

## Detailed BMS Faculty Research Focus Areas

USCSOMG Biomedical Sciences	Focus Areas
Sergio Arce, M.D., Ph.D. – BMS	<ol style="list-style-type: none"> <li>1. Discovering novel roles for B and T lymphocytes in the pathogenesis of sarcoidosis</li> <li>2. Biochemical mechanisms of steroid resistance in chronic persistent sarcoidosis</li> <li>3. Modeling the bone marrow plasma cell microenvironment and granulomatous inflammation in 3D culture systems</li> <li>4. Immunology and pathogenesis of multiple myeloma</li> </ol>
Asa C. Black, Jr., M.D. – BMS	<ol style="list-style-type: none"> <li>1. Pluripotent Adult Stem Cells (with Dr. Henry E. Yount)</li> <li>2. Multiple sclerosis (with Dr. Mary Hughes)</li> </ol>
Anna V. Blenda, Ph.D. – BMS	<ol style="list-style-type: none"> <li>1. Investigation of the antimicrobial properties of the human galectin proteins</li> <li>2. Screening for antimicrobial properties via dose-response bacteria killing assays, galectin-bacteria binding assays using flow cytometry, and glycan array data analysis</li> <li>3. Investigation of the genetics of the birth defects of split hand foot malformation (SFHM)</li> </ol>
Renee J. Chosed, Ph.D. – BMS	<ol style="list-style-type: none"> <li>1. Investigation of the role that posttranslational modifications play in disease progression.</li> <li>2. Characterization of the human Mixed-Lineage Leukemia (MLL1) complex using yeast as a model system.</li> <li>3. Understanding the molecular mechanisms mediating human embryo development during the pre-implantation-competent embryo</li> </ol>
Steven E. Fiester, Ph.D. – BMS	<ol style="list-style-type: none"> <li>1. Elucidating factors contributing to the virulence of multidrug-resistant ESKAPE pathogens with special attention given to <i>Acinetobacter baumannii</i>.</li> <li>2. Understanding the pathobiology of <i>A. baumannii</i> in order to uncover targets for therapeutics.</li> <li>3. Investigating the mechanism by which <i>A. baumannii</i> is cytotoxic to eukaryotic cells, acquires iron under chelated conditions, translocates virulence-associated proteins to the outer membrane, secretes virulence factors and responds to environmental stressors.</li> </ol>
Lauren A. Gonzales, Ph.D. – BMS	<ol style="list-style-type: none"> <li>1. Phenotypic adaptations of inner ear morphology</li> <li>2. Sensory ecology and evolution of the primate brain</li> <li>3. Vertebrate paleontology</li> <li>4. North and South American paleobiogeography</li> <li>5. New applications of Computed Tomography (CT) data for research and education</li> </ol>
Richard L. Goodwin, Ph.D. – BMS	<ol style="list-style-type: none"> <li>1. Investigation of the mechanisms of cardiovascular development.</li> <li>2. Investigation of cardiovascular malformations at birth in order to provide opportunities for new therapies</li> </ol>

	<ol style="list-style-type: none"> <li>3. Investigation of new cell-based therapies, which likely use the same developmental mechanisms to regenerate malformed and diseased structures, to treat adult disorders.</li> <li>4. Understanding the role of the mechanical environment on genomic regulation of the differentiation and morphogenesis of cardiovascular tissues.</li> <li>5. Generating 3D reconstructions of normal and defective hearts throughout development using an inducible model of a cardiac defect known as Tetralogy of Fallot.</li> </ol>
Richard L. Hodinka, Ph.D., F (AAM) - BMS	<ol style="list-style-type: none"> <li>1. Clinical microbiology, infectious diseases</li> <li>2. Development, validation and implementation of rapid and accurate methods for the detection and monitoring of microbial pathogens causing infectious diseases</li> <li>3. Primary focus on laboratory- and point-of-care-based molecular technologies for the diagnosis of viral illnesses</li> </ol>
Ann Blair Kennedy, LMT, BCTMB, DrPH – BMS	<ol style="list-style-type: none"> <li>1. Patient and stakeholder engagement in research</li> <li>2. Stress and wellness particularly in families with children with special needs</li> <li>3. Behavioral change interventions</li> <li>4. Implementation monitoring and process evaluation</li> <li>5. Integrative medicine</li> <li>6. Investigations of the massage therapy profession</li> </ol>
Mohammed K. Khalil, DVM, M.S.Ed., Ph.D. – BMS	<ol style="list-style-type: none"> <li>1. Investigation of learning and instructional technology</li> <li>2. Advancement of medical education with innovative learning strategies</li> <li>3. Applied research on technology integration in medical education with the intention of developing effective pedagogy that promotes student-centered and life-long learning</li> </ol>
Thomas I. Nathaniel, Ph.D. – BMS	<ol style="list-style-type: none"> <li>1. Evaluation of existing data to find improved treatment outcome of RTP (“Clot Buster”) in Ischemic stroke patients</li> <li>2. Development of “telestroke technology” to improve treatment efficiency and eliminate disparity between urban and rural area stroke patients.</li> <li>3. Use of metabolomics to identify biomarkers for stroke diagnoses</li> </ol>
William E. Roudebush, Ph.D. – BMS	<ol style="list-style-type: none"> <li>1. Investigation of the significance of signaling phospholipids (i.e. platelet activating factor)</li> <li>2. Investigation of Transforming Growth Factor-Beta hormones (e.g. AMH and inhibin B) in reproduction and preimplantation embryo morphometrics</li> </ol>
Rebecca Russ-Sellers, Ph.D. – BMS	<ol style="list-style-type: none"> <li>1. Investigation of clinically driven health services research</li> <li>2. Achieving effective health service research partnerships</li> <li>3. Emergency medical technician training in medical school</li> </ol>

Jennifer Trilk, Ph.D. – BMS	<ol style="list-style-type: none"> <li>1. The power of exercise training in medical education</li> <li>2. Improving Patient Health through Exercise is Medicine™ Greenville: A community initiative to integrate physician-prescribed physical activity in Greenville, South Carolina</li> <li>3. Massage Therapy for Improvement of Quality of Life and Sport Performance in Paracycling Athletes</li> </ol>
Matthew Tucker, Ph.D. - BMS	<ol style="list-style-type: none"> <li>1. Research focuses on the role of sleep in memory processing in medically relevant contexts</li> </ol>
Shanna Williams, Ph.D. – BMS	<ol style="list-style-type: none"> <li>1. Craniofacial growth, maturation, and change based on age and ancestry</li> <li>2. Predictive Value of Basic Science Content and NBME® Comprehensive Basic Science Exams in a New Medical School</li> </ol>
William Wright, Ph.D. - BMS	<ol style="list-style-type: none"> <li>1. Determination of the mechanisms of dysfunction that occur early in the diabetic retina which lead to the development of diabetic retinopathy</li> <li>2. Investigation of inflammatory mediators that modify vascular endothelial cell function and result in altered blood flow to the retina.</li> <li>3. Assessment practices</li> <li>4. Curricular design in medical education</li> </ol>