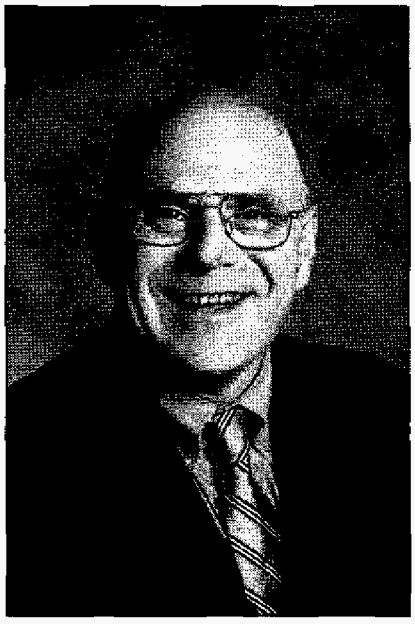
## Professor Timothy Buchman
## Washington University

# Control Theories in Critical Illness and Critical Care

**Tuesday, December 14**
**8:30 – 9:30am**
**Atlantis Grand Ballroom D**

Critical care is a triumph of the last half-century. Today, devices (such as mechanical ventilators and kidney dialysis machines) and drugs (such as synthetic antimicrobials) can sustain life through illnesses that were lethal just decades ago. Yet despite successful stabilization and reversal of the process that triggered their critical illness, many patients still fail to recover and regain physiologic independence from their multiple supports. In this lecture, we will explore the way in which therapeutic failures and a specific therapeutic success -- tight control of blood sugar-- have been interpreted by biomedical scientists in the context of three leading theories of physiologic control: homeostasis, network theory and allostasis. The ambiguities and conflicts will illuminate opportunities for decision and control theorists and engineers in the emerging field of systems biology and its application to critical clinical medicine.



Timothy G. Buchman, PhD, MD, FACS, FCCM is the immediate Past President of the Society of Critical Care Medicine. Buchman is the Harry Edison Professor of Surgery, Professor of Anesthesiology and Medicine and the Chief of the Burn, Trauma, Surgical Care Section at Washington University School of Medicine in St. Louis. He is also Director of the Level I Trauma Center and Attending Surgeon at Barnes-Jewish Hospital in St. Louis. Prior to moving to St. Louis, Dr. Buchman was Associate Professor of Surgery, Assistant Professor of Emergency Medicine and Director of the Training Program in Surgical Critical Care at The Johns Hopkins University in Baltimore, where he also held a Joint Appointment in Molecular Biology and Genetics. The Associate Editor of Shock, Dr. Buchman has also been a member of the following editorial boards: Critical Care Medicine, International Journal of Surgical Investigation, The Journal of Surgical Research and The Journal of the American College of Surgeons. He has published approximately 170 journal articles, abstracts, books and chapters. Currently, Dr. Buchman has three National Institutes of Health grants. Additionally, Dr Buchman is a member of the following professional societies: American Association for the Surgery of Trauma,American Physiological Society, American Surgical Association, Association for Academic Surgery, Eastern Association for the Surgery of Trauma, Shock Society, Society of University Surgeons and Surgical Infection Society. Washington University has honored Dr. Buchman with the Senior Class Award for Teacher of the Year and the Evarts A. Graham Resident Teaching Award. While at Johns Hopkins University School of Medicine, Dr. Buchman was presented with the Anthony L. Imbembo Teaching Award and the Baltimore Academy Teaching Award. Dr. Buchman completed his Fellowship in Traumatology and Critical Care at the Maryland Institute for Emergency Medical Service Systems and his residency and internship at The Johns Hopkins Hospital in Baltimore. He received a medical degree, a doctorate in virology, a master's degree in organic chemistry and a bachelor's degree in chemistry from the University of Chicago. Buchman's research interests span the molecular mechanisms underlying the multiple organ dysfunction syndrome; end-of-life care; and the genetics of sepsis.