Intent and Objectives: Defining complexity in acute illness.

Who Should Attend: Clinicians, clinical trainees, mathematician/information scientists, graduate students and post doctoral fellows interested in quantitative approaches to acute illness.
Preliminary Program

THURSDAY, OCTOBER 19

Session I: Acute Illness and Complexity
8:30 a.m. Welcome and Introductory Remarks Gilles Clermont, Eddy Neugebauer
8:45 a.m. Regeneration and healing: the goal of critical care Alan Russell
9:15 a.m. Keynote address Timothy Buchman
9:45 a.m. Discussion: Challenges facing Critical Care Medicine. Tim Buchman, Eddy Neugebauer
          (report of the November 2005 workshop)
10:10 a.m. BREAK

Session II: Systems Biology and Complexity
Chairs: Gary An, Anthony Hunt
10:20 a.m. A Clinician’s Perspective on Systems Biology Gilles Clermont
10:40 a.m Of Mathematicians and Biologists Bard Ermentrout
11:10 a.m. Perspectives on Complexity John Doyle
11:40 a.m. Discussion: Speaking the Same Language Gary An, Anthony Hunt
12:20 p.m. LUNCH

Session III: Modeling Inflammation and Damage
Chairs: Gilles Clermont, Markus Covert
1:30 p.m. The Unified Response to Pathogens and Tissue Damage Timothy Billiar
1:55 p.m. Modeling Inflammation and Damage Yoram Vodovotz, Jonathan Rubin
2:20 p.m. Mechanical Implications of Blood as a Bacterial
          Ecosystem John Younger
2:45 p.m. BREAK
3:00 p.m. Translational Approach to Modeling Pneumonia Dynamics Jonathan Dunn
3:25 p.m. Functional genomics of inflammation Steve Calvano
3:50 p.m. Discussion: Extracting knowledge from information Gilles Clermont, Markus Covert
4:50 p.m. ADJOURNMENT

5:00 p.m. Annual Meeting of the Society for Complexity in Acute Illness

7:00 p.m. Speakers’ Reception
Session IV: Mathematical Modeling of Organ Function and Dysfunction
Chairs: Timothy Buchman, Mitchell Fink
8:30 a.m. Cell Failure and Organ Dysfunction Mitchell Fink
8:55 a.m. Models of Lung Injury John Hotchkiss, Phil Crooke
9:20 a.m. Cardiovascular Models of Shock Sven Zenker, Sanjeev Shroff
10:00 a.m. Break
10:15 a.m. Prediction modeling in Neurotrauma Brahm Goldstein
10:40 a.m. Organ-organ Crosstalk Gary An
11:05 a.m. Discussion: Modeling Organ Function Timothy Buchman, Mitchell Fink
11:45 a.m. Poster Viewing and LUNCH

Session V: Physiologic Control: theory and practice
Chairs: John Doyle, Marie Csete
1:00 p.m. Physiological control Uwe an der Heiden
1:25 p.m. Modeling metabolic pathways Joerg Stelling
1:50 p.m. Reverse engineering metabolic networks Markus Covert
2:15 p.m. Break
2:25 p.m. Controlling sedation Wassim Haddad
2:50 p.m. Glycemic control: an engineering approach Robert Parker
3:15 p.m. Discussion: Clinical applications of control John Doyle, Marie Csete

Session VI: Young Investigators Seminars
Chairs: Gilles Clermont, Eddy Neugebauer
4:00 p.m. Introduction
4:05 p.m. Young Investigators’ Presentations
5:30 p.m. Adjournment
7:00 p.m. Conference Banquet
SATURDAY, OCTOBER 21

Session VII: Computational and Methodological Challenges
Chairs: David Bortz, Gary An
8:30 a.m. Who Should Be Part of the Modeling Team? Marie Csete
8:55 a.m. Choosing and designing the computing environment TBD
9:20 a.m. Communication through model sharing: integrating community-wide knowledge Gary An
9:40 a.m. Sharing Data and Critical Illness: the German Trauma Registry Rolf Lefering
10:05 a.m. Data and Resource Sharing: the Physionet project George Moody
10:30 a.m. BREAK
10:40 a.m. Model selection David Bortz
11:05 a.m. Model verification: from hardware to biology Christopher Langmead
11:30 a.m. Comparing models: the FURM project Anthony Hunt
11:55 a.m. Discussion: David Bortz, Gary An
12:20 p.m. LUNCH

Session VIII: The ICU of the Future and Physiological Variability
Chairs: Andrew Seely, Brahm Goldstein
12:50 p.m. Caring for the critically ill: the knowledge gap Andrew Seely
1:10 p.m. Physiological bases of variability Sven Zenker
1:35 p.m. Physiology and complexity Ary Goldberger
2:00 p.m. Variability in clinical practice Alan Mutch
2:25 p.m. The wired ICU, or maybe not Gilles Clermont
2:45 p.m. Discussion: Andrew Seely, Brahm Goldstein
3:10 p.m. ADJOURNMENT