

A photograph of the Baylor St. Luke's Medical Center building, a large glass skyscraper reflecting the sky and clouds. The building is the central focus of the image. In the top left corner, there is a dark blue rectangular box containing the text 'Baylor College of Medicine'. At the bottom of the image, there is a teal horizontal band containing the text '2022 ANNUAL REPORT'.

Baylor
College of
Medicine

Baylor St. Luke's
Medical Center

DEPARTMENT OF MEDICINE

2022 ANNUAL REPORT

The Margaret M. and Albert B. Alkek
DEPARTMENT OF MEDICINE
ACADEMIC ANNUAL REPORT 2022

Baylor College of Medicine

CHAIR'S MESSAGE

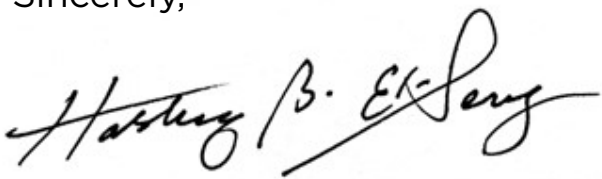
Dear Colleagues:

It is my pleasure to present to you the Department of Medicine's annual report for the year 2022. I am proud to say that we have achieved many significant milestones in the past year.

In the past year, we have made strategic investments in research, clinical care programs, medical education and training. These investments have allowed us to expand our capabilities and improve our offerings, which has resulted in a stronger competitive position for our patients, trainees and workers.

Looking ahead, we are optimistic about the future and are confident in our ability to continue delivering value to our patients and shareholders. We remain committed to innovation, integrity and excellence in our business practices and we are excited about the opportunities that lie ahead.

Sincerely,

A handwritten signature in black ink, reading "Hashem B. El-Serag". The signature is fluid and cursive, with the first name "Hashem" and last name "El-Serag" being the most prominent parts.

Hashem B. El-Serag, M.D., M.P.H.



Hashem B. El-Serag
M.D., M.P.H.

2022 ORGANIZATIONAL OVERVIEW

CHAIR

Hashem B. El-Serag, M.D., M.P.H.

OFFICE OF THE CHAIR

Vice Chair for Clinical Affairs

Vice Chair for Education

Vice Chair for Faculty and Staff Development

Vice Chair for Harris Health System/Ben Taub Hospital

Vice Chair for Quality Improvement and Innovation

Vice Chair for Research

Vice Chair for Veterans Affairs

Mandeep Bajaj, M.B.B.S.

Richard J. Hamill, M.D.

Sandra Haudek, Ph.D.

Hemant Roy, M.D.

Kyler Godwin, Ph.D.

Rolando Rumbaut, M.D., Ph.D.

Biykem Bozkurt, M.D., Ph.D.

SECTIONS

Cardiology

Cardiovascular Research

Endocrinology, Diabetes, and Metabolism

Epidemiology and Population Sciences

Gastroenterology and Hepatology

General Internal Medicine

Geriatrics and Palliative Medicine

Health Services Research

Hematology and Oncology

Immunology, Allergy, and Rheumatology

Infectious Diseases

Nephrology

Pulmonary, Critical Care and Sleep Medicine

Transition Medicine

Chief of Section

Christie Ballantyne, M.D.

Christie Ballantyne, M.D.

Mark Herman, M.D.

Christopher Amos, Ph.D.

Fasiha Kanwal, M.D., M.S.H.S.

Joslyn Fisher, M.D., M.P.H.

Aimee Garcia, M.D.

Laura Petersen, M.D., M.P.H., F.A.C.P.

Martha Mims, M.D.

Rashmi Maganti, M.D.

Thomas Giordano, M.D., M.P.H.

Wolfgang Winkelmayer, M.D., Sc.D.

Ivan Rosas, M.D.

Cynthia Peacock, M.D.

The Department of Medicine at Baylor College of Medicine is the professional home to over 1,800 professionals distributed across 14 sections. We have campus sites at Baylor St. Luke's Medical Center, the McNair Campus, Michael E DeBakey VA Medical Center, Harris Health System, Texas Children's Hospital, and the Pavilion for Women. We also have strong associations with numerous centers, programs, and organized research units. Our team is thrilled to celebrate our departmental achievements in research, patient care, and medical education and training.

THE DEPARTMENT OF MEDICINE

RESEARCH

In 2022, the research efforts of our department faculty were supported by \$120.3M in total extramural research funding including:

- \$77.2M from the NIH
- \$8.5M from the Veteran's Administration
- \$12.2M from other federal agencies
- \$17.7M from state and other non-federal sources
- \$4.7M from industry support

Two of our sections have NIH T32 grants to support research training in the fields of gastroenterology and infectious diseases.

CLINICAL CARE

Our physicians practice in Baylor St. Luke's Medical Center, the McNair Campus, Ben Taub Hospital, Michael E. DeBakey VA Medical Center and Houston Methodist Hospital. Many specialty and subspecialty services provided at these locations are nationally recognized as sites of premier clinical quality.

Patients receive state-of-the-art consultations, diagnoses and compassionate care from our world-renowned clinical staff. Our doctors specialize in diagnosing and treating various diseases ranging from heart disease, diabetes and allergies to breast cancer and cystic fibrosis. Teens with developmental disabilities transitioning into adult care receive personalized, quality care and social services through our unique Transition Medicine group.

EDUCATION

The Department of Medicine's education efforts train the next generation of leaders in medicine through medical school, graduate medical training, fellowships and internships. The Department of Medicine provides undergraduate medical education (UME) students a balance of training, exposure, and experience, which prepares them for graduate programs. Our faculty teaches two-thirds of the UME courses. Students first attend foundational sciences curriculum courses and then their clinical curriculum courses. Students choose one sub-internship, seven core clerkships and five or six clinical electives.

Students within the Internal Medicine sub-internship develop skills required for their internship. During these rotations, medical students experience increased autonomy, acting as interns supervised directly by senior residents and the attending physician. Students hone in on their history and physical skills, write orders and independently develop diagnostic and therapeutic plans. They expand their medical knowledge by using experiential and self-directed learning.

Our residencies are authorized by the Accreditation Council for Graduate Medical Education and its respective Residency Review Committees. We enroll highly competitive applicants each year and continue to match outstanding residents. Our graduates become leaders in Internal Medicine and its specialties, both academically and in clinical practice.

Beyond residency training, the Department of Medicine offers fellowships for two to four years of training in each major subspecialty, such as gastroenterology, cardiovascular disease, etc. This experience allows physicians to learn unique concepts, information and procedures for a particular subspecialty, with an opportunity to research if desired. Our department has more than 220 residents and more than 150 fellows.

Affiliations with leading research and healthcare institutions in the Texas Medical Center provide access to diverse people and resources. Our students and trainees can access numerous patients during these clerkships in various settings through our affiliation with eight leading healthcare institutions—all located in the world's largest medical center.

SECTION OF CARDIOVASCULAR RESEARCH

SECTION ACCOMPLISHMENTS

- The Cardiovascular Research section is ranked #17 nationally by *U.S. News and World Report* for best global universities for cardiac and cardiovascular systems, ranked #20 for publications, and #15 for citations.
- The Expertscape publications rankings globally #9 LDL lipoprotein, #20 hyperlipidemias, #29 atherosclerosis, #9 ezetimibe, #16 anti-cholesterol emic agents and #21 omega 3 fatty acids.
- The section received 17 new grants, including 7 NIH grants, with combined total funding of \$10,790,273.
- The grants awarded include AHA Established Investigator Award to Dr. Na Li and ADA award to new faculty member, Dr. Layla Abushamat.
- The section received the Common Spirit Physician Enterprise Vision Award for Academic Excellence Award for precision medicine cardio-genomics Heart Care pilot program.
- Outstanding academic productivity included 207 journal articles published this year, including 73 in journals with an impact factor >10.



SECTION CHIEF
Christie M. Ballantyne, M.D.

FACULTY

Section Leadership

- Christie M. Ballantyne, M.D., Section Chief and Division Chief, Atherosclerosis and Vascular Medicine
- Mark L. Entman, M.D., Division Chief, Cardiovascular Sciences
- Addison A. Taylor, M.D., Ph.D., Division Chief, Hypertension and Clinical Pharmacology
- Miguel A. Cruz, Ph.D., Division Chief, Thrombosis Research
- Vijay Nambi, M.D., Program Director, Lipids and Atherosclerosis/Preventive Cardiology Fellowship

FACULTY

Division of Atherosclerosis and Vascular Medicine

Professor

- Christie M. Ballantyne, M.D.
- Salim S. Virani, M.D., Ph.D.
- Joel D Morrisett, Ph.D.
- Louis C. Smith, Ph.D.
- Chao-Yuh Yang, Ph.D.

Professor Emeritus

- John P. Foreyt, Ph.D.

Associate Professor

- Ron C. Hoogeveen, Ph.D.
- Na Li, Ph.D.
- Vijay Nambi, M.D., Ph.D.
- Elizabeth M. Vaughan, D.O., M.P.H., R.D.
- Huaizhu Wu, M.D.

Associate Professor Emeritus

- Peter H. Jones, M.D.

Division of Cardiovascular Sciences

Professor

- Mark L. Entman, M.D.

Professor Emeritus

- Margaret Ann Goldstein, Ph.D.
- Craig J. Hartley, Ph.D.

Assistant Professor

- Xinchun Pi, Ph.D.
- Liang Xie, Ph.D.

Instructor

- Layla A. Abushamat, M.D., M.P.H.
- Hua Mao, Ph.D.

Associate Professor

- Katarzyna A. Cieslik, Ph.D.
- Sandra B. Haudek, MS, Ph.D.
- JoAnn Trial, Ph.D.

Assistant Professor

- Anilkumar K. Reddy, Ph.D.

Division of Hypertension and Clinical Pharmacology

Professor

- James L. Pool, M.D.

- Addison A. Taylor, M.D., Ph.D.

Division of Thrombosis Research

Professor

- Miguel A. Cruz, Ph.D.

Associate Professor

- Vinod Vijayan, Ph.D.

HONORS AND ACHIEVEMENTS

Layla A. Abushamat, M.D., MPH

- Recipient, American Diabetes Association Early Career Abstract Award, Exercise Physiology Interest Group, for "Age and Diabetes Interact to Decrease Muscle Mitochondrial Function"

Christie M. Ballantyne, M.D.

- Recipient, Common Spirit Physician Enterprise Vision Award for Academic Excellence Award for advancing the practice of medicine through key research or published studies, Physician Enterprise, CommonSpirit Health
- Texas SuperDoctors®, MSP Communications, Castle Connolly Top Doctors
- Highly Cited Researcher, Clarivate, 2021
- World Expert in LDL, triglycerides, lipoprotein(a), and atherosclerosis by Expertscape
- Top Scientist, Research.com
- Senior Guest Editor, *Journal of the American College of Cardiology*
- Executive Council, National Lipid Association

Katarzyna A. Cieslik, Ph.D.

- Invited Lecturer, "Glycine and N-acetyl Cysteine Supplemented Diet Improves Inflammatory-based Fibrosis in the Aging Heart," NIH Resilience Group and Office of Dietary Supplements-sponsored seminar
- Invited Lecturer, "The Aging Heart and Diastolic Dysfunction," 9th Annual Symposium, Cardiovascular Research Institute, BCM
- Invited Lecturer, "Sex-dependent Differences in Cardiac Remodeling and Inflammation in the Aging Mouse Heart," Global Talent in Science Meeting (organized by the University of Alabama at Birmingham)

Miguel A. Cruz, Ph.D.

- Course Director, Immunology (GS-IY-6301), Graduate School of Biomedical Sciences, BCM, 2021-2022
- Graduate student enrollment

Mark L. Entman, M.D.

- Emeritus Fellow, International Society for Heart Research
- Founded the Mark L. Entman Service Award for Excellence in Cardiovascular Education and announced the first recipients, Cardiovascular Research Institute, BCM

Sandra B. Haudek, M.S., Ph.D.

- Chair, Vice Chair Group for Faculty and Staff Development, Department of Medicine, BCM
- Chair, Curriculum and Education Faculty Senate Subcommittee, BCM
- Director, Peer Coaching for Educators Program, Office of Faculty Affairs and Faculty Development, BCM
- Course Director, Foundations Basic to the Science of Medicine (FBSM), School of Medicine, BCM
- Director, Planning Your Career seminar series, Vienna University of Technology, Austria

Na Li, Ph.D.

- Recipient, American Heart Association Established Investigator Award
- Recipient, three new grants totaling \$4,189,300
- Invited Lecturer, "Inflammasomes and Proteostasis: Novel Molecular Mechanisms Associated with Atrial Fibrillation," Heart Rhythm Society Scientific Session 2021
- Invited Lecturer, "Cardiomyocyte inflammasome signaling. Long Range Cardiac Cell-to-Cell Communication and Arrhythmias," Heart Rhythm Society Scientific Session 2021
- Invited Reviewer, NIH TDPS study section

Hua Mao, Ph.D.

- Recipient, Cardiovascular Research Institute 9th Annual Symposium Best Poster Award (junior faculty) for "Bone Morphogenic Protein-binding Endothelial Regulator Regulates Pulmonary Hypertension and Vascular Remodeling"
- First author, article published in *Nature Communication* (journal impact factor: 17.694)

Vijay Nambi, M.D., Ph.D.

- Topic Coordinator, Prevention and Health Promotion, American College of Cardiology Scientific Sessions
- ACC SAP Topic Editor, Prevention
- Fellow, American Society of Preventive Cardiology

Xinchun Pi, Ph.D.

- Recipient, Norton Rose Fulbright Faculty Excellence Award for Teaching and Evaluation, BCM

Elizabeth M. Vaughan, D.O., M.P.H., R.D.

- Promotion to tenured Associate Professor
- Recipient, Norton Rose Fulbright Faculty Excellence Award for Educational Research, BCM

Vinod Vijayan, Ph.D.

- Grant Review Committee Member, Oklahoma Center for the Advancement of Science and Technology, Oklahoma Health Research Program
- NIH Study Section ZRG1 BCMB-G 55: Pilot Projects Investigating Understudied G Protein-Coupled Receptors, Ion Channels, and Protein Kinases

Salim S. Virani, M.D., Ph.D.

- Recipient, President's Service Award, National Lipid Association (in recognition of service and dedication to the Association and for advancing the development of the specialty of clinical lipidology)
- World Expert, Cholesterol, Expertscape
- Recognized among the top 2% of Most Cited Scientists worldwide, PLoS Biology
- Inducted into the Baylor College of Medicine Faculty Chapter of the Alpha Omega Alpha Honor Medical Society
- Top Scientist, Research.com

Huaizhu Wu, M.D.

- Principal Investigator, five year NIH R01 grant
- Senior Author, two peer-reviewed publications
- Senior Author, American Heart Association Scientific Sessions presentation
- Invited Grant Reviewer, three NIH study sections: NMHD (Nutrition and Metabolism in Health and Disease), POM.D. (Pathophysiology of Obesity and Metabolic Disease), and AVI (Atherosclerosis and Vascular Inflammation)
- Invited Lecturer, "Inflammation and immune cells in obesity-linked metabolism," Houston Methodist Hospital Research Institute
- Interviewer, Immunology/Microbiology Graduate Program candidate applicants, BCM

RESEARCH ACTIVITIES

Grants

Layla A. Abushamat, M.D., M.P.H.

- ADA; Adiponectin and Cardiac Function in Type 2 Diabetes: Impact of Exercise Training (ADA Career Development Award); \$135,000

Christie M. Ballantyne, M.D.

- NIH/NHLBI; Atherosclerosis Risk in Communities (ARIC) Study-Coordinating Center; \$2,197,773
- PCORI; BESTMED: Observational Evaluation of Second Line Therapy Medications in Diabetes; \$21,892
- Merck & Co.; A Phase 2b, Randomized, Double-Blind, Placebo-Controlled Study to Evaluate the Efficacy and Safety of MK-0616 in Adults with Hypercholesterolemia; \$74,961
- Novo Nordisk; ZEUS—Effects of Ziltivekimab versus Placebo on Cardiovascular Outcomes in Patients with Established Atherosclerotic Cardiovascular Disease, Chronic Kidney Disease and Systemic Inflammation; \$96,578
- ISIS Pharmaceutical; A Randomized, Double-Blind, Placebo-Controlled, Phase 3 Study of ISIS 678354 Administered Subcutaneously to Patients with Severe Hypertriglyceridemia; \$103,200
- Ionis Pharmaceuticals; An Open-Label Extension Study of AKCEA-APOCIII-LRx Administered Subcutaneously to Patients with Familial Chylomicronemia Syndrome (FCS); \$31,649
- Arrowhead Pharmaceuticals; A Double-Blind, Placebo-Controlled Phase 2b Study to Evaluate the Efficacy and Safety of ARO-APOC3 in Adults with Severe Hypertriglyceridemia; \$82,978

- Arrowhead Pharmaceuticals; A Double-Blind, Placebo-Controlled Phase 2b Study to Evaluate the Efficacy and Safety of ARO-ANG3 in Adults with Mixed Dyslipidemia; \$76,800

Ron Hoogeveen, Ph.D.

- NIH/NHLBI; I Epidemiology of Venous Thrombosis and Pulmonary Embolism; \$221,864
- NIH/NHLBI; Inflammasome Activity as a Potential Contributor to Uremic Cardiomyopathy; \$14,005

Na Li, Ph.D.

- NIH/NHLBI; Cardiac Fibroblast Inflammasome and Atrial Myopathy; \$1,866,500
- NIH/NHLBI; The Role of Gasdermin-D/Interleukin-1 Nexus in Atrial Arrhythmogenesis; \$2,297,800
- TANGO2 Research Foundation; Deciphering the Mechanisms of Tango2 Deficiency Induced Cardiac Arrhythmogenesis; \$25,000

JoAnn Trial, Ph.D.

- Medallion Foundation; Autoantibodies against Advanced Glycation End Product-Modified Molecules; \$65,000

Elizabeth M. Vaughan, D.O., M.P.H., R.D.

- NIH/NIDDK; Evaluating Telementoring to Initiate a Multidimensional Diabetes Program for Latino(a)s in Community Clinics: A Randomized Clinical Trial; \$2,235,103

Huaizhu Wu, M.D.

- NIH/NIA; Inflammation and Insulin Resistance in Aging; \$1,244,170

Publications (60)

- American Heart Journal (IF **5.099**): 3
- American Journal of Emergency Medicine (IF **4.093**): 1
- American Journal of Human Genetics (IF **11.043**): 1
- American Journal of Kidney Diseases (IF **11.072**): 2
- American Journal of Medicine (IF **5.928**): 4
- American Journal of Preventive Medicine (IF **6.604**): 2
- American Journal of Public Health (IF **11.580**): 1
- Atherosclerosis (IF **6.847**): 3
- Biology of Sex Differences (IF **8.811**): 1
- BMJ Open Diabetes Research & Care (IF **4.179**): 2
- Cardiovascular Research (IF **13.081**): 3
- Cell Reports (IF **9.995**): 1
- Cells (IF **7.666**): 1
- Circulation (IF **39.918**): 6
- Circulation: Cardiovascular Interventions (IF **7.514**): 1
- Circulation: Cardiovascular Quality and Outcomes (IF **8.271**): 4
- Circulation: Genomic and Precision Medicine (IF **7.465**): 1
- Circulation: Heart Failure (IF **10.447**): 1
- Clinical Journal of the American Society of Nephrology (IF **10.671**): 2
- Critical Care Medicine (IF **9.296**): 1
- Current Atherosclerosis Reports (IF **5.967**): 6
- Current Problems in Cardiology (IF **16.464**): 7
- Diabetes Care (IF **17.152**): 2
- Diabetologia (IF **10.460**): 1
- EClinicalMedicine (IF **17.033**): 2
- European Heart Journal (IF **35.855**): 3
- European Journal of Preventive Cardiology (IF **8.526**): 5
- Genetics in Medicine (IF **8.864**): 1
- Heart Rhythm (IF **6.779**): 1
- Hypertension (IF **9.897**): 1
- Immunity (IF **43.474**): 1
- Immunology (IF **7.215**): 1
- International Journal of Cardiology (IF **4.039**): 1
- JACC: Basic to Translational Science (IF **9.531**): 2
- JACC: Cardiovascular Imaging (IF **16.051**): 1
- JACC: Heart Failure (IF **12.544**): 1
- JAMA Cardiology (IF **30.154**): 5
- JAMA Network Open (IF **13.366**): 2
- Journal of Cardiac Failure (IF **6.592**): 2
- Journal of Clinical Lipidology (IF **5.365**): 6
- Journal of General Internal Medicine (IF **6.473**): 1
- Journal of Physiology (IF **6.228**): 1

- Journal of the American College of Cardiology (IF **27.203**): 11
- Journal of the American Heart Association (IF **6.106**): 17
- Journal of the American Society of Echocardiography (IF **7.722**): 1
- Journal of the American Society of Nephrology (IF **14.978**): 2
- Mayo Clinic Proceedings (IF **11.104**): 2
- Medical Clinics of North America (IF **6.912**): 1
- Nature Communications (IF **17.694**): 1
- Nature Reviews Cardiology (IF **49.421**): 1
- Nephrology Dialysis Transplantation (IF **7.186**): 1
- Obesity (IF **9.298**): 3
- Preventive Medicine (IF **4.637**): 2
- Progress in Cardiovascular Diseases (IF **11.278**): 11
- Redox Biology (IF **10.787**): 1
- Science Advances (IF **14.972**): 1
- Science Translational Medicine (IF **19.359**): 1
- Scientific Reports (IF **4.996**): 2
- Stroke (IF **10.170**): 1
- Telemedicine Journal and e-Health (IF **5.033**): 1

Books and Book Chapters

Layla A. Abushamat, M.D., M.P.H.

- Diabetes Management During Pregnancy. In: *Diabetes Secrets*
- Diabetes Management: Lifestyle Measures—Exercise. In: *Diabetes Secrets*

Christie M. Ballantyne, M.D.

- Hypercholesterolemia. In: *Cardiovascular Risk Assessment in Primary Prevention*

Na Li, Ph.D.

- Cardiac Inflammasome and Arrhythmia. In: *Cardiovascular Signaling in Health and Disease*

Vijay Nambi, M.D., Ph.D.

- Hyperlipidemia. In: *Cardiology Secrets* (6th ed)

Salim S. Virani, M.D., Ph.D.

- Prevention: Atherosclerotic Cardiovascular Disease Risk Assessment. In: *Adult Clinical Cardiology Self-Assessment Program (ACCSAP) 2022*
- Cardiovascular Risk Assessment in Primary Prevention. In: *Cardiovascular Risk Assessment in Primary Prevention*
- Hyperlipidemia. In: *Cardiology Secrets* (6th ed)

CENTERS

Center for Cardiometabolic Disease Prevention

The Center for Cardiometabolic Disease Prevention expands the scope and depth of research, clinical and educational activities related to the prevention and treatment of atherosclerotic cardiovascular disease to improve cardiometabolic health and healthy aging. The Center includes faculty in the Division of Atherosclerosis and Vascular Medicine as well as the Section of Endocrinology, Diabetes, and Metabolism to target the interrelated risk factors of cardiometabolic disease. Cardiometabolic diseases such as cardiovascular disease and diabetes are associated with a common constellation of risk factors, including dyslipidemia, hypertension, obesity, inflammation and insulin resistance. In addition, diabetes is a risk factor for cardiovascular disease, and cardiovascular disease is the most common cause of death in individuals with diabetes. Because of their shared etiology, cardiometabolic diseases require a coordinated approach for effective prevention and treatment. Patient care encompasses the spectrum of cardiometabolic health and disease, and researchers in the center investigate biomarkers in known and potential causal pathways of cardiometabolic disease to identify additional risk factors that may lead to the development of novel therapeutic targets. The collaborative environment provides trainees with a broad range of experiences and a solid foundation in all aspects of cardiometabolic disease.

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