

SECTION OF CARDIOVASCULAR RESEARCH



SECTION CHIEF

Christie M. Ballantyne, M.D.

The Section of Cardiovascular Research had another successful year. With 126 papers published, including 47 manuscripts in journals with impact factor >10, the section continues to be a national leader in cardiovascular research. Key research studies include the first clinical trial to show the cardiovascular benefits of eicosapentaenoic acid in patients with elevated triglycerides who were at high risk for atherosclerotic cardiovascular disease events already treated with statins. The Center for Cardiometabolic Disease Prevention is conducting early-phase research trials targeting severe lipid disorders with biotechnology agents including monoclonal antibodies and antisense oligonucleotides.

This annual report outlines some of the achievement and recognitions received in 2019.

A handwritten signature in black ink that reads "Christie M. Ballantyne". The signature is fluid and cursive.

Christie M. Ballantyne, M.D.

Professor of Medicine

Chief, Section of Cardiovascular Research

HIGHLIGHTS

New NIH grants

Mark L. Entman, M.D., and **Katarzyna A. Cieslik, Ph.D.**, are PIs for an NIH/NIA-funded R01 entitled "Interaction of Mesenchymal and Myeloid Fibroblasts in Inflammatory-Based Fibrosis in the Aging Heart," which examines cellular and molecular interactions between mesenchymal and myeloid fibroblasts and potential rescue approaches to reduce diastolic dysfunction and cardiac fibrosis in the aging heart. **Joann Trial, Ph.D.**, is a coinvestigator.

Na Li, Ph.D., is a PI for an NIH/NHLBI-funded R01 entitled "Mechanisms Underlying Atrial Fibrillation Associated with Chronic Kidney Disease," which examines molecular and cellular mechanisms underlying the development of atrial fibrillation as a result of inflammasome activation in atrial myocytes in mice with chronic kidney disease.

Christie M. Ballantyne, M.D., and **Ron C. Hoogveen, Ph.D.**, are coinvestigators for an NIH/NHLBI-funded R01 entitled "Elucidating the Role of Adipokines in Mediating and Predicting HF Associated with Obesity."

Ron C. Hoogeveen, Ph.D., is a coinvestigator for an NIH/NCI-funded R01 entitled "Endogenous Hormones and Postmenopausal Breast Cancer: Etiologic Insights and Improving Risk Prediction."

Publications in High-Impact Journals

New England Journal of Medicine [IF: **70.67**]: 4

Nature Genetics [IF: **25.455**]: 1

European Heart Journal [IF: **23.239**]: 5

Circulation [IF: **23.054**]: 13

Cell Stem Cell [IF: **21.464**]: 1

Journal of the American College of Cardiology [IF: **18.639**]: 12

Circulation Research [IF: **15.862**]: 3

Diabetes Care [IF: **15.27**]: 1

Endocrine Reviews [IF: **15.167**]: 1

JAMA Cardiology [IF: **11.866**]: 6

American Journal of Human Genetics [IF: **9.924**]: 1

FACULTY

Atherosclerosis and Vascular Medicine

Division Chief

- Christie M. Ballantyne, M.D.

Primary Faculty

- John P. Foreyt, M.D.
- Ron C. Hoogeveen, M.D.
- Peter H. Jones, M.D.
- Na Li, M.D.
- Hua Mao, M.D.
- Vijay Nambi, M.D.
- Xinchun Pi, M.D.
- Salim S. Virani, M.D.
- Huaizhu Wu, M.D.
- Liang Xie, M.D.

Emeritus Faculty

- Joel D. Morrisett, Ph.D.
- Louis C. Smith, Ph.D.
- Chao-Yuh Yang, Ph.D.

Cardiovascular Sciences

Division Chief

- Mark L. Entman, M.D.

Primary Faculty

- Katarzyna A. Cieslik, M.D.
- Sandra B. Haudek, M.D.
- Anilkumar K. Reddy, M.D.
- Joann Trial, M.D.

Joint Faculty

- Robert M. Bryan Jr., M.D.
- George E. Taffett, M.D.

Emeritus Faculty

- Margaret A. Goldstein, M.D.

- Craig J. Hartley, M.D.
- Lloyd H. Michael, M.D.

Adjunct Faculty

- Oliver Dewald
- Nikolaos G. Frangogiannis, M.D.

Hypertension and Clinical Pharmacology

Division Chief

- Addison A. Taylor, M.D.

Primary Faculty

- James L. Pool, M.D.

Joint Faculty

- William E. Fann, M.D.

Thrombosis Research

Interim Division Chief

- Miguel Cruz, Ph.D.

Primary Faculty

- Vinod Vijayan, Ph.D.

Joint Faculty

- Trung C. Nguyen, M.D.
- Mona D. Shah, M.D.
- C Wayne Smith, M.D.
- Jun Teruya, M.D.
- Perumal Thiagarajan, M.D.

Adjunct Faculty

- Jing-Fei Dong, M.D.
- Michael H. Kroll, M.D.

Emeritus Faculty

- Joel Moake, M.D.

RESEARCH ACTIVITIES

Ballantyne, Christie, M.D.

- The Familial Hypercholesterolemia Foundation CASCADE-FH Registry; Duke University; \$20,000
- Measurement of Galectin-3 at Visit 4 and Visit 5 for the Full ARIC cohort; Abbott Laboratories; \$31,500
- hsTroponin Screening at Visit 4 and Visit 5 for the Full ARIC Cohort; Abbott Laboratories; \$371,965
- A Randomized, Double-blind, Placebo-controlled, Dose-ranging Phase 2 Study of ISIS 681257 Administered Subcutaneously to Patients with Hyperlipoproteinemia(a) and Established Cardiovascular Disease (CVD); Akcea therapeutics; \$206,886
- A Randomized, Double-blind, Placebo-controlled, Dose-ranging Phase 2 Study of ISIS 678354 Administered Subcutaneously to Patients with Hypertriglyceridemia and Established Cardiovascular Disease; Akcea Therapeutics; \$206,886
- A Multiple, Open-Label, Single-Arm, Extension to Study to Assess Long-Term Safety of Evolocumab Therapy in Patients with Clinically Evident Cardiovascular Disease; Amgen Inc; \$45,670
- A randomized, Double-Blind, Placebo-Controlled Study to Assess the Effects of Bempedoic Acid 180mg + Ezetimibe 10mg Fixed-dose Combination Compared to Bempedoic Acid, Ezetimibe, and Placebo Alone in Patients treated With Maximally Tolerated Statin Therapy; Esperion Therapeutics; \$21,194
- A Multicenter Open-Label Extension Study to Assess the Long-term Safety and Efficacy of Bempedoic Acid (ETC-1002) 180mg; Esperion Therapeutics; \$22, 400
- A Randomized, Double-Blind, Placebo-Controlled, Event-Driven Trial of Quarterly Subcutaneous Canakinumab in the Prevention of Recurrent Cardiovascular Events among Stable Post-Myocardial Infarction Patients with Elevated hsCRP; Novartis Pharmaceutical Company; \$125,877
- A Randomized, Placebo-Controlled Study of the Safety and Efficacy Following Repeat-Dose Administration of Evinacumab (Anti-ANGPTL3) in Patients with Severe Hypertriglyceridemia at Risk for Acute Pancreatitis; Regeneron Pharmaceuticals; \$65,000
- Profiling Cardiovascular Events and Biomarkers in the Very Old to Improve Personalized Approaches for the Prevention of Cardiac and Vascular Disease; NIH/NHLBI (R01); \$549,802
- Atherosclerosis Risk in Communities Study-Field Centers; NIH; \$311,673
- Monocyte Activation and the Role of CD11c in Obesity-Linked Metabolic Syndrome; NIH/NHLBI (R01); \$241,769
- Diabetes and Prediabetes in Older Adults; NIH/NIDDK (R01); \$36,371
- miRNAs, Whole Diet, and Coronary Heart Disease; NIH/NHLBI (R56); \$12,147
- Elucidating the Role of Adipokines in Mediating and Predicting HF Associated with Obesity; NIH/NHLBI (R01); \$185,441

Brunner, Gerd, M.D.

- Microvascular Perfusion Assessment of Ischemic Diabetic Ulcers Using MRI; NIH/NHLBI (K25); \$154,958
- MRI Based Calf Muscle Perfusion to Assess Patients with Symptomatic PAD; NIH/NHLBI (R01); \$350,417

- Biomarker Guided Therapies in Stage A/B Heart Failure; VA office of Research and Development; \$14,189

Cieslik, Katarynza, M.D.

- Interaction of Mesenchymal and Myeloid Fibroblasts in Inflammatory-Based Fibrosis in the Aging Heart; NIH/NIA; \$299,467
- Defining the Trafficking of TGF Beta Protein Receptor in Aged Cardiac Fibroblasts; The Medallion Foundation; \$82,500
- The Role of T and B Lymphocytes in the Development of Fibrosis in the Aging Heart; The Medallion Foundation; \$50,000
- Researching the Aging Heart; The Curtis and Doris K. Hankamer Foundation; \$40,000

Cruz, Miguel, M.D.

- Microvascular Thrombosis in Systemic Inflammation; NIH/NIDDK (U01); \$183,401
- Role of Vimentin in Thrombosis and Stroke; NIH/NNDS (R01); \$381,958

Entman, Mark, M.D.

- Interaction of Mesenchymal and Myeloid Fibroblasts in Inflammatory-Based Fibrosis in the Aging Heart; NIH/NIA; \$299,467
- Researching the Aging Heart; The Curtis and Doris K. Hankamer Foundation; \$40,000

Foreyt, John, M.D.

- Study of Health Outcomes of Weight-Loss (Look AHEAD) Trial; NIH/NIDDK; \$45,309
- Vitamin D to Prevent Type 2 Diabetes (D2d Study); NIH/NIDDK (U01); \$45,309

Hoogeveen, Ron, M.D.

- Lipoprotein Subfractions Study: the ARIC Study; Denka Seiken Co, Ltd; \$56,750
- ARIC Study – Field Centers; NIH/NHLBI; \$311,673
- Diabetes and Pre-diabetes in Older Adults; NIH/NIDDK (R01); \$200,000
- Profiling Cardiovascular Events and Biomarkers in the Very Old to Improve Personalized Approaches for the Prevention of Cardiac and Vascular Disease; NIH/NHLBI (R01); \$549,802
- Elucidating the Role of Adipokines in Mediating and Predicting HF Associated with Obesity; NIH/NHLBI (R01); \$185,441
- Endogenous Hormones and Postmenopausal Breast Cancer: Etiologic Insights and Improving Risk Prediction; NIH/NCI; \$76,772

Jones, Peter H., M.D.

- A Multi-center, Prospective, Randomized, Double-Blind, Placebo-Controlled, Parallel-Group Study to Evaluate the Effect of AMR101 on Cardiovascular Health and Mortality in Hypertriglyceridemic Patients with Cardiovascular Disease or at High Risk for Cardiovascular Disease: REDUCE-IT; Amarin Pharmaceuticals; \$25,000

Li, Na, M.D.

- Inflammasome Mediated Pathogenesis of Atrial Fibrillation; NIH/NHLBI (R56); \$250,000
- The Role of Inflammasome in the Pathogenesis of Atrial Fibrillation; NIH/NHLBI (R01); \$379,069
- Mechanisms Underlying Atrial Fibrillation Associated with Chronic Kidney Disease; NIH/NHLBI (R01); \$319,145

- Novel Roles of FE^{2+} , 2-Oxoglutarate-Dependent Dioxygenases in Cardiac Function; NIH/NHLBI (R01); \$250,000
- Pitx2 in Atrial Fibrillation; NIH/NHLBI (R01); \$327,304

Nambi, Vijay, M.D.

- Biomarker Guided Therapies in Stage A/B Heart Failure; VA Office of Research and Development; \$14,189
- TIMI 55/REVEAL: A Large Scale, Randomized, Placebo-Controlled Trial of the Clinical Effects of Anacetrapib among People with Established Vascular Disease; Brigham and Women's Hospital; \$150,000

Pi, Xinchun, M.D.

- LRP1 and Endothelial Function; NIH/NHLBI; \$250,000
- Signaling in Endothelial Growth and Angiogenesis; NIH/NHLBI (R01); \$250,000

Trail, Joann, M.D.

- Interaction of Mesenchymal and Myeloid Fibroblasts in Inflammatory-Based Fibrosis in the Aging Heart; NIH/NIA; \$299,467
- Researching the Aging Heart; The Curtis and Doris K. Hankamer Foundation; \$40,000

Vijayan, Vinod, M.D.

- Serine/Threonine Phosphatases and Platelet Physiology; NIH/NHLBI (R01); \$250,000
- PP2B Modulates PhoA Activation and Platelet Function by Targeting RhoGDI; American Heart Association; \$70,000
- Microvascular Thrombosis in Systemic Inflammation; NIH/NIGMS (R01); \$220,000
- Aspirin-PC for Chemoprevention of Colorectal Cancer; NIH/NCI (R42); \$86,000

Virani, Salim, M.D.

- Determining and Targeting Reasons for Low Statin Use to Improve Guideline-Concordant Statin Therapy in High-Risk Patients; VA Merit Award; \$1,097,703

Wu, Huaizhu, M.D.

- Monocyte Activation and the Role of CD11c in Obesity-Linked Metabolic Syndrome; NIH/NHLBI (R01); \$241,769
- ApoCII, Triglyceride-Rich Lipoproteins and Atherogenesis; American Heart Association; \$140,000
- Macrophage/Dendritic Cell Activation and Inflammation in Diet-Induced Obesity; American Diabetes Association; \$104,546

Xie, Liang, M.D.

- Novel Roles of FE^{2+} , 2-Oxoglutarate-Dependent Dioxygenases in Cardiac Function; NIH/NHLBI (R01); \$250,000
- LRP1 and Endothelial Function; NIH/NHLBI (R01); \$250,000
- Signaling in Endothelial Growth and Angiogenesis; NIH/NHLBI (R01); \$250,000

HONORS AND AWARDS

Ballantyne, Christie, M.D.

- Castle Connolly Top Doctors: Southeast Texas, Castle Connolly Medical Ltd., 2018
- Castle Connolly Top Doctors in Texas for the Speciality of Cardiovascular Disease, Castle Connolly Medical Ltd., 2018
- Castle Connolly Top Doctors in America, Castle Connolly Medical Ltd., 2019
- 2018 Highly Cited Researcher presented by Clarivate Analytics, Web of Science, top 1% of researchers most cited
- *U.S. News & World Report* list of top doctors, 2019
- Fellow, American Society for Preventive Cardiology, 2019
- Michael E. DeBakey, M.D., Excellence in Research Award, Baylor College of Medicine, 2019

Entman, Mark, M.D.

- Invited to participate in NIH Cardiac Contractility, Hypertrophy, and Failure (CCHF) Study Section

Haudek, Sandra, M.D.

- Norton Rose Fulbright Faculty Excellence Award for Educational Leadership, 2019
- Norton Rose Fulbright Faculty Excellence Award for Teaching and Evaluation, 2019

Virani, Salim, M.D.

- Article of the Year Award for the Physician Assistant Education Association
- Inducted into Best Doctors database