Chang, MD
Raj R. Dasgupta, MD
Amy L. Ryan (Firth), PhD
Sivagini Ganesh, MD
Vincent X. Grbach, MD
Ricardo H. Juarez, MD
Aarya Kafi, MD
Roozehra A. Khan, DO
Santhi Iyer-Kumar, MD
Alfredo Lee Chang, MD
Ramyar Mahdavi, MD
Arnold Sipos, MD, PhD
Bassam Yaghmour, MD

ADMINISTRATOR

Ian Quiza

Amy Ryan (Firth), PhD

Dr. Ryan's research group uses primary lung cells and state-of-the-art gene-editing and stem cell approaches to study mechanisms of human lung biology in a disease, gene and patient specific manner.

Beiyun Zhou, PhD

Dr. Zhou's research focuses on alveolar epithelial cell biology in general, and delineation of mechanisms regulating AEC function and differentiation in the context of lung injury and repair.

Special Clinical Research Activities**Richard G. Barbers, MD**

Dr. Barbers' research attempts to show that abnormal repair processes (which include inflammatory and immune mechanisms) eventually lead to airway fibrosis (remodeling) in asthma.

Ahmet Baydur, MD

Dr. Baydur is participating in a study that focuses on the reduction of asthma morbidity in African Americans and Hispanic/Latinos.

Ching-Fei Chang, MD

Dr. Chang is participating in numerous studies broadly focused on lung cancer.

Alfredo Lee Chang, MD

Dr. Lee Chang is participating in a multi-center study of the best way for patients on mechanical ventilation to transition to spontaneous breathing.

Sivagini Ganesh, MD

Dr. Ganesh's research activities largely focus on research in pulmonary hypertension and lung transplantation.

Santhi Iyer-Kumar, MD

Dr. Iyer-Kumar is participating in the Society of Critical Care Medicine (SCCM) ICU Liberation Collaborative, which studied the relationship of adherence to certain patient care procedures and patient outcomes in the intensive care unit.

May Lee, MD

Dr. Lee studied the use of social media as an adjunct to the training of pulmonary and critical care medicine fellows in the use of bedside ultrasound.

Janice M. Liebler, MD

Dr. Liebler is involved in a retrospective analysis that aims to characterize patients with hypoxemia who do

not fulfill Acute Respiratory Distress Syndrome (ARDS) criteria.

Adupa P. Rao, MD

Dr. Rao is participating in an observational study that collects information acquired in the care of cystic fibrosis patients to address quality improvement initiatives, and examine dynamic health care issues, including nutritional status, infection control, pulmonary treatment and/or metabolic issues rapidly and effectively.

Honors and Awards**Zea Borok, MD**

Accepted, Drexel University Executive Leadership in Academic Medicine Program

Sivagini Ganesh, MD

American's Most Honored Professionals – Top 5%, American Registry

Roozehra Khan, MD

Travel Grant Award, Chest Foundation

Renli Qiao, MD, PhD

High Impact Writer Award, Chin J Medical Humanity, Beijing, China

Visiting Professorship, Shanxi Medical University, Taiyaun, China

Visiting Professorship, 1st Hospital, Zhengzhou Medical Uni, Zhengzhou, China

Visiting Professorship, International Hospital, Beijing, China

Bassam Yaghmour, MD

Chest Foundation Travel Award, American College of Chest Physician (FCCP), San Antonio, TX

Honor Teaching Faculty of Second Annual So Cal PCCM Fellows EBUS Course, USC

Recognition for exceptional patient care in ICU, USC

Recognition as a leader in Chest/Honor for Excellence,

Dedication and Leadership in Chest, Fellow of American College of Chest Physician (FCCP), San Antonio, TX

Southern California Rising Star Physician, Super Doctor Magazine, LA Times, Los Angeles, CA

SuperDoctors Southern California Magazine Recognition

Richard Barbers, M.D.

Ahmet Baydur, M.D.

Richard Lubman, M.D.

Bassam Yaghmour, M.D.

Zea Borok, M.D.

Ching-Fei Chang, M.D.

Renli Qiao, M.D.

Ricardo Juarez, M.D.

Janice Liebler, M.D.

Adupa Rao, M.D.

Rheumatology

The Division of Rheumatology is focused on patient care, education, and research. On the research front, the Division has historically been strong in the area of systemic lupus erythematosus (SLE). On the patient care front, the Division provides broad clinical services at Los Angeles County + USC Medical Center (LAC+USC) and Keck Hospital of USC (KH). On the education front, the Division leverages the diverse clinical resources of LAC+USC, Rancho Los Amigos (RLA), and KH to provide outstanding training for medical students, Internal Medicine residents, and Rheumatology fellows. Children's Hospital of Los Angeles (CHLA), a USC-affiliated institution, serves as an invaluable resource for pediatric rheumatology. The Division's many accomplishments during the past year reflect the skills and creativity of dedicated faculty.

Physicians handle approximately 10,000 outpatient visits annually. In addition, they consult on 500+ inpatients at LAC+USC each year and continue to have an active working relationship with the Department of Orthopedics at the Arthritis Service at RLA in the management of patients needing joint replacement and rehabilitation.

Private Practice

Faculty treat more than 100 different types of arthritis and rheumatic conditions at the USC Healthcare Center and satellite offices. More than 5,000 patients are seen each year. Physicians develop and present an annual community education symposium on rheumatic diseases. The Rheumatology faculty continues to provide oversight to the unique rehabilitation and chronic care services offered at RLA.

Educational Activities

The Division of Rheumatology is strongly committed to the education of medical students, house staff, and postgraduate fellows. The curriculum for house staff and fellows is continually updated to reflect new insights into pathogenesis and treatment of rheumatic diseases.

Dr. Elizabeth Ortiz directs the Rheumatology Fellowship Training Program. The Rheumatology Fellowship emphasizes patient care for a broad range of rheumatic diseases and understanding



William Stohl, MD, PhD

Division Chief

Professor of Medicine

Clinical Activities**LAC+USC Medical Center**

The clinical service consists of active inpatient and outpatient consultation services, including two general Rheumatology outpatient clinics per week supervised by Rheumatology faculty, four general Rheumatology outpatient clinics staffed entirely by Rheumatology faculty, and one clinic specifically for patients requiring ultrasonographic evaluation, supervised by Rheumatology faculty.



Division of Rheumatology Faculty



Elizabeth Ortiz, MD, consults with a patient at LAC+USC

The Division of Rheumatology is strongly committed to the education of medical students, house staff, and postgraduate fellows. The curriculum for house staff and fellows is continually updated to reflect new insights into pathogenesis and treatment of rheumatic diseases.

Dr. Elizabeth Ortiz directs the Rheumatology Fellowship Training Program. The Rheumatology Fellowship emphasizes patient care for a broad range of rheumatic diseases and understanding the role of the immune system in the pathogenesis of autoimmune diseases. New and expanded programs in musculoskeletal ultrasonography, led by Dr. Shuntaro Shinada, highlight the Division's commitment to being at the educational forefront of Rheumatology.

The research component of the fellowship combines the expertise of a team of basic science-oriented faculty and clinical faculty with the exceptional resources in rheumatic diseases available at teaching hospitals. The research laboratories occupy ~1,500 square feet of space and are located in the Hoffman Medical Research Building, in close physical proximity to LAC+USC and KH.

Research Activities

Dr. Stohl continues to direct several clinical trials to study the effectiveness of various novel B cell-targeting biologic agents in patients with SLE. SLE is a disorder of generalized autoimmunity in which immune regulation fails. Drs. Stohl and Jacob have taken advantage of the extraordinary clinical and research resources at the USC

Health Sciences Campus to study immune regulation in human SLE. Dr. Stohl's efforts are primarily focused on B cells, while Dr. Jacob's focus is primarily on genetics. The Division's research activities are not limited to SLE. Drs. Arkfeld, Christianakis, Ehresmann, Ortiz, Panush, Savvas, and Shinada have been investigating new strategies to treat patients with rheumatoid arthritis and other inflammatory arthritides. In addition, Dr. Stohl maintains an ongoing collaboration with investigators in the Department of Ophthalmology to examine the early events in Sjögren's syndrome.

Division Accomplishments

The Division of Rheumatology celebrates several accomplishments in 2018:

- A patient-oriented conference at USC in May hosted by USC Rheumatology faculty had 200 in attendance.
- A community physician-oriented conference at USC in October hosted by USC Rheumatology faculty had 200+ in attendance.
- 100% pass rate by Rheumatology fellowship graduates on the ABIM exam in Rheumatology.
- Of 130 applicants to the Rheumatology fellowship program, the division interviewed 21, and matched with the #1, 2, and 5 candidates. USC Rheumatology has become highly attractive to fellowship applicants.
- The division Received grant support from PUMA and Selena Gomez fund to support ongoing SLE research.

FACULTY

Professor

Daniel G. Arkfeld, MD
David A. Horwitz, MD
Chaim O. Jacob, MD, PhD
Richard S. Panush, MD
Francisco P. Quismorio, Jr., MD
William Stohl, MD, PhD

Associate Professor

Glenn R. Ehresmann, MD

Assistant Professor

Stratos Christianakis, MD
Tracy Nguyen-Oghalai, DO
Elizabeth C. Ortiz, MD
Stavros Savvas, MD
Shuntaro Shinada, MD

ADMINISTRATOR

Gabriela Gutierrez

LEADERSHIP ORGANIZATION

DEPARTMENT LEADERSHIP

Chair: Hugo Rosen, MD
Vice Chair, Clinical Affairs: Michael Karp, MD
Vice Chair, County Affairs: Ron Ben-Ari, MD
Vice Chair, Educational Affairs: Eric Hsieh, MD
Vice Chair, Quality and Safety: Santhi Kumar, MD
Vice Chair, Translational Research: Lucy Golden, PhD
Senior Associate Chair, Scientific Affairs: Laurie DeLeve, MD, PhD
Associate Chair, Faculty Affairs: Andrew Stolz, MD
Chief of Medicine, Keck Medical Center of USC: John Brodhead, Jr., MD
LAC+USC Service Chief, Department of Medicine: Andrew Young, DO
Strategic Business and Planning Officer: Donna Brown
Director, Accounting: Angie Ibanez
Manager, Research and Financial Reporting: Anh Hwang

DIVISION CHIEFS

Cardiovascular Medicine: Ray Matthews, MD
Endocrinology and Diabetes: Thomas Buchanan, MD
Gastrointestinal and Liver Diseases: Neil Kaplowitz, MD
Geriatric, Hospital, Palliative and General Internal Medicine: Michael Karp, MD
Hematology: Preet Chaudhary, MD, PhD
Infectious Diseases: Fred Sattler, MD
Nephrology and Hypertension: Kenneth Hallows, MD, PhD
Oncology: Darcy Spicer, MD
Pulmonary, Critical Care and Sleep Medicine: Zea Borok, MD
Rheumatology: William Stohl, MD, PhD

DIVISION ADMINISTRATION

Cardiovascular Medicine: Jasmin Cortes
Endocrinology and Diabetes: Roxanne Odom
Gastrointestinal and Liver Diseases: Maria Vidrio
Geriatric, Hospital, Palliative and General Internal Medicine: Jennifer Severa
Hematology: Janette España
Infectious Diseases: Erika Anaya
Nephrology and Hypertension: Jennifer Severa
Oncology: Timothy Chung
Pulmonary, Critical Care and Sleep Medicine: Ian Quiza
Rheumatology: Gabriela Gutierrez

“Our mission is to train the next generation of leaders through world-class patient care, career development and research.”

- Hugo Rosen, MD, Chair, Department of Medicine



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