



## Joint Graduate Program in Biomedical Engineering Spring Seminar

**Carl Herickhoff PhD**

Assistant Professor

Presents

**Gary Bowlin PhD**

Professor & Herbert Herff Chair of Excellence

Undergraduate Coordinator

&

**John Williams PhD**

Professor & Graduate Coordinator

&

**Esra Roan PhD**

Co-Founder/CEO, SOMAVAC Medical Solutions, Inc.

**“How We Got Here: Personal Paths to a Faculty Career”**

**3:00-4:30p RM ES 308**

**Friday 21 April**

Join via Zoom @

<https://memphis.zoom.us/j/89843448947?pwd=N0w4cU4R2NDeS90NU9iMEtQRXZsdz09>

Meeting ID: 898 4344 8947 Passcode: 922085

# Gary Bowlin PhD

- Dr. Bowlin's laboratory is focused on developing and evaluating electrospun biomaterials for tissue engineering of new tissues and organs. More importantly, current work focuses on near-field electrospinning and regulating the neutrophil response to the implanted fibrous regeneration templates. The Bowlin lab research productivity has yielded over 150 journal articles (>20,200 citations, h-index: 60; Google Scholar data), 19 book chapters, over 60 U.S. and International patents (started five companies, several regulatory cleared products), and over 400 presentations and invited lectures. As a senior faculty member in Biomedical Engineering, Dr. Bowlin has a long-standing commitment to the training of future generations of engineers and scientists. Over the years, he has trained/mentored 15 high school students in year-long commitments and provided educational and career planning to numerous high school students. He has also directly supervised 80 undergraduate students in research or senior design projects. In addition, he has graduated 32 Master's degree students and 18 Ph.D. students who have had very productive careers in medicine, industry, and academia. Dr. Bowlin is the Inaugural and current President of the International Society for Biomedical Polymers and Polymeric Biomaterials and serves as the Secretary/Treasurer for the International Society for Applied Cardiovascular Biology. Finally, he is a Fellow of the National Academy of Inventors and the American Institute for Medical and Biological Engineering.



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# Dr Esra Roan PhD

- Dr. Esra Roan has over 20 years of experience in creating engineered solutions and launching ideas in technical fields. Prior to her current role as the CEO of SOMAVAC, she was an Associate Professor in Biomedical Engineering at the University of Memphis where she focused on soft tissue biomechanics and was recognized for her work in ventilator induced lung injury with an Outstanding Early Career Investigator Award from the American Thoracic Society. She began her career as a development engineer at 3M Precision Optics (Cincinnati, OH). Esra co-founded SOMAVAC Medical Solutions to design and commercialize medical technologies focusing on the post-surgical recovery. She was recently recognized for her role with a Super Woman in Business Award from MJB in 2020. Dr. Roan has BS and MS degrees in Mechanical Engineering from the Tennessee Technological University (TTU) and a PhD in Mechanical Engineering from the University of Cincinnati. She serves on the Advisory Board of TTU and UofMemphis MechE Departments as well as Women @Southeastern Life Sciences. Dr. Roan's path to US was through a tennis scholarship at TTU, where she was recognized for her achievements with an introduction in to the TTU Athletic Hall of Fame in 2011. She now lives in Memphis, TN with her husband Steve and two children (Ben and Emre).



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# Dr Carl Herickhoff

- Dr. Herickhoff and team are focused on developing novel transducers and approaches to ultrasound imaging (and therapy) to improve human health. Research work includes application-specific ultrasound array design, fabrication, integration, and testing, as well as simulation and implementation of new imaging algorithms. Current projects include end-to-end system customization for transcranial neuroimaging, dual-frequency arrays for superharmonic contrast imaging, catheter arrays for intravascular elasticity imaging, and a waveform-inversion-based quantitative body scanner. As of 2020, Dr. Herickhoff has 14 journal articles, 2 book chapters, 1 patent, and over 20 conference abstracts and proceedings papers. He has mentored or co-mentored over a dozen students (ranging from undergraduates to post-doctoral fellows) and is a regular reviewer for 5 refereed journals related to ultrasound, medical imaging, and biomedical engineering. He is an active member in the American Institute of Ultrasound in Medicine (AIUM), the IEEE Ultrasonics, Ferroelectrics, and Frequency Control (UFFC) Society, the Acoustical Society of America (ASA), and the Biomedical Engineering Society (BMES).

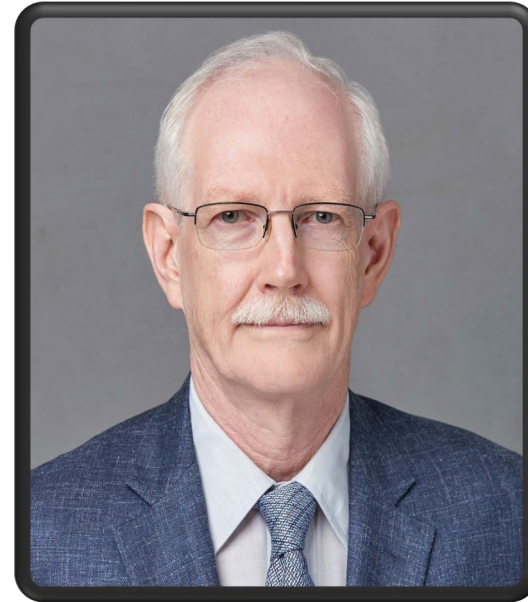


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# Dr John Williams

- Dr. Williams and team are focused on developing multiscale models of the growth plate to simulate the mechanical environment around and within chondrocytes. This relates to bone growth and fracture healing, and has relevance to developing treatments for scoliosis, nonunion fractures, and growth plate fractures. Current work is focused on the influence of the permeability of the calcified cartilage on the stresses and strains in cells at various depths within the growth plate during gait; determining the mechanical signals received by chondrocyte cilia; and understanding the growth and remodeling of the subchondral bone plate and its possible role in slipped capital femoral epiphysis, which is the most common hip disorder in adolescents. He has co-authored over 100 journal and conferences papers on the biomechanics of bone, growth cartilage, knee and shoulder joint mechanics, gait, spine, pediatric and adult fracture fixation, knee arthroplasty and prosthodontics. He is a co-inventor of 20 US and 38 affiliated international patents, which form the basis for the improved kinematics of the DePuy Synthes ATTUNE® Primary Total Knee Implant. He is a member of the American Society of Mechanical Engineers, The Orthopaedic Research Society and is a voting member of the ASTM International Committee F04 on Medical and Surgical Materials and Devices. He is a regular reviewer for the DEBUT undergraduate biomedical design and innovation competition, the NSF, OREF Research Grants Committee, and has served several terms as a member of the Neutron Scattering Science Review Committee for Neutron Sciences at Oak Ridge National Laboratory. He is an Academic Editor for PLoS ONE and PeerJ.



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