Fluids of the future
This lecture will present potential future innovation in fluid resuscitation. We will review historical military contributions to current resuscitation strategies as well as their limitations. We will describe the expectations for the fluids of the future that will overcome current limitations. Finally, we will discuss select ongoing research efforts with a review of current animal data.

Monitoring tissue perfusion
Tissue perfusion is a common endpoint for the resuscitation of critically ill patient. There are a wide range of clinical and laboratory techniques that can be applied to tailor our resuscitation approach to the need of a given patient. This lecture will review several tools available to the care team and discuss pros and cons.

Ischemia-reperfusion injury: a deep dive
Ischemia-reperfusion injury is a common scenario in emergency medicine and critical care. It is encountered in a host of conditions such as hypovolemic shock, aortic thromboembolism, sepsis, etc. This lecture will discuss the pathophysiology of ischemia-reperfusion in depth with an emphasis on mitochondrial injury. We will discuss monitoring and diagnostic tools as well as current novel therapeutics development efforts.