

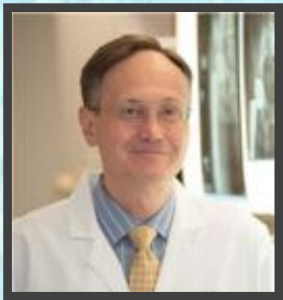


## John P. Cooke, MD, PhD

Professor and Chair, Department of Cardiovascular Sciences,  
Houston Methodist Research Institute

### *Cellular Transitions in Regeneration*

Cell fate is not fixed, but is rather responsive to environmental factors. The fluidity of cell fate is a function of epigenetic plasticity. Cells sense damage - or pathogen associated molecular patterns via pattern recognition receptors to activate innate immune signaling. We find that activation of innate immune signaling changes the expression and activity of epigenetic modifiers so as to promote DNA accessibility. In addition, a glycolytic shift is associated with an increase in the expression of a nuclear citrate transporter and the conversion of citrate to acetyl coA, to support increased histone acetylation. These epigenetic effects of innate immune signaling permit cellular plasticity required for tissue repair and regeneration. Pharmacological or genetic modulation of this pathway may provide for therapeutic transdifferentiation to promote recovery from tissue injury



## George F. Muschler, MD

Orthopaedic Surgeon and Clinician-Scientist  
Cleveland Clinic

### *Understanding and using Native Stem and Progenitor Cell Sources*

Stem cell biology is of central importance in tissue engineering and regenerative therapies. Many cell sources have been identified. However, the rational design of cell-based therapies, either targeting cells in situ, or harvest and transplantation of cells demands answers to several key questions:

- 1) How many stem cell types (niches) are there in native tissues?
- 2) How much variation is there between individuals and between tissues?
- 3) What is the relationship between the concentration and prevalence of stem/progenitor populations and tissue health?
- 4) Are specific stem/progenitor subtypes best suited as a cell source for specific clinical applications?
- 5) What specific attributes or markers can be used to distinguish between the stem cell populations and progenitor cell populations with (desirable or undesirable) features?

Our lab is working actively to contribute a series of valuable tools and clinical insight that enable a precise and systematic examination of these important questions.



**Keck Seminar**  
**Friday, Oct 5, 4pm**  
**BioScience Research Collaborative**  
**BRC Auditorium**

The Gulf Coast Consortia is a collaboration of:  
Rice University | Baylor College of Medicine | University of Houston | University of Texas Health Science Center at Houston  
University of Texas Medical Branch at Galveston | University of Texas MD Anderson Cancer Center  
Institute of Biosciences & Technology at Texas A&M Health Science Center