The Department of Bioengineering at
Clemson University
Presents

Zhongjun Jon Wu, PhD
Assistant Professor of Surgery
Director of Artificial Organs Laboratory
University of Maryland School of Medicine
Baltimore, Maryland

Development of an Integrated Artificial Pump-Lung: From Concept to In-vivo Evaluation

Lung disease, behind cardiovascular illness and cancer, is the third largest cause of death in America. Current therapy for respiratory failure includes mechanical ventilation and extracorporeal membrane oxygenation. Mechanical ventilation is effective for short term support, yet the sustained tidal volumes and airway pressures often used may damage the lungs via barotrauma, volutrauma, and other iatrogenic injuries that can prevent lung recovery. ECMO systems are attractive since they closely simulate physiological gas exchange, but in practice, these systems are limited by the complexity of its operation, bleeding, and reduced patient mobility. At present, irreversible and chronic lung disease can only be treated with lung transplantation. Unfortunately, lung transplantation is limited by the availability of donor lungs and the lack of bridge to transplantation options. The objective of this project is to develop a novel compact integrated pump-lung to provide respiratory support for patients with lung failure.

In this talk, we will provide a comprehensive survey of the current status and future perspective of artificial lung device as therapy for patients with respiratory failure. The fundamental technical problems associated with artificial organs and bioengineering principles used in the development of the integrated artificial pump-lung from the initial concept to the in-vivo evaluation will be presented.

Friday, November 9, 2007
1:30 PM
Rhodes 302