CARDIO-METABOLIC DISEASE & OBESITY INITIATIVE

Faculty Profiles

JOHNS HOPKINS UNIVERSITY

JOHNS HOPKINS TECHNOLOGY VENTURES

CENTER FOR METABOLISM AND OBESITY RESEARCH (CMOR)

JOHNS HOPKINS TECHNOLOGY VENTURES

JOHNS HOPKINS MEDICINE

Institute for Basic Biomedical Sciences

Michael Wolfgang, Ph.D
Director

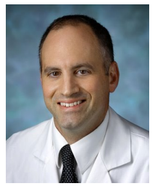
Dipali Sharma, MS, PhD

Oncology
Metabolomics, cancer-obesity connection

Guang William Wong, PhD

Physiology
Adipose/muscle hormones, insulin resistance

Todd Tarquin Brown, MD, PhD



Endocrinology
Diabetes, Lipid disorders

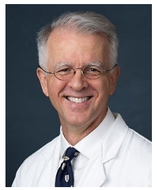
Peter Espenshade, PhD

Cell biology
Cholesterol lipid biosynthesis

Adrian Sandra Dobs, MD, MHS

Endocrinology
Diabetes, hyperlipidemia, gonad dysfunction

Jeffery Hunter Young, MD, MHS



Epidemiology
Insulin resistance, hypertension, CVD

Lili Ayala Barouch, MD

Cardiology
Leptin, b3-adrenergic signaling

JOHNS HOPKINS
TECHNOLOGY VENTURES

METABOLISM AND OBESITY

MICHAEL J. WOLFGANG, PHD

Faculty Webpage
Publications
Grant Information

APPOINTMENTS

Professor, Biological Chemistry

Director, Center for Metabolism and Obesity Research

RESEARCH INTERESTS

- Understanding molecular mechanisms to sense and respond to nutritional/metabolic cues
- Exploring novel neuron-specific enzyme function in metabolic processes

RESEARCH HIGHLIGHTS

- Requirement of hepatic pyruvate carboxylase during fasting, high fat, and ketogenic diet
- mTORC1 activation is not sufficient to suppress hepatic PPARα signaling or ketogenesis
- The role of ethanolamine phosphate phospholyase in regulation of astrocyte lipid homeostasis
- Remodeling glycerophospholipids affects obesity-related insulin signaling in skeletal muscle

OBESITY, METABOLISM AND CANCER

DIPALI SHARMA, MS, PHD

Faculty Webpage
Publications
Grant Information

APPOINTMENTS

Professor, Oncology

Member, Center for Metabolism and Obesity Research

RESEARCH INTERESTS

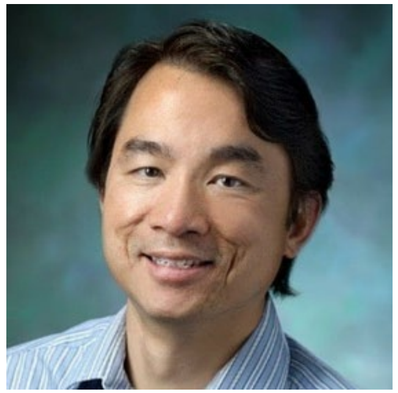
- Understanding the molecular connections between breast cancer and obesity, racial disparities, and microbial dysbiosis
- Developing strategies to abrogate the obesity-breast cancer axis and improving therapeutic responses in obese women

RESEARCH HIGHLIGHTS

- Gut colonization with an obesity-associated enteropathogenic microbe modulates the premetastatic niches to promote breast cancer lung and liver metastasis
- Weight Gain after Hormone Receptor-Positive Breast Cancer
- Hyperleptinemia in obese state renders luminal breast cancers refractory to tamoxifen by coordinating a crosstalk between Med1, miR205 and ErbB
- Concomitant activation of GLI1 and Notch1 contributes to racial disparity of human triple negative breast cancer progression

METABOLIC DISEASES AND OBESITY

GUANG W. WONG, PHD



Faculty Webpage
Publications
Research Grants

APPOINTMENTS

Professor, Physiology

Member, Center for Metabolism and Obesity research

RESEARCH INTERESTS

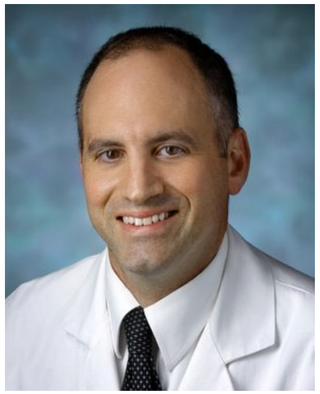
- Endocrine mediators secreted by adipose tissue
- Regulation of fat mass, systemic insulin sensitivity, glucose, and lipid metabolism by circulating factors
- C1q/TNF protein family, PRADC1, CTRP13

RESEARCH HIGHLIGHTS

- CTRP13 ablation improves systemic glucose and lipid metabolism
- Hypermetabolism in mice carrying a near-complete human chromosome 21
- PRADC1: a novel metabolic-responsive secretory protein that modulates physical activity and adiposity
- C1q/TNF-related protein 2 (CTRP2) deletion promotes adipose tissue lipolysis and hepatic triglyceride secretion

DIABETES, LIPID DISORDERS, ENDOCRINOLOGY

TODD TARQUIN BROWN, MD, PHD



Faculty Webpage
Publications
Grant Information

APPOINTMENTS

Professor, Medicine

Member, Center for Metabolism and Obesity research

RESEARCH INTERESTS

- Exploring metabolic, endocrine and skeletal abnormalities in HIV-infected patients
- Understanding the occurrence and prevalence of insulin resistance, diabetes, and anthropometric changes in HIV patients and their relationship to antiretroviral treatment

RESEARCH HIGHLIGHTS

- Skeletal muscle DNA methylation: Effects of exercise and HIV
- CROI 2023: Metabolic and Other Complications of HIV Infection
- Associations of Muscle Density and Area With Coronary Artery Plaque and Physical Function
- Lipid Disorders in People with HIV
- The association of adipose tissue area with subclinical coronary atherosclerosis progression in men with and without HIV

LIPID METABOLISM, CHOLESTEROL, CANCER

PETER ESPENSHADE, PHD

Faculty Webpage
Publications
Grant Information

APPOINTMENTS

Professor, Cell Biology

Associate Dean, Graduate Biomedical Education

Member, Center for Metabolism and Obesity Research

RESEARCH INTERESTS

- Cellular regulation of cholesterol homeostasis and adaptation to hypoxia
- Sterol Regulatory Element Binding Protein (SREBP) control of lipid homeostasis in mammalian cells by regulating cholesterol and fatty acid synthesis

RESEARCH HIGHLIGHTS

- Targeting Stearoyl-CoA Desaturase in Solid Tumors
- Expanding roles for SREBP in metabolism
- Serum lipoprotein-derived fatty acids regulate hypoxia-inducible factor
- Dipyridamole Inhibits Lipogenic Gene Expression by Retaining SCAP-SREBP in the Endoplasmic Reticulum

ENDOCRINOLOGY, DIABETES, HYPERLIPIDEMIA, GONADAL DYSFUNCTION

ADRIAN SANDRA DOBS, MD, MHS

Faculty Webpage
Publications
Grant Information

APPOINTMENTS

Professor, Medicine
Director, Johns Hopkins Clinical Research Network
Member, Center for Metabolism and Obesity Research

RESEARCH INTERESTS

- Understanding the relationship between sex hormones and heart disease
- Male gonadal functional and hormone replacement therapy
- Diabetes and polycystic ovarian syndrome

RESEARCH HIGHLIGHTS

- An Individualized Approach to Managing Testosterone Therapy in the Primary Care Setting
- Analysis of cardiovascular risk factors associated with serum testosterone levels according to the US 2011-2012 National Health and Nutrition Examination Survey
- Pathophysiology, risk factors, and screening methods for prediabetes in women with polycystic ovary syndrome

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CARDIOVASCULAR DISEASE, INSULIN RESISTANCE

JEFFERY HUNTER YOUNG, MD, MHS

Faculty Webpage
Publications
Grant Information

APPOINTMENTS

Associate Professor, Medicine

Member, Center for Metabolism and Obesity Research

RESEARCH INTERESTS

- Genetic epidemiology and novel risk factors for cardiovascular disease
- The roles of hypertension, diabetes, and obesity on cardiovascular disease

RESEARCH HIGHLIGHTS

- Mitochondrial DNA copy number and diabetes: the Atherosclerosis Risk in Communities (ARIC) study
- The Sex and Race Specific Relationship between Anthropometry and Body Fat Composition Determined from Computed Tomography: Evidence from the Multi-Ethnic Study of Atherosclerosis

CARDIOLOGY AND OBESITY

LILI AYALA BAROUCH, MD

Faculty Webpage
Publications
Grant Information

APPOINTMENTS

Professor, Medicine

Director, Sports Cardiology Program

Member, Center for Metabolism and Obesity research

RESEARCH INTERESTS

- Understanding molecular mechanisms to sense and respond to nutritional/metabolic cues
- Exploring novel neuron-specific enzyme function in metabolic processes

RESEARCH HIGHLIGHTS

- Beneficial cardiac effects of caloric restriction are lost with age in a murine model of obesity
- Restoring leptin signaling reduces hyperlipidemia and improves vascular stiffness induced by chronic intermittent hypoxia
- Dependence of β3-adrenergic signaling on the adipokine leptin in cardiac myocytes

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JOHNS HOPKINS
TECHNOLOGY VENTURES

ADDITIONAL FACULTY WITH CARDIO-METABOLIC DISEASE AND OBESITY FOCUS

ENDOCRINOLOGY AND OBESITY

REXFORD S. AHIMA, MD, PHD

Faculty Webpage
Publications
Research Grants

APPOINTMENTS

Professor, Medicine

Director, Division of Endocrinology, Diabetes, and Metabolism, Johns Hopkins University School of Medicine

RESEARCH INTERESTS

- Pathogenesis of obesity and diabetes
- Relationship between energy stores and regulation of energy balance in brain
- Understanding the role of adipokines, cytokines and myokines in targeting the brain and peripheral organs to control feeding and metabolism

RESEARCH HIGHLIGHTS

- Inositol polyphosphate multikinase modulates free fatty acids-induced insulin resistance in primary mouse hepatocytes
- Endocrine disorders associated with obesity
- Synergistic Modulation of Inflammatory but not Metabolic Effects of High-Fat Feeding by CCR2 and CX3CR1.

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METABOLIC DISORDERS, DIABETES

DAX FU, PHD

Faculty Webpage
Publications
Grant Information

APPOINTMENTS

Associate Professor, Physiology

RESEARCH INTERESTS

- Structure and function of a human pancreatic zinc transporter for the early diagnosis and treatment of diabetes
- Role of zinc transporter ZnT8 in regulating insulin processing and secretion

RESEARCH HIGHLIGHTS

- Novel autoantibodies to the β-cell surface epitopes of ZnT8 in patients progressing to type-1 diabetes
- Down-regulation of the islet-specific zinc transporter-8 (ZnT8) protects human insulinoma cells against inflammatory stress
- Highly specific monoclonal antibodies for allosteric inhibition and immunodetection of the human pancreatic zinc transporter ZnT8
- Coupling of Insulin Secretion and Display of a Granule-resident Zinc Transporter ZnT8 on the Surface of Pancreatic Beta Cells.
- Lipid-tuned Zinc Transport Activity of Human ZnT8 Protein Correlates with Risk for Type-2 Diabetes.

METABOLISM, DIABETES

LING HE, MD, PHD

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[Publications]
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APPOINTMENTS

Associate Professor, Pediatrics

RESEARCH INTERESTS

- Liver metabolism of glucose and lipids
- Mitochondrial dynamics and respiration through AMPK activation
- Insulin resistance and hepatic steatosis in obesity and type II diabetes

RESEARCH HIGHLIGHTS

- Blocking AMPKαS496 phosphorylation improves mitochondrial dynamics and hyperglycemia in aging and obesity
- Mitochondrial Dynamics during Development
- Far-western Blotting Detection of the Binding of Insulin Receptor Substrate to the Insulin Receptor
- Activation of the canonical ER stress IRE1-XBP1 pathway by insulin regulates glucose and lipid metabolism
- The P300 acetyltransferase inhibitor C646 promotes membrane translocation of insulin receptor protein substrate and interaction with the insulin receptor
- Alterations of Gut Microbiota by Overnutrition Impact Gluconeogenic Gene Expression and Insulin Signaling

CARDIOVASCULAR DISEASE

DAVID A. KASS, MD

Faculty Webpage
Publications
Grant Information

APPOINTMENTS

Professor, Medicine
Abraham and Virginia Weiss Professor of Cardiology
Professor of Biomedical Engineering
Professor of Pharmacology and Molecular Sciences

RESEARCH INTERESTS

- Protein kinase G in heart disease and treatment, Phosphodiesterase inhibitors and heart failure
- Models of obesity, metabolic syndrome, and cardiac stress to identify treatments of heart failure with preserved ejection fraction
- Role of mToR signaling in cardiac disease, TRPC6 and muscular dystrophy
- Sarcomere enhancing molecules and pulmonary hypertension

RESEARCH HIGHLIGHTS

- Transient receptor potential canonical type 6 (TRPC6) O-GlcNAcylation at Threonine-221 plays potent role in channel regulation
- Myocardial Metabolomics of Human Heart Failure With Preserved Ejection Fraction
- Pharmacological TRPC6 inhibition improves survival and muscle function in mice with Duchenne muscular dystrophy
- Single serine on TSC2 exerts biased control over mTORC1 activation mediated by ERK1/2 but not Akt
- Increased Energy Expenditure and Protection From Diet-Induced Obesity in Mice Lacking the cGMP-Specific Phosphodiesterase PDE9

ENDOCRINOLOGY AND OBESITY

ANASTASIA KRALLI, PHD

Faculty Webpage
Publications
Research Grants

APPOINTMENTS

Professor, Physiology

RESEARCH INTERESTS

- Role of estrogen-related receptors in adipose tissue and skeletal muscle
- Therapeutic interventions for states where oxidative metabolism or tissue function are compromised
- Regulatory and transcriptional mechanisms that enable physiologic adaptations

RESEARCH HIGHLIGHTS

- Loss of skeletal muscle estrogen-related receptors leads to severe exercise intolerance
- Perm1 regulates CaMKII activation and shapes skeletal muscle responses to endurance exercise training
- Estrogen-Related Receptors Mediate the Adaptive Response of Brown Adipose Tissue to Adrenergic Stimulation.
- Complementary Roles of Estrogen-Related Receptors in Brown Adipocyte Thermogenic Function.
- Perm1 enhances mitochondrial biogenesis, oxidative capacity, and fatigue resistance in adult skeletal muscle.

ADVANCED HEART FAILURE, CARDIAC TRANSPLANT, CARDIOVASCULAR DISEASE

PRIYA UMAPATHI, MD

Faculty Webpage
Publications

APPOINTMENTS

Assistant Professor, Medicine

RESEARCH INTERESTS

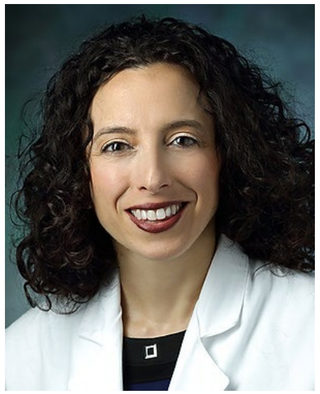
- Cardiac metabolism, glycobiology and proteins
- Therapeutic targets and precision medicine for heart failure
- Inherited cardiomyopathies, cardio-metabolic heart failure
- Cardiac remodeling/energetics and SGLT2 inhibitors
- The Umapathi Cardio-Metabolic Lab

RESEARCH HIGHLIGHTS

- CaMKII as a Therapeutic Target in Cardiovascular Disease
- Excessive O-GlcNAcylation Causes Heart Failure and Sudden Death
- Differential Detection of O-GlcNAcylated proteins in the heart using antibodies

CARDIOVASCULAR DISEASE, LIPID DISORDERS, OBESITY

ERIN MICHOS, MD, MHS



Faculty Webpage
Publications
Grant Information

APPOINTMENTS

Associate Professor, Medicine

Director, Women's Cardiovascular Health Research

RESEARCH INTERESTS

- Cardio-Obstetrics and Cardiovascular Disease in Women
- Advanced Lipid Disorders
- Risk prediction for cardiovascular disease including the use of coronary artery calcium scores, markers of inflammation, and other biomarkers
- Obesity and Cardiometabolic Diseases

RESEARCH HIGHLIGHTS

- Cardiovascular disease prevention in women - the current state in 2023
- Sex-specific differences in cardiovascular risk factors and implications for cardiovascular disease prevention in women
- Inclisiran: A New Strategy for LDL-C Lowering and Prevention of Atherosclerotic Cardiovascular Disease
- Glucagon-like peptide-1 receptor agonists in diabetic kidney disease: A review of their kidney and heart protection
- Role of Glucagon-Like Peptide-1 Receptor Agonists in Achieving Weight Loss and Improving Cardiovascular Outcomes in People With Overweight and Obesity

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JOHNS HOPKINS
TECHNOLOGY VENTURES

CARDIOVASCULAR DISEASE, RISK STRATIFICATION, DYSLIPIDEMIA, MI

CHIADI ERICSON NDUMELE, MD, PHD, MHS

Faculty Webpage
Publications
Research Grants

APPOINTMENTS	Associate Professor, Medicine Robert E. Meyerhoff Assistant Professor
RESEARCH INTERESTS	- Relationship between obesity and cardiovascular disease - Cardio-metabolic disease - Biomarkers and cardiovascular risk assessment
RESEARCH HIGHLIGHTS	- For obese people, an increased risk of 'silent' heart damage, study says - Cardiovascular-Kidney-Metabolic Health: A Presidential Advisory From the American Heart Association - Addressing Cardiovascular Risk in Diabetes: It's More Than the Sugar - Obesity and Subtypes of Incident Cardiovascular Disease - Heart Failure and Obesity: The Latest Pandemic

Cardiovascular epidemiology; Vascular & Kidney diseases

Josef Coresh, MD, PhD

Faculty Webpage
Publications
Research Grants

APPOINTMENTS	Professor, Epidemiology George W. Comstock Professor
RESEARCH INTERESTS	- Chronic Kidney Disease and the Risk of Cardiovascular Disease - Chronic Kidney Disease Prognosis Consortium
RESEARCH HIGHLIGHTS	- Novel Prediction Equations for Absolute Risk Assessment of Total Cardiovascular Disease Incorporating Cardiovascular-Kidney-Metabolic Health: A Scientific Statement From the American Heart Association - Cardiovascular-Kidney-Metabolic Health: A Presidential Advisory From the American Heart Association - Polygenic Risk Scores for Kidney Function and Their Associations with Circulating Proteome, and Incident Kidney Diseases - Chronic Kidney Disease Testing Among Primary Care Patients With Type 2 Diabetes Across 24 U.S. Health Care Organizations

TARGETED DRUG DELIVERY PLATFORMS

KANNAN RANGARAMANUJAM, PHD, MS

Faculty Webpage
Publications
Grant Information

APPOINTMENTS	Professor, Ophthalmology Co-Director, Center for Nanomedicine
RESEARCH INTERESTS	- Targeted drug delivery for ocular and neurodegenerative diseases - Targeted drug delivery using dendrimers
RESEARCH HIGHLIGHTS	- Galactosylated hydroxyl-polyamidoamine dendrimer targets hepatocytes and improves therapeutic outcomes in a severe model of acetaminophen poisoning-induced liver failure - Rationally Designed Galactose Dendrimer for Hepatocyte-Specific Targeting and Intracellular Drug Delivery for the Treatment of Liver Disorders - Systemic administration of dendrimer N-acetyl cysteine improves outcomes and survival following cardiac arrest

OTHER RELATED INSTITUTES AT JOHNS HOPKINS

- Johns Hopkins Heart and Vascular Institute
- Johns Hopkins Comprehensive Diabetes Center
- Endocrinology, Diabetes, and Metabolism Research